Solid Waste Management for Sustainable Urban Development (SMWSUD) Project in Indonesia



ESIA Report: TEMANGGUNG

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Kementerian Pekerjaan Umum
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ABBREVIATION

APBD	:	*Anggaran Pendapatan dan Belanja Daerah*/Regional Budget
APBN	:	*Anggaran Pendapatan dan Belanja Negara*/National Budget
ATR/BPN	:	*Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional* (Agrarian and Spatial Planning/Head of the National Land Agency
BOD	:	Biological Oxygen Demand
CITES	:	Convention on International Trade in Endagered Species
COD	:	Chemical Oxygen Demand
DLH	:	*Dinas Lingkungan Hidup*/Environmental Service
DO	:	Dissolved Oxygen
DPRKPLH	:	*Dinas Perumahan Rakyat, Kawasan Permukiman dan Lingkungan Hidup*/ Department of Public Housing, Settlement Areas and the Environment
E&S	:	Environment and Social
ECMWF	:	European Centre for Medium-Range Weather Forecasts
ESEL	:	Environmental and Social Exclusion List
ESIA	:	Environmental and Social Impact Assessment
ESMP	:	Environmental and Social Management Plan
ESP	:	Environmental and Social Policy
GAP	:	Gender Action Plan
GBV	:	Gender Based Violence
GoI	:	Government of Indonesia
Gubuk Penyimpanan	:	The term used to refer to the storage area for collected waste is often also utilised by wastepickers as a place to rest.
HH	:	Household
IFC PS	:	International Finance Corporation (IFC) Performance Standards.
IUCN	:	International Union of Conservation for Nature
Kerokan	:	Common method of treatment practiced by the Indonesian community when experiencing symptoms of a cold. This traditional practice involves scraping the skin with a blunt object, such as a coin, often after applying oil or menthol ointment.
KLHK	:	*Kementerian Lingkungan Hidup dan Kehutanan*/Ministry of Environment and Forestry

LG	:	Local Government
LPMU	:	Local Project Management Unit
LTP	:	Leachate Treatment Plant
Pamsimas	:	*Penyediaan Air Minum dan Sanitasi Berbasis Masyarakat*/Community-Based Drinking Water and Sanitation Provision
Posyandu	:	*Pos Pelayanan Terpadu*/Integrated Healthcare Post
PPM	:	Project-affected People's Mechanism
PPSNO	:	*Paguyuban Pengelola Sampah Non Organik*/Non-Organic Waste Management Association
Puskesmas	:	*Pusat Kesehatan Masyarakat*/Community Health Center
Pustu	:	*Puskesmas Pembantu*/Subsidiary Community Health Center
RDF	:	Refuse Derived Fuel
SEAH	:	Sexual Exploitation, abuse and Harassment
SEP	:	Stakeholder Engagement Plan
SNI	:	*Standar Nasional Indonesia*/ Indonesian National Standard
SWM-SUD	:	Solid Waste Management for Sustainable Urban Developmen
TPA	:	Final Disposal Site/Landfill
TPS3R	:	Reuse, Reduce, Recycle Facilities
TPSD	:	Village Waste Management Center
TPST	:	*Tempat Pengolahan Sampah Terpadu*/Integrated Waste Processing Site
UKL-UPL	:	*Upaya Pengelolaan Lingkungan* – Upaya Pemantauan Lingkungan/Environmental Management Effort – Environmental Monitoring Effort) report and submission of *Izin Lingkungan* (Environmental Permit
UPTD	:	*Unit Pelaksana Teknis Dinas*/Service Technical Implementation Unit
WBG	:	World Bank Group

EXECUTIVE SUMMARY

The Asian Infrastructure Investment Bank (AIIB) is providing a sovereign-guaranteed loan for the Republic of Indonesia to fund the Solid Waste Management for Sustainable Urban Development (SWM-SUD) Project. This initiative seeks to enhance waste management infrastructure in ten Indonesian cities located in Sumatera, Kalimantan, and Java ("sub-projects"). The Alliance to End Plastic Waste (AEPW) signed a cooperation document with AIIB in early August 2023 to support Government of Indonesia (GoI) by providing technical assistance for the project preparation.

AEPW (the Client) has appointed EnviroSolutions & Consulting (ESC) (the Consultant) to conduct Environmental and Social Impact Assessments (ESIAs) for each selected sub-project, following AIIB's Environmental and Social Policy (ESP) and applicable local frameworks.

The ten Indonesian cities and districts include Tranche 1 (Kabupaten Temanggung, Kabupaten Rembang, Regional Aceh, Kabupaten Tasikmalaya and Kabupaten Jepara) and Tranche 2 (Regional Magelang, Kabupaten Gunungkidul, Kabupaten Cirebon, Kabupaten Banyuwangi and Kabupaten Tabalong).

This report describes ESIA of the selected sub-project Temanggung Regency for the construction of the TPA Sanggrahan (Sanggrahan Tempat Pembuangan Akhir (TPA)) (hereafter refer to as "the Sub-project").

Project Description

The TPA Sanggrahan is located within the regency of Temanggung, district of Kranggan, village of Sanggrahan, and hamlet of Losari. The Sub-project is proposed to improve the existing solid waste management situation in Temanggung as follows:

- Improvements to the waste processing and rehabilitation of the existing sanitary landfill waste cell in the current TPA Sanggrahan Temanggung area, where the integrated waste processing site (TPST) is proposed.
- Development of a Refuse Derived Fuel (RDF) facility which houses material recovery activities as part of the segregation process for RDF feed. This RDF facility will create economic benefits for the Local Government (LG).

The TPA Sanggrahan and TPST are located on 60,278 m^2 of land that has been approved for non-commercial use by the Spatial Utilisation Activity Suitability Approval (KKPR) in 2023. The land currently used as TPA includes areas previously classified as plantation land, rain-fed rice fields and part of the land designated as Protected Rice Field Land (LSD) and Sustainable Food Crop Land (LP2B). According to the KKPR approval No. 053/KKPR/2023 dated 29 December 2023, the LSD spatial pattern will be issued based on the recommendations of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), and LP2B has been regulated in accordance with applicable laws and regulations. Ownership of the land is confirmed by nine Certificates of Right of Use in the name of the Temanggung Regency Government.

Of the total land area of 60,278 m^2, 12,697 m^2 was acquired through a land swap mechanism with village-owned "bengkok" land. This land had previously been allocated by Sanggrahan village to four village officials. As part of the land swap, the local government provided replacement land in Krajan hamlet, Sanggrahan village, which was accepted by the village officials as land users. The replacement land is more productive agricultural dry land than the previous land. The land exchange process started in 2020 and was completed in 2023 with a land acquisition appraisal for the TPA site.

The TPST land use is proposed to include:

- Zones 1, 2, and 3: new landfill zones

- Zone 4
- Zone 5
- Zone 6: the Leachate Treatment Plant (LTP) and picking bay
- Construction of an operational road to provide access to the new TPST facilities.

The chosen technology for the design of the TPST Sanggrahan includes composting, incineration, and RDF production as the main processes. The products generated by the TPST will include compost, maggots/animal feed, RDF balls, RDF briquettes, and sellable inorganic waste

Legal and Regulatory Framework

The Sub-project is subject to the relevant laws and regulations within Indonesia, in addition to the relevant AIIB and International Regulatory Framework:

- AIIB Environmental and Social Framework;
- World Bank Group General Environmental, Health and Safety (EHS) Guidelines (2007);
- WBG EHS Guidelines for Waste Management Facilities (2007); and,
- WBG EHS Guidelines for Water and Sanitation (2007).

Screening and Scoping Results

Based on the screening and scoping assessment of this Sub-project, it is likely to be classified as a Category B Project under the AIIB Environmental and Social Framework (ESF).

The Sub-project's Area of Influence (AoI) is anticipated to affect an area within a 500 m radius, while the indirectly affected area extends up to 1,000 m. The determination of the affected area refers to the regulation of the Minister of Public Works No. 3 of 2013, which outlines the implementation of waste infrastructure and facilities in Articles 32 and 35.

ESC carried out the scoping study site visit from 15 to 17 May 2024 where legacy (i.e., existing prior to the Sub-project) issues relating to environmental and/or social impacts:

- Environmental
  - Air and Water Pollution - The lack of regular cover of the landfill (TPA) results in significant odour and water pollution from non-functioning drainage systems containing leachate.
  - Leachate Management - The leachate treatment plant (LTP) and drainage system have not been functioning effectively, resulting in water pollution.
  - Landfill Landslide History - The history of landslides at the landfill (TPA) indicates poor waste management, which could threaten safety and disrupt operations, as past landslides have blocked the main access road to the TPA.
- Social
  - Community Complaints - Local communities, particularly in the village of Tegalombo, have complained about the negative impacts of the landfill, mainly related to odour and water pollution.
  - Women, Elderly and Vulnerable groups scavenging the landfill as a source of income.

Risk and Impact Identification

The initial identification of potential environmental and social impacts based on pre-mitigation stage conditions was carried out in accordance with the AIIB ESS. A total of 7 high risks, 29 medium risks, and 6 low risks were identified, as well as 1 positive. The summary of high risks is presented in the table below.

AIIB ESS	Components/ Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
Pre-construction						
ESS 1	Socio-Cultural: Increase of community concerns	Stakeholders Socialization	There are community concerns about the existing activities of the TPA Sanggrahan. Based on interviews with village leaders, several community complaints were identified regarding the presence of TPA Sanggrahan. The main issues are the unpleasant odour that occurs at certain times and the spillage of waste on the roads during the transport of waste to the TPA, which has the potential to increase community concerns when the project plan is socialised with the community. There will be various concerns from the community regarding the Project Development Plan, for example from wastepickers regarding economic activities and concerns about traffic disruption during the activity phase. In addition to the concerns that will arise, there will also be the potential for community expectations regarding the positive impacts of the development of the Sanggrapan landfill.	**High**	• Conduct a baseline survey to identify community expectation and concern to the project. Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Yes
Construction						
ESS 1	Water Quality: Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	Temporary landfill construction - Waste disposal handling during construction	There is a possibility that leachate from the temporary landfill operation could flow into surface water bodies without prior treatment, if the LTP is still not operating properly.	**High**	• Monthly monitoring for surface water quality to modify or evaluate implemented mitigation measures based on target threshold. • Evaluate Leachate Treatment Plant	Yes

AIIB ESS	Components/ Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
		(Associated Facilities)			• Install geosynthetic liner in temporary landfill and a leachate collection system to prevent drainage into water bodies	
ESS 1	Water Quality: Groundwater Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)	Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	The leachate of temporary landfill could infiltrate to the groundwater and potentially pollute it if the environmental protection and membranes does not meet the standard.	**High**	• Ground water quality baseline data collection. • Install geosynthetic liner in temporary landfill and a leachate collection system to prevent infiltration to groundwater	Yes
ESS 1 & 2	Socio-economic: Wastepicker Relocation	Temporary landfill construction - Waste disposal handling during construction (Associated	• The land preparation activities during the construction phase will have an impact on the relocation of wastepickers' stalls. According to data from the TPA Sanggrahan UPTD, there are 69 wastepickers, comprising 49 women and 24 elderly individuals. This group is particularly vulnerable and may be disproportionately affected by the proposed changes. Any operational changes at the TPA could have a negative impact on the local economy, particularly affecting women and the elderly, who are among the most vulnerable groups in the community. • The project development plan indicates that the location of the wastepicker stalls in	**High**	• Conduct socialization • Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans • Develop livelihood restoration plans specifically targeting women and elderly wastepickers, ensuring gender sensitive and inclusive approaches. • Ensure compensation mechanisms consider the vulnerability of these groups.	Yes

AIIB ESS	Components/ Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
			the TPA will become the location of the project development. This will necessitate the cleaning up of non-permanent stalls.			
ESS 1	Transportation : Disruption to Land Traffic	Mobilization of Equipment and Materials	• The mobilization of heavy vehicles and construction materials may increase traffic volume around the TPA Sanggrahan. The passage of heavy vehicles can disrupt community activities and potentially cause other issues, such as road damage. • Construction mobilization may disrupt traffic, especially on the Kranggan-Kaloran road.	High	• Conduct a traffic impact assessment • Implement a traffic management plan	Yes
ESS 1	Health and Safety : increase in community accidents	• Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • Temporary landfill	Landfills located near residential areas or public access pose risks to surrounding communities, particularly from exposure to hazardous gases, waste leaks, and the movement of heavy vehicles. Children or residents who are unaware of the dangers of landfills may experience accidents, including getting trapped in waste piles or being injured by vehicles entering and exiting the site.	High	• Identify potential interactions between the community and vehicle routes as well as the landfill area. • Create a buffer zone or high security fence around the landfill to prevent unauthorized access. • Place warning signs and traffic signals around the landfill area to regulate the movement of heavy vehicles. • Regularly monitor air and water quality and take mitigation actions if pollution is detected. • Conduct outreach and education for the surrounding community about the dangers of the landfill, especially for children.	Yes

AIIB ESS	Components/ Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
					• Manage drainage effectively to prevent leakage of liquid waste into the surrounding area.	
Operation						
ESS 1 & 2	Social-Economic : disruption of wastepickers ' livelihoods	Operation of TPST Operation of TPA	The operation of the TPST allows waste arriving at the landfill to be processed directly at the facility. This has the potential to reduce the amount of waste that wastepickers can collect and, consequently, decrease their income.	**High**	• Develop and implement livelihood restoration programs • Provide alternative job opportunities	Yes

Impact Assessment

The environmental and social assessment process for the proposed sub-project has identified environmental and social concerns, but no significant negative impacts that cannot be realistically mitigated and managed have been identified. The sub-project components are relatively medium in scale and involve straightforward construction and operational activities, resulting in localised and manageable impacts. Most of these impacts are related to the construction phase, which involves the relocation of wastepickers and impacts on wastepickers' income.

Recommendation

The sub-project requires a site-specific Environmental and Social Management Plan (ESMP), which includes mitigation measures for both the construction and operation phases. The contractor will be required to prepare a management plan outlining its responsibilities for the implementation of the ESMP, which must be approved prior to the start of construction. A copy of the ESMP should always be available on-site during construction to ensure that all mitigation measures are followed.

The environmental and social impacts of this project are mainly related to the construction and operation of the plant. The most significant issues include odour, water contamination from leachate and the risk of landslides. Improving the leachate management infrastructure, drainage system and ensuring regular waste cover will help to mitigate these negative impacts. All mitigation measures must be implemented in accordance with international standards and national regulations to protect the surrounding environment.

Stakeholder engagement is critical to ensuring that the project meets expectations. Public consultations will continue throughout project implementation to address community concerns, especially for vulnerable groups such as wastepickers, women and the elderly who may be affected. A grievance redress mechanism will be established to collect and address complaints promptly.

Regular monitoring will be carried out to ensure that all mitigation measures are properly implemented. Reports from the monitoring activities will be used to assess the impacts of the project and additional measures will be taken as necessary. Monitoring will include field observations, document reviews, and interviews with workers and affected community members.

1 INTRODUCTION

1.1 Project Background

1.1.1 The Asian Infrastructure Investment Bank (AIIB) is providing a sovereign-guaranteed loan for the Republic of Indonesia to fund the Solid Waste Management for Sustainable Urban Development (SWM-SUD) Project. This initiative seeks to enhance waste management infrastructure in ten Indonesian cities located in Sumatera, Kalimantan, and Java ("sub-projects"). The Alliance to End Plastic Waste (AEPW) signed a cooperation document with AIIB in early August 2023 to support Government of Indonesia (GoI) by providing technical assistance for the project preparation.

1.1.2 AEPW (the Client) has appointed EnviroSolutions & Consulting (ESC) (the Consultant) to conduct Environmental and Social Impact Assessments (ESIAs) for each selected sub-project, following AIIB's Environmental and Social Policy (ESP) and applicable local frameworks.

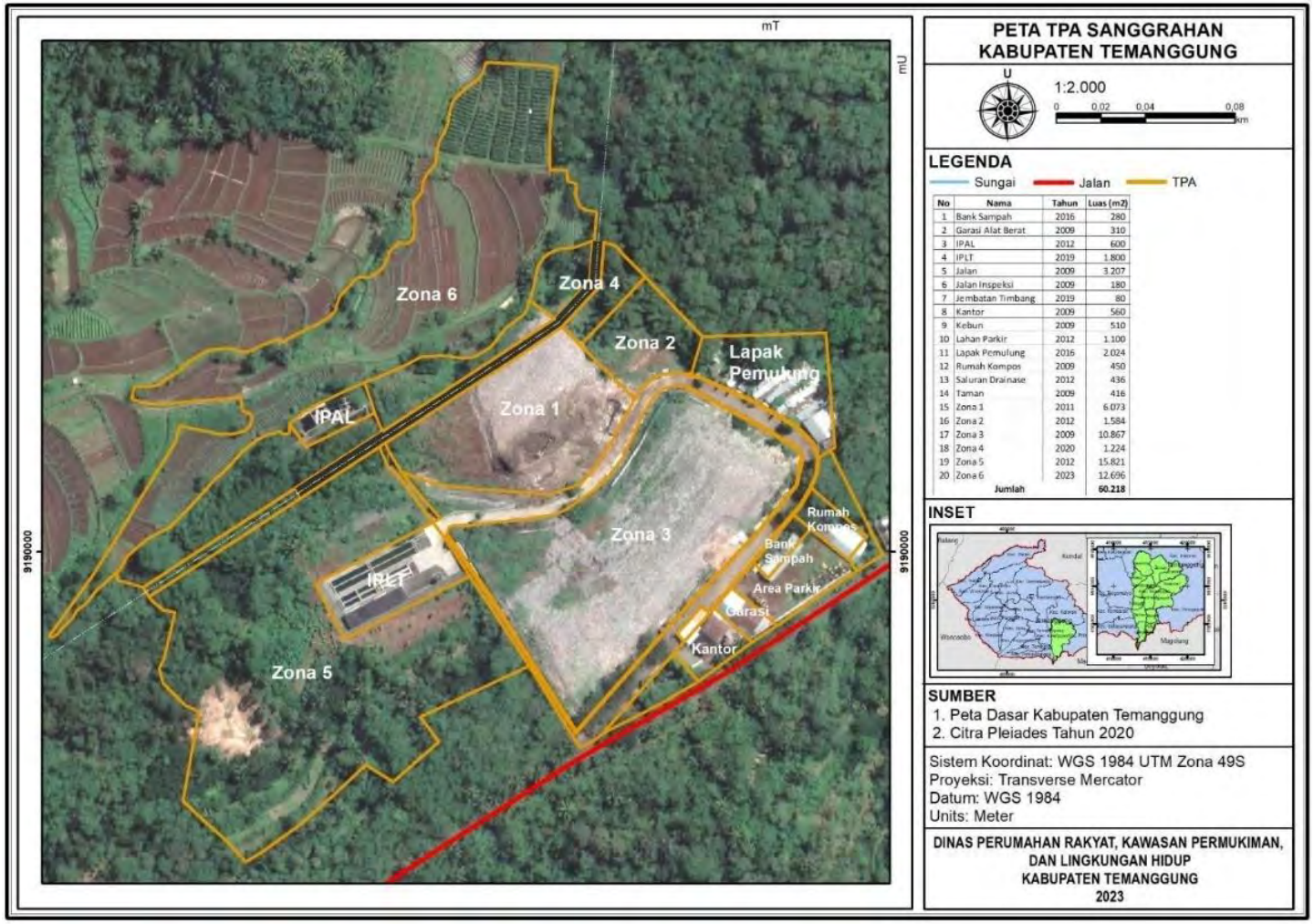
1.2 Sub-projects

1.2.1 The ten Indonesian cities and districts include Tranche 1 (Kabupaten Temanggung, Kabupaten Rembang, Regional Aceh, Kabupaten Tasikmalaya and Kabupaten Jepara) and Tranche 2 (Regional Magelang, Kabupaten Gunungkidul, Kabupaten Cirebon, Kabupaten Banyuwangi and Kabupaten Tabalong).

1.2.2 This report describes ESIA of the selected sub-project Temanggung Regency for the rehabilitation of TPA (*Tempat Pembuangan Akhir*/landfill) Sanggrahan and construction of the TPST (*Tempat Pengolahan Sampah Terpadu*/Integrated Waste Processing Site) Sanggrahan (hereafter refer to as "the Sub-project") with location as illustrated in **Figure 1-1**.

1.2.3 Referring to **Figure 1-1,** Zones 1, 2, and 3 will be used as the new landfill zones and the TPST, LTP, and picking bay will be built at Zone 6. Zone 4 will be developed as an access road to the TPST. The detailed description of the Temanggung Regency sub-project, including the existing conditions waste management mass balance, sub-project components, and alignment with the Master Plan Document for Solid Waste Management of Temanggung Regencey for the Year 2023 – 2033 is presented in Section 2.

Figure 1-1 Temanggung Regency Sub-Project - TPA Sanggrahan



Source: DPRKPLH Temanggung Regency, 2023

1.3 ESIA Objectives

1.3.1 The overall objective of the ESIA is to carry out screening, scoping, analysis, and assessment of the beneficial and adverse environmental and social impacts associated with the Sub-project and ensure the negative impacts are avoided, minimized, mitigated, or compensated, and to integrate the E&S considerations into the project design and implementation. The ESIA also aims to comply with the national and AIIB requirements with respect to E&S assessment and management.

1.4 Scope of Work

1.4.1 The scope of work in the document preparation process is as follows:

- Prepare baseline based on secondary data and to carry out primary baseline data collection for TPA Sanggrahan.
- Prepare an ESIA and Environmental and Social Management Plan (ESMP) for the construction and operation of the Sub-project to ensure E&S sustainability.
- Include management plans and other instruments detailing E&S requirements to guide the Sub-project's final design and its components, including recommendations for changes to the Sub-project design and specific actions to be taken by contractors and subcontractors.
- Develop a Stakeholder Engagement Plan (SEP), including analysing affected and interested parties, detailing documentation requirements, and disseminating information about the sub-project.
- Assess the potential impact of project activities on women in the community in the ESIA. A Gender Action Plan (GAP) will be prepared to mitigate the adverse impacts and promote inclusion/equality for benefit-sharing for women. In consultation with relevant stakeholders, including the Client and community members, measures will be identified to prevent potential negative impacts caused by the influx of migrant workers in the community and the risk of gender-based violence, sexual exploitation and abuse, sexual harassment (GBV/SEA/SH), and included in the management plans.
- Support the Project Implementing Unit (PIU) in meaningful consultation.

1.5 Structure of the ESIA

1.5.1 The structure of the ESIA is described in **Table 1-1**.

Table 1-1 ESIA Report Structure

Chapter	Chapter Title	Envisaged contents and assumptions/exclusions
	Executive summary	Summary of the ESIA that highlights and briefly describes all aspects evaluated and the proposed management, mitigation and management measures. The executive summary is in both Bahasa Indonesia and English.
1	Introduction	Includes project background, objectives and ESIA structure.
2	Project Description	Describe the detailed description of project setting, project components, and an assessment of alternatives.
3	Legal and Regulatory Framework	Describe the AIIB guidelines and Indonesia regulatory setting, permitting matrix and international environmental and social safeguards applicable.
4	Screening and Scoping Results	Describe findings during screening and scoping activities, identify of potential risk and impact based on screening and scoping results.
5	Environmental and social baseline	Explain the environmental, biodiversity and social baseline from secondary and primary data.
6	Impact Assessment Methodology	Description of impact assessment methodology.
7	Impact Assessment	Description of impact assessment for environmental, biodiversity, social and climate aspects. Follow by cumulative impact assessment.
8	Environmental and Social Management Plan	Describe all the mitigation, monitoring, management and institutional measures to be during pre-construction, construction and operation phases to eliminate adverse impacts, offset them, or reduce them to acceptable levels
9	Conclusion and Recommendation	Present conclusions and recommendations for the Sub-project based on the ESIA study conducted.

2 PROJECT DESCRIPTION

2.1 Introduction

2.1.1 This section provides the summary of existing solid waste management in the Temanggung Regency including type of waste generated, waste collection, transportation, segregation, as well as the description, setting, and layout of the Sub-project.

2.2 Overview of the Existing Solid Waste Management in Temanggung

2.2.1 Temanggung Regency has a waste disposal site, TPA Sanggrahan in Kranggan, which was built in 2009 with a sanitary landfill specification and started operating in 2010. It was rebuilt with APBN funds in the 2011 and 2012 fiscal years. This landfill is operated with controlled landfill systems, and the waste pile is about 12 m high. The TPA Sanggrahan receives waste from 205 of the 289 villages in Temanggung Regency. Based on 2023 data, approximately 130 tons/day are disposed of at the landfill. Most of the incoming waste comes from the DPRKPLH Residue Transport Service, while the rest is self-delivered from the villages/sub-districts.

2.2.2 TPA Sanggrahan operations use the controlled landfill method with a total land area of 6.02 hectares and an active zone area of 1.92 hectares. Waste management at TPA Sanggrahan consists of sorting inorganic waste suitable for sale by Non-Organic Waste Community/*Paguyuban Pengelola Sampah Non Organik* (PPSNO) and processing organic waste into compost. These two waste management activities can reduce waste by as much as 20 tonnes/day. Meanwhile, the remaining waste is landfilled.

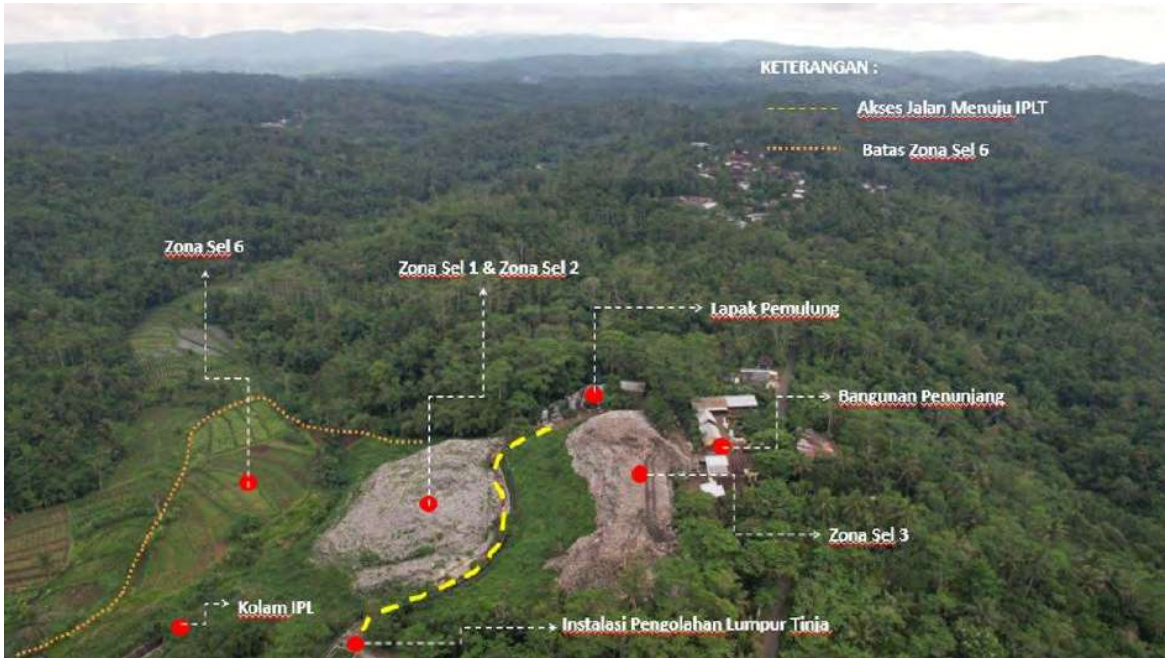
2.2.3 Cell #1 and #3 within the TPA Sanggrahan were constructed with a geo-membrane, and the TPA was equipped with Leachate Treatment Plant (LTP). The TPA cell has been operating with an open dumping system because of a lack of soil cover. Since the existing inlet pipe to the LTP is corroded and broken, the current leachate effluent does not flow into the LTP.

2.2.4 The proposed Sub-project will rehabilitate the leachate collection pipes, install new pipes to drain the leachate to the LTP to avoid leachate leakage into water bodies, and reactivate the groundwater monitoring system. To date, the LG has lacked operation and maintenance budgets for landfill operations, such as for daily covers, spare parts, training, LTP process control, and monitoring.

2.2.5 The Local Government had resources and financing that could be used when constructing temporary landfills for waste disposal during landfill rehabilitation stages. This temporary landfill will be built near the existing LTP. The construction of temporary landfill will be implemented in accordance with AIIB or national standards to ensure that temporary landfill will not pollute the environment.

2.2.6 The existing operational roads within the facility (around Zone 3 and Zone 1) are currently covered with waste (**Figure 2-1** and **Figure 2-5**). As part of the Sub-project, the existing operational roads will be cleared and widen to make transport more effective. An access road in between Zone 6 and Zone 1 will be constructed (considered as associated facilities) to provide access for the construction activities at Zone 6 and for access to IPL.

Figure 2-1 TPA Sanggrahan Existing Condition Map

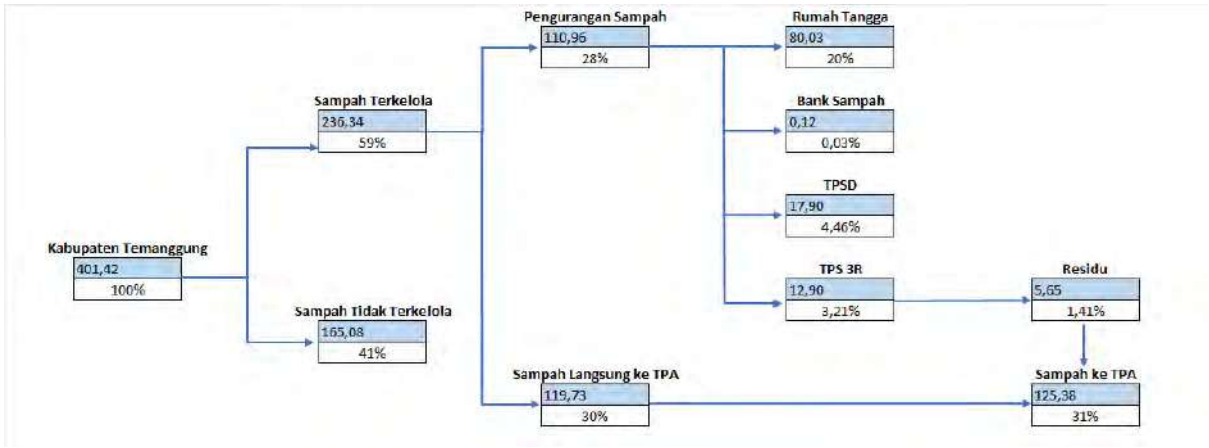


Source: DPRKPLH Temanggung Regency, 2023

Service Areas

2.2.7 The percentage of waste handled by the Department of Public Housing, Settlements, and Environment of Temanggung Regency 2022 was 59% of the total waste (both domestic and non-domestic). According to secondary data from the Environment Department, the total waste generated in the service area was 401.42 tons per day. Of this, 119.73 tons per day were transported to the landfill (TPA) and 5.65 tons per day residue from the TPS3R (Waste Treatment Sites), while 110.96 tons per day, or 27.7%, was reduced through household waste management, waste banks, *Tempat Pengolahan Sampah Desa* (TPSD), and TPS3R. However, around 165.08 tons per day of waste remains unmanaged. This unmanaged waste is often disposed of by individual methods, including burning, burying in pits in people's yards, or dumping indiscriminately.

Figure 2-2 Temanggung Regency Existing Mass Balance



Source: DPRKPLH Temanggung Regency, 2023

2.2.8 Based on the discussion with the Department of Public Housing, Settlements, and Environment of Temanggung Regency, the waste management plan for TPA (Final Disposal Site) Sanggrahan is to serve the following sub-districts:

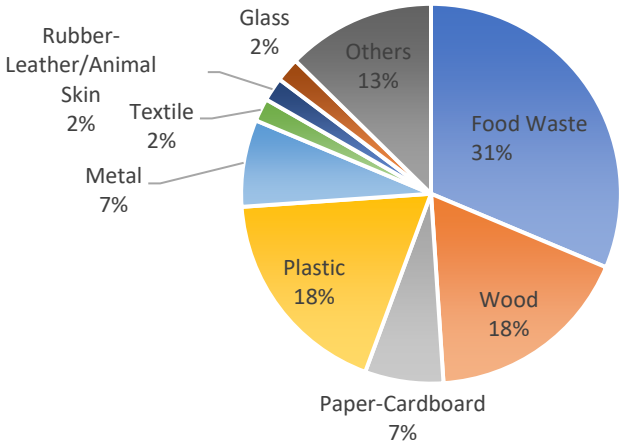
- Parakan Sub-district
- Kledung Sub-district
- Bansari Sub-district
- Bulu Sub-district
- Temanggung Sub-district
- Tembarak Sub-district
- Selopampang Sub-district
- Kranggan Sub-district
- Pringsurat Sub-district
- Kaloran Sub-district
- Kandangan Sub-district
- Kedu Sub-district
- Ngadirejo Sub-district
- Jumo Sub-district
- Gemawang Sub-district
- Candiroto Sub-district
- Bejen Sub-district
- Tretep Sub-district
- Wonoboyo Sub-district

Waste Composition

2.2.9 Based on the Directorate General of Waste, Wastewater, and Hazardous Toxic Substance Management of KLHK (*Kementerian Lingkungan Hidup dan Kehutanan*/Ministry of Environment and Forestry) information system, Temanggung's waste generation in 2023 is about 147,357.80 tons/year or 403.72 tons/day; waste reduction is about 44,305.86 tons/year (30.07%); and waste handling is about 45,970.76 tons/year (31.20%). Of the total waste generated, the managed waste is about 90,276.62 tons/year (61.26%), and the unmanaged waste is about 57,081.18 tons/year (38.74%).

2.2.10 The largest proportion of waste generated is food (31%), plastics (18%) followed by wood/twig/leaf (18%), paper/cardboard (7%), metal (7%), textile (2%), glass (2%), and others (13%) (see **Figure 2-3**).

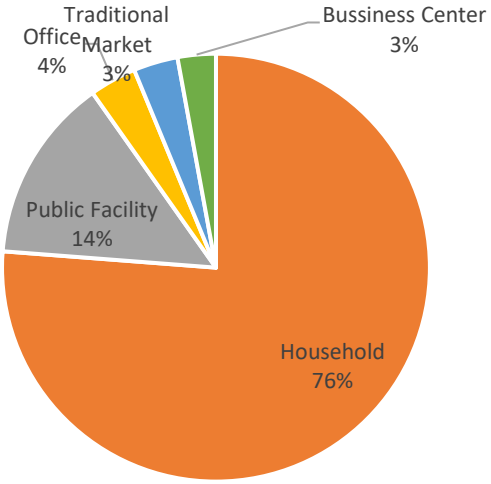
Figure 2-3 Waste Composition



Source: Directorate General of Waste, Wastewater, and Hazardous Toxic Substance Management of KLHK, 2024

2.2.11 The sources of waste (see **Figure 2-4**) are households (68.15%), traditional markets (3%), business centers (2.58%), public facilities (12.51%), offices (3.17%), and others (10.59%).

Figure 2-4 The source of waste in Temanggung



Source: Directorate General of Waste, Wastewater, and Hazardous Toxic Substance Management of KLHK, 2024

Waste Projection

2.2.12 The average annual growth rate based on calculation results referring to the historical population for 2010-2023 in Temanggung is 0.92%. Per capita waste generation is conservatively estimated based on waste generation in 2023 at 0.5kg/person/day. It is assumed that the local government will provide sufficient vehicles to transport waste from the community to the SWM-SUD facility.

2.2.13 Analysis has also been performed on the estimated growth rate (see **Table 2-1**) composition of waste delivered to the SWM-SUD facility. At household level, residents use large proportions of organic waste on their properties to make compost. As a result, the volume of organic waste that is landfilled is substantially lower than in urban areas. The relatively lower rate of organic waste also increases the percentage of other materials presented in the table below.

Table 2-1 Waste Growth Rate

Type of Waste	%
Organic Waste	-0,76
Plastic	0,34
Paper	0,11
Metal	0,03
Rubber & Leather	0,02
Textile	0,03
Glass	0,05
Other	0,12

Waste Collection and Transport

2.2.14 Temanggung Regency's waste collection facilities include TPSD (Village Waste Management Centers), TPS3R (Reuse, Reduce, Recycle Facilities), and Transfer Depots. Waste from households, commercial areas, and other sources is disposed of at TPSD/TPS3R/TPA (Final Disposal Sites) independently by citizens or by waste collection services. As of 2023, Temanggung Regency has 4 Transfer Depots, 32 service containers, and 43 village-owned containers located at TPSD or TPS3R sites. However, both public and household level the waste collection is not segregated.

2.2.15 Transportation involves moving waste from collection points or transfer units to disposal sites (TPA). As of the end of 2022, waste transportation services in Temanggung Regency cover 20 districts. The available transportation facilities include garbage carts, three-wheeled motorbikes, pick-up trucks, dump trucks, and arm roll trucks. Waste from its source is transported to TPSD/TPS3R/Transfer Depots using garbage carts and three-wheeled motorbikes, while transportation from these facilities to TPA is conducted using pick-up trucks, dump trucks, and arm roll trucks, considering the service area's characteristics.

Final Processing and Disposal

2.2.16 The waste processing facilities in Temanggung Regency include village-owned TPSD, TPS3R, and TPA. Additionally, the community engages in independent composting at each household. Most Temanggung Regency residents dispose of organic waste in fields, and composting is the primary waste processing method for this waste.

2.2.17 For the 3R program until 2023, Temanggung had 38 TPS3R facilities sourced from funding of *Anggaran Pendapatan dan Belanja Negara* (APBN) or national budget and *Anggaran Pendapatan dan Belanja Daerah* (APBD) or regional budget. Based on data from DPRKPLH (2023), 2,055.30 tons/year of waste was handled in TPS3R facilities. There were 121 waste

bank units from the non-government and private sector funding. Waste reduction through the waste bank in 2023 was achieved at about 39.19 tons/year.

2.2.18 Condition of TPA Sanggrahan facilities, including environmental protection facilities, is presented in Figure 2-5 and described in the succeeding Sections:

Figure 2-5 Condition of TPA Sanggrahan Facilities



Weighbridge Area



Leachate Treatment Facility



Leachate in the drainage channel



Leachate flowing in the nearby surface water



Pyrolysis Machine



Composting Area





Internal Access Roads covered by Waste

Gas Collection System

2.2.19 The gas collection pipes function to reduce the accumulated gas pressure through flowing the gas captured inside through ventilated pipes. However, the pipes used for capturing methane gas are no longer functional as waste buries the vertical pipes provided by PUPR.

Leachate System

2.2.20 A LTP functions to remove and reduce leachate contamination to the environment. The LTP and drainage system at TPA Sanggrahan has not been functioning effectively. Several instances of leachate and waste have been observed in the drainage channel due to the improper functioning of the LTP and the leachate monitoring pond is operating but not in accordance with SOP.

Composting

2.2.21 Composting areas are utilized to processed organic waste into compost. Composting has not been operational at TPA Sanggrahan since 2022.

Monitoring Wells

2.2.22 Monitoring wells are used to monitor groundwater quality that may be affected by landfill activity. There are only two monitoring wells located within the TPA Sanggrahan.

History of Incidents

2.2.23 Heavy rainfall at the landfill has caused landslides of waste from landfill Zone 3, obstructing the operational road to the Fecal Sludge Treatment Plant (IPLT/*Instalasi Pengolahan Lumpur Tinja*).

Condition of Weighbridge

2.2.24 A weighbridge is used to measure the weight of waste trucks, function to rack the amount of waste being disposed of. The weighbridge has been broken since 2022.

Pyrolysis

2.2.25 Pyrolysis is a waste management process which utilizes heat on waste materials to facilitate decomposition of organic materials in the absence of oxygen,and thereby reduce the volume of waste. Pyrolysis was operated only between 2017 and 2018.

Access Road

2.2.26 The access road is designed to allow vehicles to transport waste. The access road to the TPA Sanggrahan is less than 6 meters wide. The access road in village areas is not paved, making waste loaded vehicles harder to travel. This issue also cause three-wheeled vehicle to wear out more quickly. Inside the landfill, the active landfill zone are overflowing to operational route, making the distinction between access road and landfill area zone invisible.

2.3 Project Setting and Layout

2.3.1 TPA Sanggrahan is located at East Longitude 110° 23' - 110° 46' 20" and South Latitude. 7° 14' - 7° 32' 35". TPA Sanggrahan is located in the following administrative areas:

- Hamlet: Losari
- Village: Sanggrahan
- District: Kranggan
- Regency: Temanggung

2.3.2 The existing waste stockpiled in landfills at TPA Sanggrahan will be reorganized to ensure that the site is ready to receive new waste from the TPST Sanggrahan. The newly reorganised landfill is anticipated to have a lifespan of ten years, operational from 2025 to 2034. In 2034, the landfill will be closed with final cover soil. The landfill is planned to accommodate residents' waste in 20 sub-districts in Temanggung Regency. TPA Sanggrahan is planned to operate with a sanitary landfill system. Waste closure in this system is carried out every 4

days. This closure aims to reduce its environmental impact, such as odors and the possibility of making waste piles a nest for disease vectors. Waste is stacked in several layers before being covered with a final cover that reduces surface water infiltration into the landfill.

2.3.3 In the Master Plan Document for Solid Waste Management of Temanggung Regency for the Year 2023-2033, the development of infrastructure and facilities for waste management has been mentioned in the policies and strategies for operational technical development, including TPST and RDF. Based on this, the Sub-project is proposed to improve the existing solid waste management situation in the Temanggung Regency as follows:

- Improvements to the waste processing and rehabilitation of the existing sanitary landfill waste cell in the current TPA Sanggrahan area, where the TPST is proposed.
- Development of a Refuse Derived Fuel (RDF) facility which houses material recovery activities as part of the segregation process for RDF feed. This RDF facility will create economic benefits for the Local Government (LG).

2.3.4 Based on Government of Indonesia Regulations 81/2012, an integrated waste processing site, hereinafter abbreviated as “TPST”, consists of collection, sorting, reuse, recycling, processing and final processing facilities. Meanwhile, the final processing facility is a place to process and return waste to environment i.e., landfill.

2.3.5 The capital expense for the facility is an estimated IDR 123,128,850,000 and the operational expense is IDR 8,519,901,737. Temanggung Regency already has a Memorandum of Understanding (MOU) with the following stakeholders for operation and off-taking:

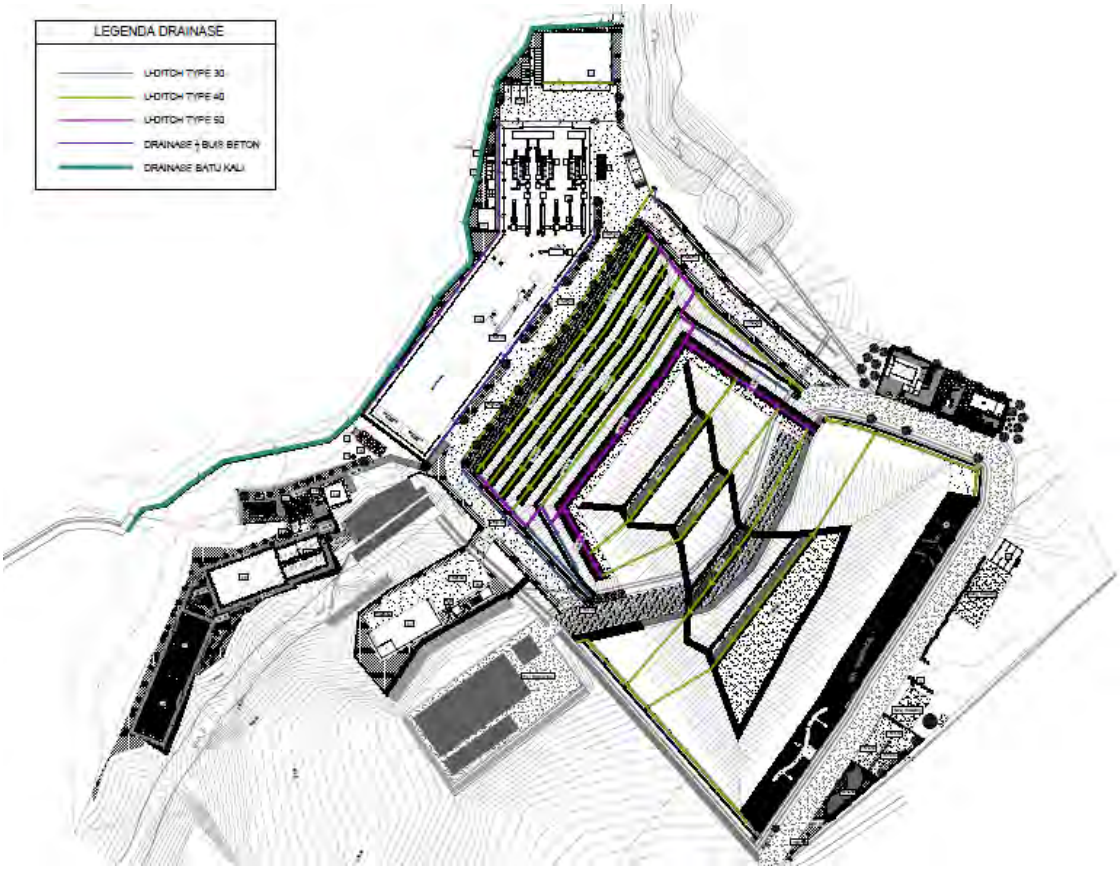
1. PT Solusi Bangun Indonesia for RDF facility operator;
2. PT Indotex Lasindo Jaya for RDF off-taker;
3. PT Greenprosa Adikara Nusa for black soldier fly off-taker; and
4. Koperasi Produsen Tawon Sindoro Sumbing for compost off-taker.

2.3.6 In planning this TPST, a waste management flow and mass balance scheme has been created, and the required land area has been calculated. Based on the results of the analysis carried out, the selected technologies for the TPST Sanggrahan design are composting and RDF production. The following supporting facilities will be built:

- Fence
- Access Road
- Operational Road
- Weighbridge
- Office
- Laboratory
- Workshop/Hangar/Garage
- Test Well
- Embankment/River/Cliff Strengthening

- Rainwater/Drainage Channel (**Figure 2-6**, Zones number are indicated in **Figure 2-7**)
- Vehicle Wash
- Clean Water, Sanitation and Electricity Facilities

Figure 2-6 Landfill Area Drainage Channel Plan



Source: DED Document, 2024

2.3.7 The Sanggrahan TPST and residual landfill site plan and land use is presented in the following **Figure 2-7.** Zones 1, 2, and 3 will be used as new landfill zones. The arrangement will be carried out by compacting the existing waste, then construction will be carried out with sanitary landfill standards. The TPST, LTP, and picking bay will be built at Zone 6. The construction of operational road is planned to provide accessibility to new landfill cells, TPST, LTP, and sludge treatment plant. Zone 4 will be developed as an access road to the TPST. Meanwhile, Zone 5 was not recommended as a development zone because it is too steep.

Figure 2-7 Site Layout Plan of TPA and TPST Sanggrahan

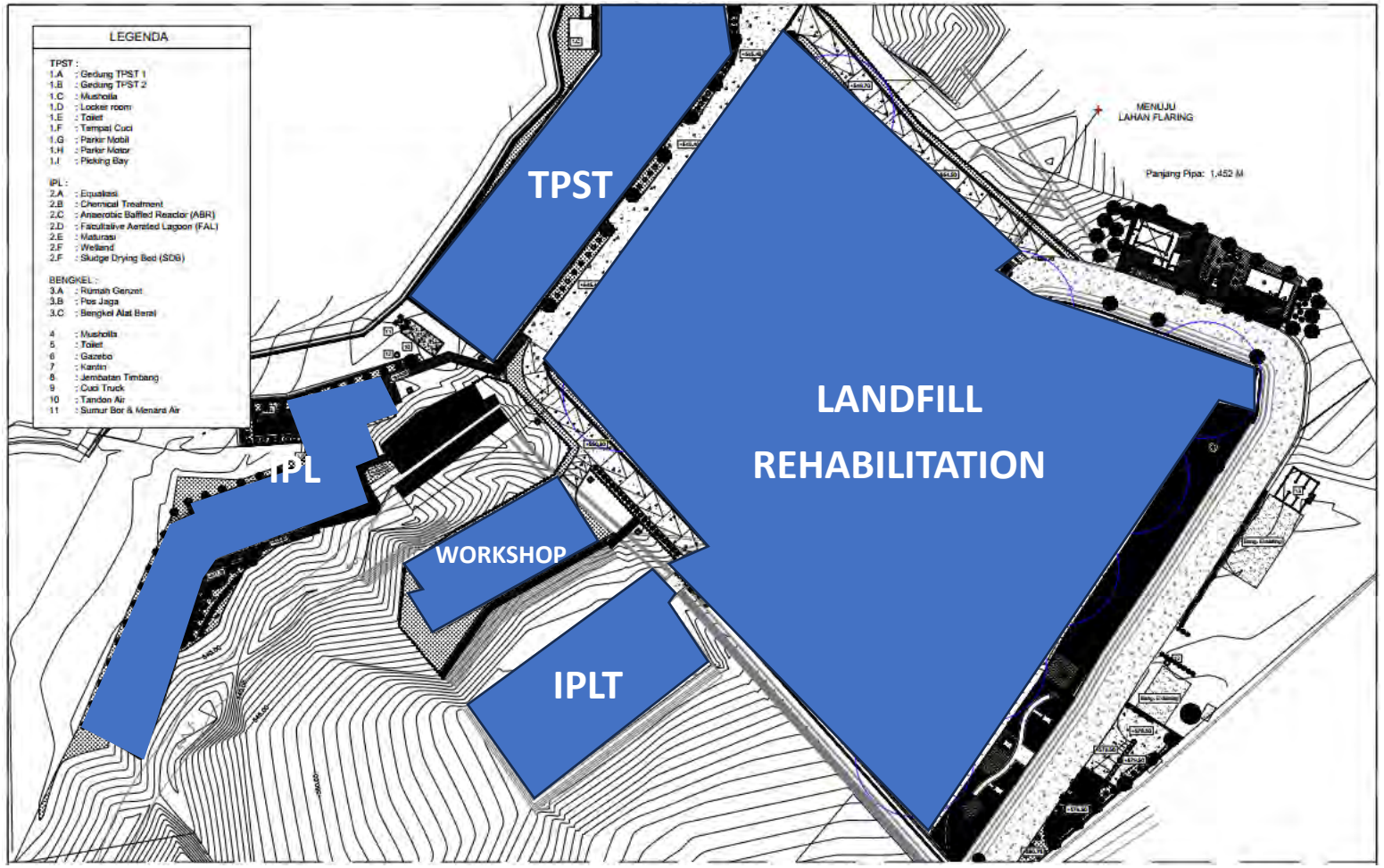


Table 2-2 Land use Plan of the Proposed Landfill and TPST Facility

No	Land Use	Area (Ha)
1	Waste bank	280
2	Heavy equipment garage	310
3	LTP	600
4	Sludge treatment plan	1,800
5	Road	3,207
6	Inspection road	180
7	Weighbridge	80
8	Office	560
9	Garden	510
10	Parking area	1,100
11	Wastepicker's area	2,024
12	Composting area	450
13	Drainage system	436
14	Park	416
15	Zone 1	6,073
16	Zone 2	1,584
17	Zone 3	10,867
18	Zone 4	1,224
19	Zone 5	15,821
20	Zone 6	12,696

2.4 Project Components

2.4.1 In the planning for the TPA Sanggrahan, the municipal waste entering the landfill will first be processed at the Waste Processing Site (TPST) before the residual waste is disposed of in the landfill.

2.4.2 There will be two entry points for wastes to be processed at the TPST: one for market waste and one for non-market waste (Final Report Document of TPA Sanggrahan). Market wastes are defined as organic wastes, and non-market wastes are materials that are not sold or traded in the market but are instead discarded or managed through waste management systems.

2.4.3 Market waste will go directly to the unloading area in the TPST hangar, while non-market waste will enter the picking bay area before being processed in the TPST hangar. The chosen technology for the design of the TPST Sanggrahan includes composting, incineration, and RDF production as the main processes. The products generated by the TPST will include compost, maggots/animal feed, RDF balls, RDF briquettes, and sellable inorganic waste.

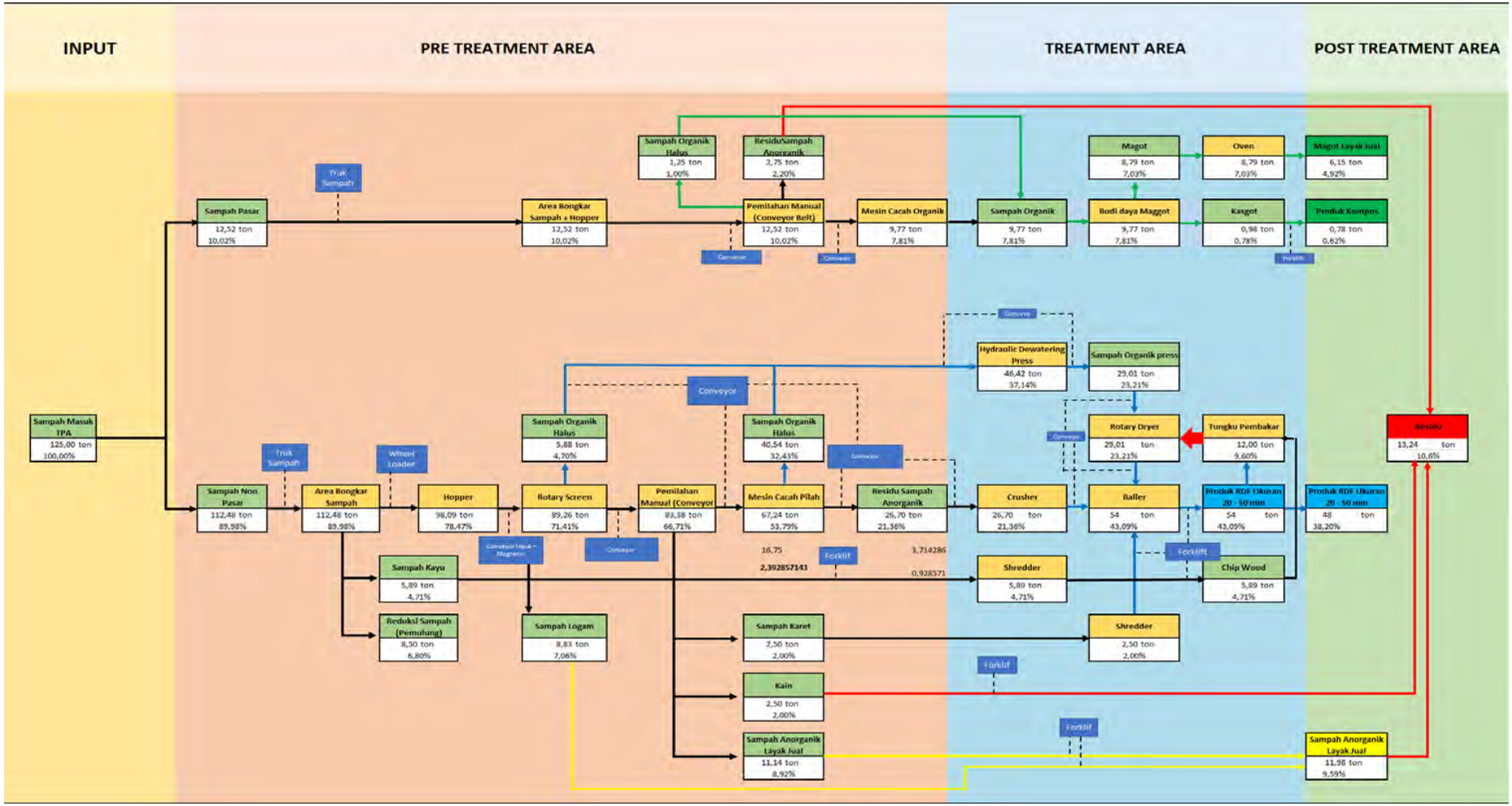
2.5 Landfill System

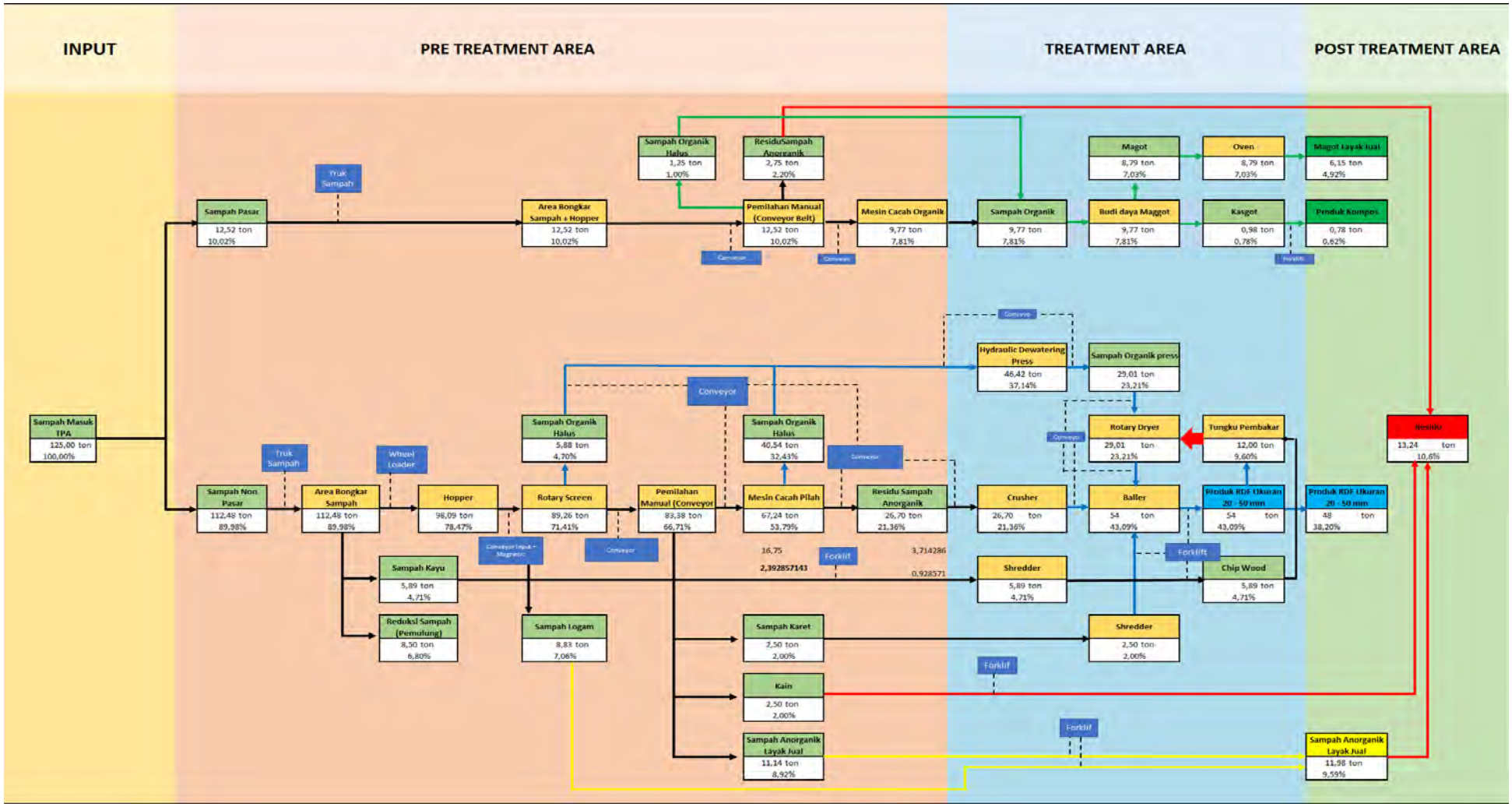
2.5.1 The waste treatment process is divided into four phases: input, pre-treatment, treatment, and post-treatment. According to population projections, the facility is expected to receive 125 tonnes of waste. Depending on its origin, the waste is sorted into two pre-treatment streams: one for market waste and another for non-market waste.

2.5.2 Market waste is segregated and chopped before entering the treatment area. Organic waste from markets serves as feedstock for maggot cultivation and composting. Non-market waste, consisting of various types of organic and inorganic materials, undergoes pre-treatment through handpicking, rotary screening, and chopping. The waste is separated into categories such as metal, fabric, rubber, and inorganic waste with economic value. This pre-treatment stage aims to recover as much material as possible for recycling.

2.5.3 In the main treatment phase, organic waste is processed into RDF using a hydraulic dewatering press and briquette machine to produce RDF briquettes. Inorganic waste is dried in a rotary dryer, reduced in size using a crusher, and formed into 20-50 mm RDF. During the post-treatment phase, valuable inorganic materials, like metal, are sold for recycling. Only around 10.29 tonnes of waste are expected to end up in the landfill as residuals from the process. The mass balance of the Sub-project is presented in **Figure 2-8**.

Figure 2-8 Mass Balance of Sub-Project




INPUT
PRE TREATMENT AREA
TREATMENT AREA
POST TREATMENT AREA
Sampah Masuk IPA
125,00 ton
100,00%
Truk Sampah
Sampah Pasar
12,52 ton
10,02%
Area Bongkar Sampah + Hopper
12,52 ton
10,02%
Sampah Organik Halus
1,25 ton
1,00%
ResiduSampah Anorganik
2,75 ton
2,20%
Pemilahan Manual (Conveyor Belt)
12,52 ton
10,02%
Mesin Cacah Organik
9,77 ton
7,81%
Sampah Organik
9,77 ton
7,81%
Magot
8,79 ton
7,03%
Oven
8,79 ton
7,03%
Magot Layak Jual
6,15 ton
4,92%
Budi daya Maggot
9,77 ton
7,81%
Kasgot
0,98 ton
0,78%
Produk Kompos
0,78 ton
0,62%
Truk Sampah
Wheel Loader
Sampah Non Pasar
112,48 ton
89,98%
Area Bongkar Sampah
112,48 ton
89,98%
Hopper
98,09 ton
78,47%
Rotary Screen
89,26 ton
71,41%
Sampah Organik Halus
5,88 ton
4,70%
Pemilahan Manual (Conveyor
83,38 ton
66,71%
Sampah Organik Halus
40,54 ton
32,43%
Mesin Cacah Pilah
67,24 ton
53,79%
Residu Sampah Anorganik
26,70 ton
21,36%
Conveyor
Hydraulic Dewatering Press
46,42 ton
37,14%
Sampah Organik press
29,01 ton
23,21%
Rotary Dryer
29,01 ton
23,21%
Tungku Pembakar
12,00 ton
9,60%
Residu
13,24 ton
10,6%
Crusher
26,70 ton
21,36%
Baller
54 ton
43,09%
Produk RDF Ukuran 20 - 50 mm
54 ton
43,09%
Produk RDF Ukuran 20 - 50 mm
48 ton
38,20%
16,75
2,392857143
Forklif
3,714286
0,928571
Forklift
Sampah Kayu
5,89 ton
4,71%
Shredder
5,89 ton
4,71%
Chip Wood
5,89 ton
4,71%
Reduksi Sampah (Pemulung)
8,50 ton
6,80%
Sampah Logam
8,83 ton
7,06%
Sampah Karet
2,50 ton
2,00%
Shredder
2,50 ton
2,00%
Forklif
Kain
2,50 ton
2,00%
Forklif
Sampah Anorganik Layak Jual
11,14 ton
8,92%
Sampah Anorganik Layak Jual
11,98 ton
9,59%

2.6 Leachate Treatment Plant

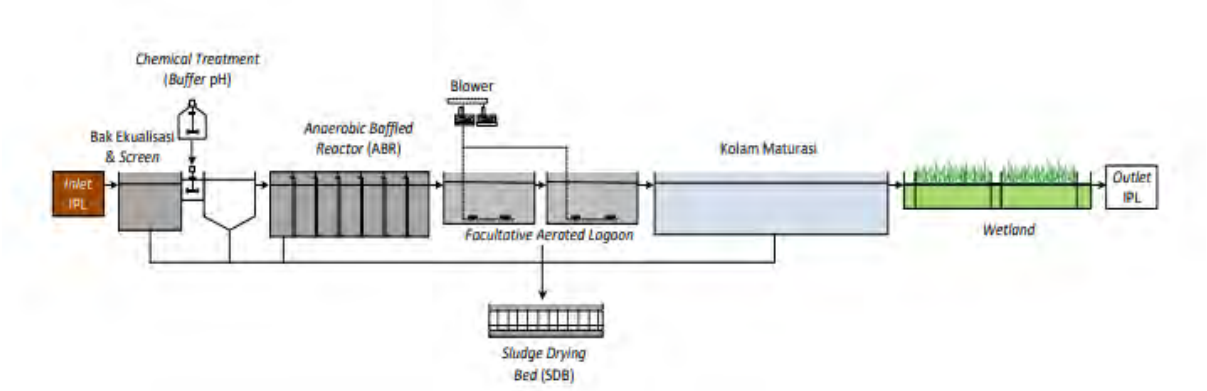
2.6.1 The leachate treatment system includes an equalization tank, chemical treatment unit, anaerobic reactor, maturation pond, facultative pond, sludge drying bed, and wetland. The system is also equipped with a recirculation system, which consists of a recirculating pump and flexible recirculating pipes. The system uses gravity to transport leachate through the various components. The current leachate treatment plant (LTP) removal effectivity depends greatly on the operation of its blower in the facultative aerated lagoon to result in effluent that comply to standards.

2.6.2 The comparison of leachate characteristics before (influent) and after (effluent) treatment with fully functional blower presented in **Table 2-3** is based on the LTP workflow diagram illustrated in **Figure 2-9.**

Table 2-3 Leachate Characteristics Influent and Effluent

Characteristic	Influent	Effluent
Discharge	60 m3/day	59.53 m3/day
BOD	4,000 mg/l	96.78 mg/l
COD	10,000 mg/l	264.6 mg/l
TSS	500 mg/l	3.77 mg/l
NH3-N	400 mg/l	60.14 mg/l

Figure 2-9 Work Diagram for Leachate Treatment Plant



2.6.3 Based on the leachate characteristics presented in **Table 2-3** and the updated DED review, the effluent from the LTP process design shown in **Figure 2-9** will still not meet the quality standards for N-Total. Hence, additional processing units are needed to reduce the levels of N-Total and comply with the quality standards. It was therefore recommended to add surface aerated lagoon unit with an area of 135m^2 in the LTP process.

2.7 Land Status

2.7.1 The TPA Sanggrahan and TPST are located on 60,278 m^2 of land that has been approved for non-commercial use by the Spatial Utilisation Activity Suitability Approval (KKPR) in 2023. The land currently used as TPA includes areas previously classified as plantation land, rain-fed rice fields and part of the land designated as Protected Rice Field Land (LSD) and Sustainable Food

Crop Land (LP2B). According to the KKPR approval No. 053/KKPR/2023 dated 29 December 2023, the LSD spatial pattern will be issued based on the recommendations of the Ministry of Agrarian Affairs and Spatial Planning/ National Land Agency (ATR/BPN), and LP2B has been regulated in accordance with applicable laws and regulations. Ownership of the land is confirmed by nine Certificates of Right of Use in the name of the Temanggung Regency Government.

2.7.2 The 60,278 m^2 of land includes 12,697 m^2 of additional land acquired through a land swap with village-owned "bengkok" land. This land was originally allocated by the village of Sanggrahan to four village officials. As part of the land swap, the local government provided replacement land in Krajan Hamlet, Sanggrahan Village. The swapped land was agricultural dry land to paddy field land. The land replacement is more productive than the previous land. The land swap process began in 2020 and was completed in 2023 through the Land Acquisition Appraisal Activity for the landfill site. Appendix F (Land Appraisal Acquisition Document) provides the details on land acquisition and compensation process.

2.8 Offtaker

2.8.1 The RDF product from the project will be supplied to multiple industrial partners. PT Solusi Bangun Indonesia, a cement company, will use the RDF as an alternative fuel for its cement production. PT Indotex Lasindo Jaya, operating in the manufacturing and marketing of textile dyeing and printing products, will also utilize RDF for its industrial processes. Additionally, PT Greenposa Adikara Nusa will be the off-taker for the maggot BSF (Black Soldier Fly) product, which is part of the project's organic waste management solution. For compost produced by the project, the Koperasi Produsen Tawon Sindoro Sumbing will handle distribution and utilization of the compost.

2.9 Project Activities

Pre-Construction

2.9.1 The TPST pre-construction activities involve the following:

1. Field survey

   Field survey activity provides for:

   a. Gaps identification of social and environmental data based on studies that have previously been conducted
   b. Conduct baseline data collection
   c. Extended study of stakeholder identification, mapping, and analysis
   d. Deepening potential impact identification and risk mitigation

2. Feasibility Study, Planning Documents, and Environmental Permitting

   a. This study aims to determine the location and planned activities of the proposed project, which are supported by institutional, financial and economic factors, regulation, stakeholder engagement and community empowerment, and technical factors. The study includes a topographic/geodetic survey to determine the condition of the land proposed as the location of the power plant infrastructures. The survey also provides site descriptions for technical design purposes, as well as

measurement and installation of benchmarks, such as agricultural lands and settlements.

b. Conduct a TPA engineering planning document that complies with norms, standards, guidelines, and criteria and is affordable in construction, operation, and maintenance.

c. The activity includes the development of UKL-UPL (Upaya Pengelolaan Lingkungan – Upaya Pemantauan Lingkungan/Environmental Management Effort – Environmental Monitoring Effort) report and submission of Izin Lingkungan (Environmental Permit) to the Government.

3. Stakeholder socialization

Socialization activity aims to inform the local community regarding the project plan, including land acquisition, construction activities, and operation of power plants in the future. The activity also presents the positive and negative impacts and how the project will address them. Public consultation is intended to obtain local community inputs regarding the project plan and later, identify the potential impact of the project to the local community.

4. Land Acquisition

The development of TPST Sanggrahan requires additional land to accommodate the expansion of waste management facilities, including the improvement of landfill infrastructure and support systems. This expansion is necessary to increase waste processing capacity and to comply with environmental and spatial planning regulations. In order to meet these needs, the project has had to acquire additional land.

Of the total land area of 60,278 m^2, 12,697 m^2 was acquired through a land swap mechanism with village-owned "bengkok" land. This land had previously been allocated by Sanggrahan village to four village officials. As part of the land swap, the local government provided replacement land in Krajan hamlet, Sanggrahan village, which was accepted by the village officials as land users. The replacement land is more productive agricultural dry land than the previous land. The land exchange process started in 2020 and was completed in 2023 with a land acquisition appraisal for the TPA site.

Documentation of the land acquisition and appraisal is available at the Temanggung Environment Department (DLH). The information on the additional land required for the project is essential for the analysis of social impacts on land users, which will be further investigated in the ESIA.

Construction Activities

2.9.2 The construction activities will be further described in the following subsection.

1. Recruitment Activities

The contractor carries out the labour recruitment activities during the construction stages. The required labour includes skilled and non-skilled workers. The policy is to recruit local residents according to their respective fields of expertise. Approximately 60% of workers are estimated to be unskilled labourers. Accommodation, food, and basic necessities will be provided at the worker's base camp for the workers. The

number of workers required during the construction period in Sanggrahan Temanggung TPST and residual landfill is estimated to be 62 people.

2. Construction of access road (Associated Facilities)

   Access road to TPA/TPST is the responsibility of local government. This road is to access the temporary dumping site during construction. It is planned to be located west of the main gate of TPA.

3. Land Preparation

   Land preparation is an important initial stage in implementing the construction stage. This stage involves planning, preparing, and arranging the land that will be used to build the structure. Land preparation includes clearing the land of vegetation, digging for foundations, and removing unsuitable materials. Land preparation also includes setting up temporary infrastructure such as driveways, regulating water flow, and providing resources such as electricity and water.

4. Construction of Base Camp and Workshop

   The base camp and workshop will be constructed at the construction site within the project boundary. It consists of a main building, workshop and garage, and other supporting facilities. This temporary base camp and workshop will be decommissioned upon the Sub-project's construction completion.

5. Mobilization of Equipment and Materials

   Heavy equipment and construction materials will be mobilized through the existing public road system; the contractor will mobilize accordingly due to road conditions. The equipment to be mobilized is presented below:

Table 2-4 Equipment List

Stage	Equipment
Land preparation	Excavators, dump trucks, generators, cranes, and compactors
Construction of TPST facility	Compactor and rollers, motor grader, generators, skylift trucks, cranes, boring machines, concrete/asphalt trucks, excavators and bulldozers, dump trucks, supporting machinery for foundation, wall and roof installation, and patch machines
Rehabilitation of landfill	Compactor and rollers, motor grader generators, skylift trucks, cranes, boring machines, concrete/asphalt trucks, excavators and bulldozers, dump trucks, and supporting machinery

6. Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)

   The initial stage of TPST construction activities involves the provision of a platform for the development of an RDF facility and an operating road from the existing main access. A two-lane carriageway will be provided as an operating road for safe and efficient transport for the construction stage. This road will also then form the access road during operation stage. The activities will then continue to the general construction activities for the development of the reception area, sorting area, pre-treatment area, drying area, post-treatment area, office, and wastewater treatment plant construction. The following activities will be carried out:

   a. RDF facility structural columns and beams installation.

b. RDF facility structural and non-structural wall installation.
c. Drainage, piping, cables/utilities, sewer and associated manhole works.
d. RDF facility roof structure and roof installation
e. RDF facility openings (doors and windows) installation.
f. Operational road base and asphalt works for RDF facility
g. LTP-associated works

7. TPA Rehabilitation

Construction of new lined landfill cells will conform to GoI standards. Construction will include the provision of stockpile material (soil) for daily/intermediate cover, a gravel bed, and a piped leachate collection and transfer system. The following activities will be carried out:

a. Water supply work
b. Power supply work
c. Foundation excavation and installation
d. LTP-associated works which include excavation and construction
e. Drainage, piping, cables/utilities, sewer and associated manhole works
f. Existing waste cell rehabilitation to be repurposed as residual cell
g. Operational road base and asphalt works for sanitary landfill

8. Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)

This activity includes waste management disposal during the construction TPA rehabilitation stages to the temporary landfill. The temporary landfill will be constructed with geomembrane liner. LGs are responsible for the construction of temporary landfills.

9. Labor discharge

The process of releasing construction workers will be carried out in accordance with the agreement at the time of recruitment of workers. All construction workers will be released in accordance with the procedures owned by the implementing contractor according to applicable regulations and provisions.

10. Commissioning

After the construction had been finished and all the equipment had been tested well, the commissioning work will formally start.

Operation Activities

2.9.3 Activities during operation stage include the following:

1. TPST/TPA Staff Recruitment

The LGs (UPTD/*Unit Pelaksana Teknis Daerah*) will conduct staff recruitment activities during the operational stage. The staff includes skilled and non-skilled workers. The skilled staff includes administration staff, monitoring staff, and machinery operators. The non-skilled staff includes wastepicker staff.

2. Operation of TPST

   This TPST will start by receiving 125 tons per day (tpd) of waste in the tipping area. This will continue by carefully sorting and removing all non-RDF feed material before initiating the shredding process. Material recovery to segregate non-RDF feed material for RDF production during the sorting process in this TPST is estimated to collect approximately 11.47 tpd of metal, cans, plastic, and glass-related materials. Drying may be carried out using a series of processes that are energy intensive. Approximately 11.47 tpd of organic waste will be processed in maggots and composters. Leachate produced from TPST operational stage will be channelled to the LTP.

3. Operation of TPA

   The TPA is used for final waste disposal. At TPA Sanggrahan, the landfill system used is a Sanitary Landfill. This system is carried out by piling up waste, compacting it, then covering the waste with covered soil. This aims to reduce odour and flies at the TPA location and speed up the decomposition process. Leachate produced from waste decomposition in TPA operational stage will be channeled to the LTP.

4. Maintenance of all facilities

   Maintenance activities in this TPST facility will mainly focus on the mechanical part of the instruments within the material recovery and RDF production process, including the conveyor system and wastewater treatment plant. Other maintenance activities, in general, will involve maintenance of the LTP system; methane gas capture/flaring network; housekeeping; maintenance of weighbridge, open areas, waste cell, drainage system and operational road; ensuring all structural and non-structural components in RDF facility structure working as intended; aesthetic maintain around the environment; disease vector control; implementation of worker safety; handling of emergency response to fire and erosion; and ensuring maintenance and provision of required supporting equipment and spare parts are provided as required.

5. Off taker Activity

   Off-takers will be involved in the regular collection and utilization of the products generated by the TPST. PT Solusi Bangun Indonesia and PT Indotex Lasindo Jaya will use the RDF produced in the facility for their industrial needs. PT Greenposa Adikara Nusa will collect and manage the maggot BSF (Black Soldier Fly) product, while Koperasi Produsen Tawon Sindoro Sumbing will be responsible for the distribution and use of compost

2.9.4 Daily estimated vehicles usage during operation stage are as follows:

- Not more than 10 cars and 30 motorcycles which belong to the TPST staff and guests will be roaming or parking within the designated parking space.
- Not less than 100 vehicles of various types of waste motorcycles and trucks will enter to the TPST during the operational stage. Each of these vehicles will have two (2) to four (4) trips depending on their transported waste volume and distance from their collection points. As such, 200 - 400 times of weighing before waste disposal at the tipping bay will take place in the weighbridge.
- Two (2) to four (4) heavy machinery will be operated in the waste cell to organise waste in the residual cell and to cover the waste with soil.

- Four (4) trucks and at least one excavator will be utilized in the borrow pit and to transport soil to the residual cell as cover soil.
- At least one (1) forklift will be utilized to support the operations of the RDF facility.

Project Schedule

2.9.5 The pre-construction phase will begin in 2023 to prepare planning documents and environmental permits by the Regional Government. Field surveys also started in 2023 to accommodate primary data for environmental permits and planning documents. The stakeholder socialization was conducted in 2024 to gather stakeholder perception information about the project.

2.9.6 The tentative schedule to complete the construction of the Sub-project is planned 16 months after site clearing commences. The testing and commissioning process may take two (2) months after construction completion.

2.9.7 As such, the operational stage is tentatively planned for Month 18 after construction. The contractor will adjust the number of workers and necessary transport and equipment during the construction phase to fit into this tentative plan. This tentative schedule will be confirmed and agreed upon during the project description meeting with potential contractors before the document tender submission. Adjustments of the schedule due to actual site conditions or changes of order, if any, will affect the project schedule and hence should be agreed upon by related stakeholders.

2.9.8 The tentative schedule for SWM-SUD project Temanggung is presented in **Table 2-5**.

Table 2-5 Temanggung SWM-SUD Project Schedule

No	Stages	Year						
		2023	2024	2025	2026	2027	2028	2029
A	**Pre-construction**							
1	Field Survey							
2	Feasibility Study, Planning Document, and Environmental Permitting							
3	Stakeholder Socialization							
4	Land Acquisition							
B	**Construction**							
1	Recruitment Activities							
2	Construction of access road (Associated Facilities)							
3	Land Preparation							
4	Construction of Base Camp and Workshop							
5	Mobilization of Equipment and Materials							
6	Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)							
7	Construction of TPA Rehabilitation							

No	Stages	Year						
		2023	2024	2025	2026	2027	2028	2029
8	Temporary landfill construction-Waste disposal handling during construction (Associated Facilities)							
9	Labor discharge							
10	Commissioning							
C	**Operation**							
1	TPST/TPA Staff Recruitment							
2	Operation of TPST							
3	Operation of TPA							
4	Maintenance all facilities							

AIIB Loan Implementation Period

2.10 Project Alternatives

2.10.1 The consideration of project alternatives is the consideration of projects of a similar technical character or functionality that will meet the specified objective. Alternatives include different locations, sizes, technologies, designs, time frames, or operational procedures. The alternative process should consider different ways of achieving the same objective.

Table 2-6 Summary of Alternatives for this Sub-Project

No	Description	Positive	Negative
1	No Sub-project	Least cost option	• Does not address existing environmental, social and public health issues; • Landfill will be full within a few years with no long term alternative.
2	Landfill rehabilitation to meet sanitary landfill standard and build new cells and infrastructure within the existing site boundary	• Will address existing environmental, social, public health issues • The existing site is already approved for waste disposal that will serve another five to ten years	• More costly than developing a new site. • Limited available space for expansion.
3	Landfill rehabilitation and TPST (RDF) construction	• Will address existing environmental, social, public health issues; • Maximises waste reduction; • Provides income generation; • The TPST can be developed on the existing landfill; • Garbage is used to generate electricity;	• There is still around 20% residual; • Costs associated with pre-processing to recover fuel fractions; • The unit energy yield (ie, kJ per kg MSW) in the case of RDF is less than the parent MSW.

No	Description	Positive	Negative
		• RDF is an alternative and renewable fuel derived from municipal waste; • Contains high calorific value compared to parent material; • RDF emission characteristics are superior to coal with less pollutant emissions such as NOx, SOx, CO and CO2; • Saves land by using less Final Disposal Site (TPA) area.	
4	Develop advanced waste-to-energy (WtE) incinerator	• Maximises waste reduction; • Provides income generation from power production; • Can be developed on the existing site to extend the operating life of the existing landfill.	• Does not (directly) address environmental, social, public health issues at existing site; • Still requires landfill (approx. 20% waste + ash from thermal process); • Will generate Dioxins requiring quenching; • Very expensive, both in terms of CAPEX & OPEX; • It requires advanced operation, management, and maintenance capacity, which does not exist at present. • High Risk. No existing commercial-scale thermal process WtE plants are currently in operation in Indonesia.

1. No Sub-project

No Sub-project scenario does not support the Solid Waste Management Act (No.18/2008) which recognises the fact that relying solely on landfills will only continue to worsen the solid waste pollution issues. President Regulation No. 97/2017 provides a roadmap towards the 2025 Clean-from-Waste Indonesia (Indonesia Bersih Sampah 2025), with a target of 30% waste reduction and 70% waste handling by 2025. For the "70% waste handling" target mentioned above, the indicators include increasing waste to be treated (recycling, composting, biogas, thermal recovery, etc.) and reducing waste to be landfilled (MoEF, 2020). As such, a "no project" scenario is unappealing since it would continue to promote unsanitary conditions and untreated waste which would pollute and contaminate the area.

At the current rate of filling (1,456.73tpd), TPA Sanggrahan will be full in less than 3 years. Solid waste will rapidly build up across the city without an alternative SWM-SUD option.

Analysis result: *Least preferred option. Action must be taken to address the current poor condition of the site and lack of future disposal airspace.*

2. Landfill rehabilitation to meet sanitary landfill standard and build new cells and infrastructure within the existing site boundary

   Rehabilitation of the existing site is required to address the environmental, social, and public health issues, regardless of future landfilling requirements. Under this scenario, the existing cells will be reshaped capped and closed, reducing leachate, odour, disease vectors, and GHG emissions. The waste mass will be reshaped to stabilise cells and reduce the risk of slope failure. The waste mass will be reshaped to optimize the use of the available space and create additional airspace for new cells that will extend the site life (without 3R/WtE).

   As the site already has an UKL/UPL, is zoned for landfilling, and is accepted by the surrounding community, this will provide the fastest option for future waste disposal requirements. Beyond rehabilitating the existing waste mass and infrastructure, extension works will include new sanitary landfill cells, leachate treatment system and associated infrastructure required to meet both GoI (U18- 2008) and international sanitary landfilling standards. The extension works will include a sorting station to provide a safe working environment for waste pickers and to maximise 3R waste reduction. Space will be allocated for advanced waste reduction / waste to energy (alternative 4) which could potentially further increase the operating life of the site up to 20+ years through significant waste reduction processes.

   Addressing the existing condition of the site and extending within the existing boundary will be relatively expensive given the limited, potential extension capacity. However, it provides a rapid solution to the current problem and buys enough time for additional long-term solutions, such as advanced 3R/WtE and/or expansion of the current site beyond its existing boundaries or identification and development of a new site.

   Analysis result: Least preferred option.

3. Landfill rehabilitation and TPST (RDF) construction

   Rehabilitation of the existing site is required to address the environmental, social, and public health issues, regardless of future landfilling requirements. Under this scenario, the existing cells will be reshaped capped and closed, reducing leachate, odour, disease vectors, and GHG emissions. The waste mass will be reshaped to stabilise cells and reduce the risk of slope failure. The waste mass will be reshaped to optimize the use of the available space and create additional airspace for new cells that will extend the site life (without 3R/WtE).

   The RDF construction will adapt the Refuse Derived Fuel (RDF) as the main waste processing technology. RDF is considered as one of the green fuels and leads to a green environment. This can partially solve the existing problems with municipal waste and energy requirements. Many benefits are realized both in terms of economics and in terms of health. The waste problem is not only a problem for the government but also a problem for the community. Some of the energy needs of households and industries in the future can be met from the RDF produced by the existing TPA.

   Analysis result: Preferred option to immediately address current situation and provide sufficient extension life to develop longer term solution.

4. Develop advanced waste-to-energy incinerator

An advanced waste reduction system including sorting and recovery station for recyclables and a thermal process waste to energy system, incinerator would provide an effective waste reduction solution which could reduce final disposal requirements to <20% of the waste stream. WtE incinerators have a number of advantages including significant waste volume reduction, income and power generation, reduction in GHG production, relatively small footprint, and reduction in environmental impacts to soil and surface/groundwater from leachate production.

Although the above advantages of an incinerator project appear to address many of the current issues/needs, there are a number of drawbacks associated with this option, namely very high CAPEX/OPEX in the region of US$350million to establish the plant with a further $50-$70 per tonne requirement for operation and maintenance. In addition, like the new landfill option, the lead time for an incinerator project will be 3-5 years. At present there are no commercial scale thermal process WtE projects in operation in Indonesia, despite numerous attempts by national, international, and donor backed project groups. The risks, therefore, remain very high without prior precedents to refer to. In association with this risk there is no existing capacity to operate, manage, and maintain such a plant. In order for the project to be successful, the local government would need to engage a private sector operator with a solid track record of international experience in establishing and running a WtE incinerator project.

The target fuel is also the main recyclables separated out in the municipal and private collections and by the very large numbers of dependent wastepickers at the site. Therefore, an incinerator project would either impact the wastepickers livelihoods or, more likely, the incinerator waste stream would be impacted from wastepickers removing high CV recyclables before they reached the plant. This will then need supplementary fuel to support combustion at an acceptable temperature and will be very expensive – especially in the wet season.

Analysis result: *Not preferred as a stand-alone option due to high cost, long lead-time, and high risk. Advanced Solid Waste treatment and reduction may be considered in conjunction with rehabilitation and extension of the current landfill site, but not as a stand-alone option.*

3 LEGAL AND REGULATORY FRAMEWORKS

3.1 Indonesian Legal and Institutional Framework

3.1.1 The Sub-project is subject to the relevant laws and regulations within Indonesia. An overview of the legal and institutional framework for environmental and social management is provided in the table below.

Table 3-1 Environmental and Social Laws and Regulations in Indonesia and Regional

National and Regional Laws and Regulations Title
Environmental
Decree of the Minister of State for the Environment No. 48 of 1996 on Noise Level Standard
Decree of the Minister of State for the Environment No. 50 of 1996 on Odour Level Standards
Minister of Public Works Regulation No. 21/PRT/M/2006 on National Policy and Strategy for the Development of Solid Waste Management System (KSNP-SPP);
Law No. 18 of 2008 on Waste Management ("Law 18/2008")
Law No. 32 of 2009 on The Protection and Management of The Environment
Minister of Home Affairs Regulation No. 33 of 2010 on Waste Management Guidelines ("MOHA Reg. 33/2010")
Ministry of Environment Regulation No. 16 of 2011 on The Content Guidance of the Draft Regional Regulation about Waste Management
Ministry of Environment Regulation No. 16 of 2012 on Guidelines for the Preparation of Environmental Documents
Ministry of Environment Regulation No. 17 of 2012 on Community Involvement in Environmental Impact Assessment and Environmental Permit Process
Central Java Province Regional Regulation Number 5 of 2012 Amendment to Central Java Province Regional Regulation Number 10 of 2004 on Wastewater Quality Standards
Temanggung Regent Regulation No 1/2012 on Temanggung Regency Spatial Planning for 2011-2031
Presidential Regulation No. 97 of 2017 on National Policy and Strategy for the Management of Household Waste and Waste Similar to Household Waste ("PR. 97/2017")
Appendix 3 "Stationary Sources Emission Quality Standard for Cement Industry Businesses and/or Activities that Use Refuse Derived Fuel (Using Household Waste and/or Household Type Waste)", Minister of Environment and Forestry No. P.19/MENLHK/SETJEN/KUM.1/2/2017 on Emission Quality Standard for Cement Industry Businesses and/or Activities ("MOEF 19/2017")
Central Java Regional Regulation No. 03/2018 on Groundwater management
Temanggung Regent Regulation No 35/2018 on Management of Household and Household-like Waste
Governor Regulation of Central Java Province No 11/2019 concerning JAKSTRADA Central Java Province
Temanggung Regency Regional Regulation No. 9 of 2020 on Environmental Protection and Management
Temanggung Regency Regent Regulation No. 56 of 2020 on Position, Organizational Structure and Work Procedures of Temanggung Regency Regional Apparatus
Government Regulation No. 22 of 2021 on the Implementation of Environmental Protection and Management

National and Regional Laws and Regulations Title
("GR 22/2021")
Temanggung Regency Regent Regulation No. 119 of 2021 on the Establishment, Position, Organisational Structure and Work Procedures of the Implementing Unit
SNI 8966:2021 concerning solid fuel for power plants (RDF/SRF)
Temanggung Regent Regulation No 17/2022 on Duties and Functions of the Public Housing, Settlement Areas and Environment Service of Temanggung Regency
Central Java Regional Regulation No. 04/2023 on Environmental Protection and Management
Temanggung Regent Regulation No. 12 of 2023 on Regional Development Plan 2024-2026
Temanggung Regent Regulation No. 43 of 2023 on Implementation of Waste Management
Social
Government Regulation No. 8 of 1953 concerning State Land
Law Number 5 of 1960 concerning Basic Agrarian Law in Indonesia
Law No. 2 of 2012 concerning land acquisition for development in the public interest.
Ministry of Health Regulation No. 3 of 2014 on Community Led Total Sanitation
Regulation of the Head of the BPN No. 6 of 2015, concerning technical standards for land acquisition.
Minister of Home Affairs Regulation No. 1 of 2016 concerning Village Asset Management
Presidential Regulation No. 62 of 2018 on the handling of social impacts on the community within the framework of land provision for national strategic projects.
Regulation of the Minister of ATR/BPN No. 20 of 2020 concerning the handling of social impacts on the community.
Government Regulation no. 18 of 2021 on Management Rights, Land Rights, Apartment Units, and Land Registration
Regulation of the Government Goods/Services Procurement Policy Agency No. 12 of 2021 concerning Guidelines for the Implementation of Government Goods/Services Procurement through Providers.
Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia No. 19 of 2021 concerning Provisions for Implementing Government Regulation No. 19 of 2021 concerning the Implementation of Land Acquisition for Development in the Public Interest
Law No. 6 of 2023 concerning the Stipulation of Government Regulations in Lieu of Law No. 2 of 2022 concerning Job Creation into Law
Presidential Regulation No. 78 of 2023 concerning Amendments to Presidential Regulation No. 62 of 2018 concerning Handling Social Impacts in the Context of Providing Land for National Development
Government Regulation No. 39 of 2023 concerning Amendments to Government Regulation No. 19 of 2021 concerning Implementation of Land Acquisition for Development in the Public Interest

3.2 AIIB and relevant International Regulatory Framework

3.2.1 The International Standards that will be applicable for the Sub-project are listed in the table below.

Table 3-2 AIIB and Relevant International Guidelines

Internation Guidelines
Asian Infrastructure Investment Bank (AIIB)
AIIB Environmental and Social Framework
• Environmental and Social Standard (ESS) 1 – Environmental and Social Assessment and Management
• ESS 2 – Land Acquisition and Involuntary Resettlement
• ESS 3 – Indigenous Peoples
World Bank Group
World Bank Group (WBG) General Environmental, Health and Safety (EHS) Guidelines (2007)
WBG EHS Guidelines for Waste Management Facilities (2007)
WBG EHS Guidelines for Water and Sanitation (2007)

3.2.2

3.3 Discussion on Gap Analysis

3.3.1 The table below presents a comparison between the AIIB framework/policy and Indonesia's national regulations. It highlights identified gaps and areas where the frameworks have been harmonized. Key areas of focus include approaches to stakeholder engagement, analysis of alternatives and cumulative impacts, social impacts, and involuntary resettlement.

Table 3-3 Identified Gaps and Harmonised Framework

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
ESS 1			
A. General	Requires integrating environmental and social considerations into project decision-making and management at all stages.	Indonesian EIA (AMDAL) and other sectoral regulations focus on integrating environmental considerations but often less on social aspects.	**Gap**: Less emphasis on integrating social aspects into project decision-making. **Harmonization**: Enhance integration of social considerations in AMDAL and other regulatory frameworks to match AIIB's comprehensive approach.
B. Assessment and Management Process	Mandates a thorough assessment and effective management of environmental and social risks and impacts.	Indonesian regulations require environmental impact assessments but may vary in thoroughness and scope.	**Gap**: Potential variance in the depth and scope of assessments, especially for social impacts. Especially if the required environmental document is UKL-UPL **Harmonization**: Standardize assessment processes to include detailed social impact assessments, aligning with AIIB's comprehensive evaluation requirements.

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
C. Environmental Coverage	Requires a broad assessment of potential environmental risks and impacts, including biodiversity, pollution, and resource efficiency. AoIs to cover larger distance depending on environmental aspects and impacts.	Indonesian environmental laws cover these aspects but not detail regarding greenhouse gasses assessment. AoIs within 500m buffer.	**Gap**: There are no requirements to conduct assessment on greenhouse gases emissions assessment. In addition, AoIs may extend more than 500m buffer depending on environmental aspects and impacts. **Harmonization**: Align enforcement and specificity in local regulations with AIIB's detailed environmental coverage to ensure comprehensive protection and sustainable resource use, to include greenhouse gases on the assessments, and to ensure associated facilities impacts are addressed and mitigation measures implemented.
D.Social Coverage	Stresses on assessing social risks and impacts, including impacts on vulnerable groups and gender considerations.	Social aspects are covered under various laws, but there may be gaps in addressing impacts on vulnerable groups and gender specific impacts	**Gap**: Inadequate focus on vulnerable groups and gender-specific impacts. **Harmonization**: Implement more focused social impact assessments and mitigation plans that emphasize protections for vulnerable groups and gender-specific impacts, per AIIB standards. Use of gender-disaggregated baseline data and analysis and monitoring these data.
E. Health and Safety	Requires the identification and management of health and safety risks for communities and workers throughout the project lifecycle.	Regulations exist for occupational health and safety, with less comprehensive coverage for community health and safety.	**Gap**: Community health and safety might not be as comprehensively managed as worker health and safety, the use of WBG EHS guidelines, and the needs of conducting GBV assessment. **Harmonization**: Enhance community health and safety measures in project planning and implementation to match the comprehensive AIIB standards.
F. Labor and Working Conditions	Mandates good labor practices and the protection of workers' rights throughout the project cycle.	Indonesian labor laws protect worker rights but may lack specific provisions for project conditions and settings.	**Gap**: General labor laws may not fully address the specific conditions and needs of project settings like the GRM for workers and minimum age requirements (18 years old). **Harmonization**: Integrate specific AIIB labor standards into project labor policies to ensure all workers' rights and working conditions are fully protected.

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
ESS 2			
A. General	Emphasizes minimizing displacement and improving or restoring livelihoods of affected persons, ensuring compensation and rehabilitation.	Indonesian Land Acquisition Law focuses on compensation for land but may lack provisions on livelihood restoration.	**Gap**: Limited focus on livelihood restoration and support post-displacement. **Harmonization**: Enhance to include comprehensive livelihood restoration measures aligned with AIIB's requirements to ensure holistic rehabilitation.
B. Consultation and Participation	Mandates meaningful consultation with and participation of affected persons in the resettlement process.	Public consultation is required, but the depth and effectiveness of engagement can vary.	**Gap**: Potential variability in the effectiveness of public consultations. **Harmonization**: Standardize and enhance consultation processes to ensure meaningful and effective participation along the project lifetime, as per AIIB standards.
C. Vulnerable Groups	Special provisions are required for vulnerable groups to ensure that their livelihoods and standards of living are improved or at least restored.	Limited specific provisions for vulnerable groups in the context of land acquisition and resettlement.	**Gap**: Lack of detailed protection and enhancement measures for vulnerable groups. **Harmonization**: Introduce specific protections and enhancement measures for vulnerable groups in resettlement plans, aligning with AIIB's detailed requirements.
D. Grievance Redress Mechanisms	Requires the establishment of appropriate grievance redress mechanisms accessible to affected persons.	While grievance mechanisms exist, they may not be tailored specifically for resettlement grievances.	**Gap**: General grievance mechanisms may not adequately address resettlement-specific issues. **Harmonization**: Develop and implement resettlement-specific grievance redress mechanisms that are accessible and effective, including but not limited to the following: - Compensation and resettlement entitlements - Relocation assistance to displaced persons - Restoration of livelihood - Disclosure of information - Project-affected people without land titles or any recognizable legal rights are eligible for resettlement

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
			assistance and compensation for loss of non-land assets.
ESS 3			
A. General	ESS3 requires projects to foster full respect for Indigenous Peoples' identity, dignity, human rights, economies, and cultures.	The Indonesian constitution recognizes Indigenous Peoples' rights, but implementation varies by region.	**Gap**: Variability in how Indigenous rights is implemented and protected at the regional level. **Harmonization**: Establish consistent national guidelines that align with AIIB's comprehensive requirements to protect Indigenous rights across all regions.
B. Social Assessment	Projects must undertake a culturally appropriate social assessment to understand the impacts on Indigenous Peoples.	Indonesia requires consideration of Indigenous Peoples in environmental assessments, but practices vary.	**Gap**: Inconsistency in the depth and cultural appropriateness of social assessments **Harmonization**: Standardize social assessments to include detailed, culturally appropriate evaluations of impacts on Indigenous Peoples, ensuring alignment with AIIB standards.
C. Indigenous Peoples Plan (IPP)	An IPP is required, detailing how adverse impacts will be avoided or minimized, and benefits will be shared.	Regulations include requirements for community development plans, often without specific guidelines for IPPs.	**Gap**: Lack of specific requirements for IPPs in local regulations. **Harmonization**: Introduce specific requirements for IPPs within community development regulations to ensure detailed planning and benefit-sharing with Indigenous Peoples.
D. Consultation and Participation	AIIB standards mandate free, prior, and informed consultation with Indigenous Peoples to obtain their broad support for projects.	Indonesian law promotes consultation, but there is no strict requirement for obtaining prior informed consent.	**Gap**: Formal consent processes are not universally required or implemented. **Harmonization**: Implement a formal consultation and consent framework that meets AIIB's requirements for free, prior, and informed consent throughout the project lifecycle.

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
E. Grievance Redress Mechanisms	Requires effective and culturally appropriate grievance mechanisms specifically designed for Indigenous Peoples.	General grievance mechanisms exist but are not tailored specifically for Indigenous Peoples.	**Gap**: Lack of culturally tailored grievance mechanisms for Indigenous Peoples. **Harmonization**: Create culturally specific grievance mechanisms that are accessible and effective for Indigenous communities, aligning with AIIB standards.

4 SCREENING AND SCOPING RESULTS

4.1 Project Categorisation

4.1.1 The Asian Infrastructure Investment Bank (AIIB) categorises its projects into three categories based on the environmental and social impacts they may have:

- Category A: Projects with significant, irreversible, and unprecedented adverse environmental and social impacts. These projects require an environmental and social management plan (ESMP) and an ESIA.
- Category B: Projects with a limited number of potentially adverse environmental and social impacts. These projects require an initial review of environmental and social risks and impacts, and an appropriate environmental and social instrument.
- Category C: Projects with minimal or no adverse environmental and social impacts. These projects do not require an ESIA, but an analysis of their environmental and social aspects is required.

4.1.2 Based on the Scoping assessment of this sub-project, it is likely to be classified as a Category B Project under the AIIB Environmental and Social Framework (ESF). This classification is supported by the following considerations:

- A total of approximately 77 individuals, classified as Project Affected Persons (PAP), have been identified as potentially impacted by the project. This group includes wastepickers, collectors, traders, and land users. While these individuals may experience some disruption, no cases of permanent displacement or loss of sensitive cultural or heritage sites have been identified within the landfill. However, there is a potential loss of income for wastepickers with the planned development of the TPA. Additionally, the nearest community is situated less than 500 meters away, and potential disturbances to access can be mitigated and managed.
- The project includes the planned acquisition of 12,697 m² of land for the expansion of the existing landfill (TPA). This land is owned by the village government and was acquired through a land swap process, reducing the risk of significant social conflict or involuntary resettlement, as no permanent displacement of residents has been identified.
- The sub-project involves activities similar to existing operations, such as the establishment of new waste processing infrastructure. These activities are not unprecedented and therefore potential impacts are well understood and can be effectively mitigated using standard industry practices.
- The project is adjacent to residential areas and agricultural land but does not have significant adverse environmental or social impacts that cannot be managed. These impacts are site-specific, limited and can be addressed through established mitigation measures.
- Cumulative impacts are expected to be limited as there are no other significant projects or developments in the area of influence. Access routes and services are already in place for the landfill site, further reducing the potential for additional cumulative effects.

4.2 Identification of Legacy Issues

4.2.1 The team carried out a scoping site visit from 15 to 17 May 2024. The team identified legacy issues, refers to environmental or social impacts that existed at the project site prior to the implementation of a new project or improvement. The legacy issues identified during the site visit are presented in the following table.

Table 4-1 List of Legal Issue

Findings	Description	Mitigation Measures
Environmental Aspect		
Air and Water Pollution	The lack of regular cover of the landfill (TPA) results in significant odour and water pollution from non-functioning drainage systems containing leachate. This exacerbates ongoing environmental problems and causes concern for the surrounding communities.	• Implementation of regular land cover management. • Improvement and repair of drainage channels. • Periodic monitoring of air and water quality.
Leachate Management	The leachate treatment plant (LTP) and drainage system have not been functioning effectively, resulting in water pollution. This is an ongoing environmental issue that needs to be addressed in the new project design.	• Rehabilitation of the LTP. • Design and maintenance of drainage systems. • Implementation of a monitoring system for leachate, surface water, and ground water quality.
Landfill Landslide History	The history of landslides at the landfill (TPA) indicates poor waste management, which could threaten safety and disrupt operations, as past landslides have blocked the main access road to the TPA.	• Slope stabilization. • Early warning systems.
Social Aspect		
Community Complaints	Local communities, particularly in the village of Tegalombo, have complained about the negative impacts of the landfill, mainly related to odour and water pollution, which also affects their land productivity.	• Conduct Public consultation and dialogue with the community. • Implementation of an Environmental and Social Management Plan • Develop Grievance Redress Mechanism • Implementation of regular land cover management. • Improvement and repair of drainage channels. • Periodic monitoring of air and water quality.
Women & Elderly Wastepickers	Of the 69 existing wastepickers at the landfill, 49 are women and 24 are elderly. Women and elderly form part of a vulnerable population who are likely to be affected by operational changes at the landfill.	• Development of alternative livelihood programs. • Provision of basic services such as healthcare and social support for women and the elderly in the project area. • Involvement of communities and vulnerable groups in the decision-making process.

Findings	Description	Mitigation Measures
		• Gender-responsive approaches need to be strengthened in project impact solutions
Vulnerable Groups	In addition to the women and elderly wastepickers, there were several children who followed their families to the dump, using the excuse that no one was at home. One of them was identified as having special needs.	• Social programs for children and the elderly. • Involvement of communities and vulnerable groups in the decision-making process. • Prohibition of children in the TPA area

4.2.2 Recommendations for mitigations, management, and monitoring to address these legacy issues will be addressed through this ESIA.

4.3 Sensitive Receptors

4.3.1 Whilst there is no clear definition of "sensitive receptors" provided in AIIB ESF, good international industry practice accepts that sensitive receptors differ depending on the Project itself and the activities proposed. In the context of waste management projects in general, the following may be identified as sensitive receptors:

4.3.2 Environmental receptors

- Existing habitat including endangered or protected species and their ecosystem
- Key Biodiversity Areas (KBA), Soil, groundwater and water bodies
- Natural areas such as national or state parks, forests, or monuments; officially designated wildlife sanctuaries, preserves, refuges, or areas; and Federal wilderness areas

4.3.3 Social receptors

- Affected people whose livelihood relies on the Project, including wastepickers, other affected persons (e.g., business owners, waste truck drivers), affected entities (e.g., junk shops, commercial establishments, stalls, land use/resource), and others
- Permanently occupied dwellings within around the Project site, where potential visual and operational impacts (e.g., odor, noise, nuisance) may arise
- Socio-politically sensitive sites where public acceptance might be unlikely (i.e., memorial sites, churches, schools, religion facility)
- Socio-economic facilities and public infrastructure such as education, health, religious buildings, public open spaces and roads/ traffic which may be impacted by the Project activities
- Cultural heritage: Tangible forms of cultural heritage include physical properties or structures (e.g., buildings, monuments, unique natural features), while intangible heritage could encompass practices, customs, and languages tied to local traditions. (tangible forms of cultural heritage or immovable objects, property, sites, structures; unique natural features, intangible forms of culture such as knowledge, innovations, practices of communities embodying traditional lifestyles)

- Indigenous people: the rights or concerns specific to indigenous peoples, as projects like these may involve their traditional land, access to natural resources, or cultural practices

4.3.4 Mitigation measures should be established in alignment with AIIB ESF to ensure that sensitive receptors are protected from negative impacts, including targeted engagement with indigenous people and affected communities. The table below identifies the sensitive receptors mapped against the project:

Table 4-2 Sensitive Receptor Identified in TPA Sanggrahan, Temanggung

Intervention	Surface Water and Groundwater Receptors	Socio-Economic Cultural Receptors	Land Cover/Ecological Receptors	Protected Area Status
Landfill	Potential contamination of surface water due to non-functioning leachate treatment plant (LTP); leachate could affect groundwater	Waste pickers, local residents, sacred site and tomb; risk of odor and contamination complaints from nearby villages	Agricultural land, nearby residences within 300 meters	Not within a protected area
TPST RDF	Possible surface runoff and groundwater contamination during operation phase	Waste pickers, local community; sacred site (petilasan); 69 wastepickers, with 71% women and 35% elderly	Agricultural land, limited vegetation	Not within a protected area
Leachate Treatment Plant	Potential direct impact on groundwater and surface water quality; improper drainage could lead to contamination	Waste pickers, local residents; potential impact on livelihoods	Agricultural land, potential improvement of water quality	Not within a protected area
Access Road Widening	No direct impact on surface water or groundwater expected	Local residents, road users; access disruptions during construction	Agricultural land, minimal vegetation	Not within a protected area
Temporary Landfill	Potential contamination of surface and groundwater from leachate; absence of proper drainage system	Waste pickers, local residents; potential economic displacement for wastepickers	Agricultural land; potential disruption to the land use due to unclear boundaries	Not within a protected area

Intervention	Surface Water and Groundwater Receptors	Socio-Economic Cultural Receptors	Land Cover/Ecological Receptors	Protected Area Status
		due to relocation		

4.4 Sub-Project Area of Influence

4.4.1 In order to define the Area of Influence (AoI) for the Temanggung Sub-project, it is important to consider the various environmental and social factors that may be directly or indirectly affected by the project. The following is a framework that can be used to develop the AoI for the project:

1. Direct impacts
    a. Landfill site: The area encompassing the physical land on which the landfill is constructed, including operational areas such as waste storage, leachate management and other supporting facilities (e.g. access roads, drainage).
    b. Leachate management and pollution: The AoI includes the area around the landfill that may be directly affected by the leachate produced, in particular the flow of contaminated water to surface and groundwater sources.
    c. Air pollution: The area affected by odours, smoke or dust from landfill operations, including the process of burning or moving waste. This can range from several hundred metres to several kilometres, depending on topography and wind conditions.
    d. Noise: The area exposed to noise from heavy equipment or vehicles operating at the landfill, such as the area around the access road to the landfill.
2. Indirect impacts
    a. Vehicle movement: Access roads to and from the landfill that may be affected by increased heavy vehicle traffic. This may include arterial and secondary roads around the site.
    b. Community economic disruption: Impacts on the livelihoods of local people, particularly those involved in waste collection (wastepickers), trade and waste transport. The AoI also includes residential or market areas where they live or work.

4.4.2 Degradation of natural resources: Potential degradation of land or natural resources such as water, particularly those used by local communities for domestic, agricultural or fishing purposes.

4.4.3 The table below provides indicative study area boundaries for each component defined to capture the most significant interactions between the project and the surrounding environment. These boundaries help to assess the extent of direct and indirect impacts, guiding mitigation measures.

Table 4-3 Indicative Study Area Boundaries

Component	Study Area Boundaries	Receptor
Environmental and Biodiversity Components		
Waste Facility Buffer Zones	Residential development should be typically further than 250 meters from the perimeter of the proposed landfill (IFC EHS Guidelines)[1] The distance from the TPST to the nearest settlement is at least 500 m (National Regulation)[2] Selection of the TPA location should be more than 1 km (one kilometer) from residential areas, taking into account leachate pollution, odor, the spread of disease vectors, and social aspects, in accordance with the National Regulation.	Humans within the radius
Air Quality	An assessment will normally be required where there is: a 'human receptor' within: - 250 m of the boundary of the site; and/or - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s)[3]	Humans within the air emission range
Noise	The "Assessment Area" for noise impact shall include all areas within 300m from the "Study Area"	Humans and fauna within the noise emission range
Vibration	Within 100m from the project boundary[4]	Humans and residential or commercial buildings
Surface Water	Water body that receives effluent of LTP Within 500m from the landfill (IFC EHS Guidelines)	Surface water quality, aquatic life
Groundwater	Within 300m from the landfill (IFC EHS Guidelines)	Groundwater quality
Soil	Location of hazardous waste storage, location of LTP and, landfill site	Soil and biota
Biodiversity	Project site where land clearing will take place (if any) Water bodies that received effluent of LTP	Terrestrial and aquatic fauna
Visual Impact	The "Assessment Area" for landscape impact assessment shall include all area within a 500m distance from the "Study Area"	Humans within the visual range of the project
Social Components		
Economic, Social, and Cultural Activities	Community activities (where there is housing, public facilities (including restaurant, hotel, shops), socio-economic or cultural activities) within the project site and up to 1,000 metres from the project boundary, including	Communities engaged in social, economic and cultural activities within the development area

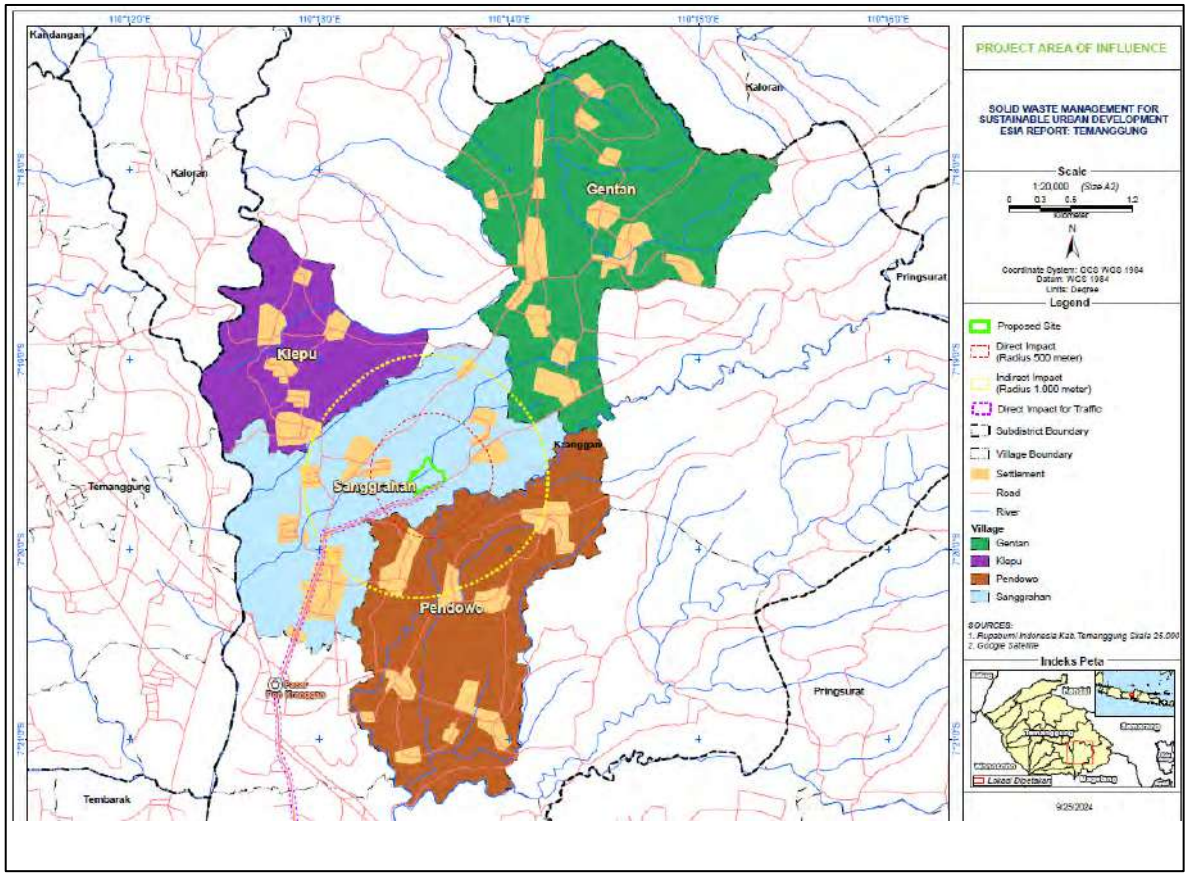
[1] https://www.ifc.org/content/dam/ifc/doc/2000/2007-waste-management-facilities-ehs-guidelines-en.pdf
https://www.ifc.org/content/dam/ifc/doc/2000/2007-waste-management-facilities-ehs-guidelines-en.pdf
[2] https://peraturan.bpk.go.id/Details/144707/permen-pupr-no-03prtm2013-tahun-2013
https://peraturan.bpk.go.id/Details/144707/permen-pupr-no-03prtm2013-tahun-2013
[3] https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf
[4] https://ntepa.nt.gov.au/__data/assets/pdf_file/0007/1107745/Appendix-I-Noise-and-Vibration-Impact-Assessment.PDF

Component	Study Area Boundaries	Receptor
	along roads used during the construction phase for the mobilisation of equipment and construction materials.	

4.4.4 The planned activity is anticipated to affect an area within a 500 m radius, while the indirectly affected area extends up to 1,000 m. The determination of the affected area refers to the regulation of the Minister of Public Works No. 3 of 2013, which outlines the implementation of waste infrastructure and facilities in Articles 32 and 35

4.4.5 The Area of Influence also includes the industrial off-takers for the project's RDF, maggot BSF, and compost products. PT Solusi Bangun Indonesia and PT Indotex Lasindo Jaya, both of which will receive RDF, as well as PT Greenposa Adikara Nusa for the maggot BSF, and Koperasi Produsen Tawon Sindoro Sumbing for compost, may have indirect impacts associated with transportation and processing. Increased transportation frequency to these facilities could impact local traffic patterns, and the operation of these facilities may also extend the AoI based on air emissions, noise, and the environmental footprint of their processing activities..

Figure 4-1 Area of Influence



4.5 Risk and Impact Identification

4.5.1 This section provides an initial identification of potential risks and impacts for environmental, and social based on the information available at the time (pre-mitigation stage). The initial identification of potential environmental and social impacts was carried out in accordance with the AIIB ESS. The risk level for each component of the AIIB ESS was classified according to the following guidelines as shown in table below. The initial analysis of environmental and social impacts was limited to the areas observed during the field visit.

Table 4-4 Definition of Risk Category

Risk Category	Description
High	Project activities with potentially adverse environmental or social risks and/or impacts are highly diverse, irreversible or unprecedented. The impacts and risks have the potential to be significantly adverse due to the complex nature of the project, the size of the project, and/or the sensitivity of the project location.
Medium	Project activities with potential adverse environmental or social risks and/or impacts that are limited and few in number, generally site-specific, largely manageable and can be addressed through mitigation measures.
Low	Project activities with minimal or no negative environmental and social risks and/or impacts

4.5.2 **Table 4-5** lists out the E&S aspects, the activities that cause impact, and the impact description for pre-construction, construction and operation phases.

Table 4-5 Potential Environmental and Social Risks and Impacts

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
Pre-construction						
ESS 1 & ESS 2	Socio Economic: land user income disruption	Land acquisition	There is a land acquisition of 12,697 m2 for the project development plan. The land is owned by the Sanggrahan village government and is known as Bengkok Land. The land acquisition is done through a land swap mechanism where the village owned Bengkok Land is exchanged for land owned by the Temanggung Sub-district Government. The land swap process was completed in 2023 (before construction). On the village government land, there are four land users who are Sanggrapan village officials. Based on information from the village head, the cultivators have received land compensation according to what was given by the Temanggung district government. In the preparation of the ESIA, a detailed investigation of the land acquisition process and the impact of the land acquisition on the land users is required.	**Medium**	• Review land acquisition process • Collecting social economic data and perceptions from PAP	Yes
ESS 1	Socio-Cultural: Increase of community concerns	Stakeholders Socialization	There are community concerns about the existing activities of the TPA Sanggrahan. Based on interviews with village leaders, several community complaints were identified regarding the presence of TPA Sanggrahan. The main issues are the unpleasant odour that occurs at certain times and the spillage of waste on the roads during the transport of waste to the TPA, which has the potential to	**High**	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
			increase community concerns when the project plan is socialised with the community. There will be various concerns from the community regarding the Project Development Plan, for example from wastepickers regarding economic activities and concerns about traffic disruption during the activity phase. In addition to the concerns that will arise, there will also be the potential for community expectations regarding the positive impacts of the development of the Sanggrapan landfill.			
Construction						
ESS 1	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5)	• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction • Commissioning	Dust emissions will occur during both the land clearing/preparation phase and construction activities. The clearing process will lead to dust fall, classified as Total Suspended Particles (TSP). If not managed, the cleared land will continue to generate dust throughout all construction operations. Actions like material movement and site grading on cleared land will also contribute to dust generation.	**Medium**	• Conduct monitoring of air quality parameters to compare baseline and existing quality during pre-construction to modify or evaluate implemented mitigation measures based on target threshold. • Implement dust control measures, such as regular water spraying on heavily trafficked areas, including access roads and active construction zones. • Only well-maintained heavy machinery/ vehicles/ tools can be used.	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
ESS 1	Air Quality: Increased of Gas Concentration (CO, CO2, NO2, SO2, H_2S, methane, and HC)	• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities) • Commissioning	Mobilization and construction activities will involve construction traffic, heavy equipment, machinery, and other heavy vehicles. These activities result in the emission of pollutants from fossil fuel combustion. The main pollutants released include CO, CO2, SO2, NO2, N2O, VOCs, and hydrocarbons (HC). Additionally, rehabilitation work on existing landfill cells may lead to an increase in odor, particularly due to higher concentrations of hydrogen sulfide (H_2S) and methane released in the ambient air. Aside from odor, accidental ignition of H_2S and methane will result in fire and generation of more combustion gases including potential toxic pollutants.	**Medium**	• Conduct monitoring of air quality parameters to compare baseline and existing quality during pre-construction to modify or evaluate implemented mitigation measures based on target threshold. • Only well-maintained heavy machinery/vehicles/tools can be used.	Yes
ESS 1	Noise pollution	• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation	Essentially generated by the operation of the mobile equipment assigned to the worksite. Noise levels are expected to rise in the Project Area due to increased use of: • Light and heavy construction vehicles • Diesel generators • Heavy machinery • Power tools.	**Medium**	• Conduct noise monitoring to compare baseline and noise levels during construction to modify or evaluate implemented mitigation measures based on target threshold. • Perimeter fencing as sound barrier is to be maintained until construction activities are completed.	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
		• Temporary landfill construction				
ESS 1	Increased Vibration	• Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction	Vibration may occur due to the civil works activities particularly construction of TPA, TPST and supporting facilities. Operation of construction equipment cause ground vibrations which spread through the ground and diminish in strength with distance. Building founded on the soil in the vicinity of construction site response to vibration. Ground vibration from construction activities rarely reaches levels that can damage structures and there is currently construction equipment available that can minimise the impact of vibration.	**Medium**	Baseline vibration data collection	Yes
ESS 1	Increased in Surface Run-Off	• Construction of access road (Associated Facilities) • Land Preparation • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction	The landfill has been operating so that the drainage channel in the project site has been constructed, the arrangement of the landfill and TPST will improve the function of the drainage channel thus storm water can be controlled.	**Medium**	Rehabilitation of drainage channels to control storm water	No
ESS 1	Soil : Increased Soil Erosion	• Construction of access road (Associated Facilities) • Land Preparation • Construction of TPST Facilities	During rainfall, the surface runoff will carry construction materials and erode the soil. Currently, the landfill operation has been operational whereby the stormwater and erosion control infrastructure at the project site	**Medium**	• Storm Water Control & Management • Erosion Control & Management	No

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
		• TPA Rehabilitation Temporary landfill construction	has been built, therefore the impact of increased erosion can be categorized as low			
ESS 1	Soil: Soil contamination	• Temporary landfill construction • Waste disposal handling during construction (Associated Facilities)	Potential soil contamination due to improper handling of waste materials from both the existing landfill and construction equipment	**Medium**	• Baseline soil quality data collection • Install geomembrane liners in temporary landfill • Construct collection channel for leachate so there is no spill	Yes
ESS 1	Water Quality: Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	• Construction of access road (Associated Facilities) • Base Camp and Workshop • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • TPA Rehabilitation • Commissioning	Construction activity could pollute the surface water quality in the form of silt pollution, the release of hydrocarbons or chemicals, and the release of other site waste into the water such as litter or building materials.	**Medium**	• Conduct monitoring of physical environmental parameters to compare baseline and existing quality during construction to modify or evaluate implemented mitigation measures based on target threshold. • All drainage facilities and sediment control structures will be inspected on a regular basis and maintained. Deposited silt and grit will be removed regularly. • Debris and refuse generated on-site should be collected, handled, and disposed of properly to avoid entering the receiving waters. Stockpiles of cement and other construction materials should be kept covered when not being used.	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
ESS 1	Water Quality: Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	• Temporary landfill construction • Waste disposal handling during construction (Associated Facilities)	There is a possibility that leachate from the temporary landfill operation could flow into surface water bodies without prior treatment, if the LTP is still not operating properly.	**High**	• Monthly monitoring for surface water quality to modify or evaluate implemented mitigation measures based on target threshold. • Evaluate Leachate Treatment Plant • Install geosynthetics liners in temporary landfill • Construct collection channel for leachate so there is no spill	Yes
ESS 1	Water Quality: Groundwater Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)	• Temporary landfill construction • Waste disposal handling during construction (Associated Facilities)	The leachate of temporary landfill could infiltrate to the groundwater and potentially pollute it if the environmental protection and membranes does not meet the standard.	**High**	• Ground water quality baseline data collection. • Install geosynthetics liners in temporary landfill • Construct collection channel for leachate so there is no spill	Yes
ESS 1	Physiography : Landscape Change	Land Preparation	Changes to the landscape due to clearing and construction activities.	**Low**	No assessment as the existing location already built as landfill	No
ESS 1	Waste Management: Increased Construction Waste	• Land Preparation • Construction of Base Camp and Workshop • Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • TPA Rehabilitation	Generation of demolition and construction waste from construction activity. Construction waste consists of materials such as bricks, concrete, metals, and wood that are damaged or unused during construction. Construction waste often contains and includes hazardous materials such as fluorescent lights, batteries, and other electrical equipment, empty paint and petroleum based products containers,	**Medium**	• Contractors to prepare and implement spill response and emergency plans • Selling remaining materials that are still valuable • Using construction waste that are still valuable for future	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
		• Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	oil/fuel contaminated soil, and spill cleanup materials from oil and fuel spills.		projects or for maintenance activities • Disposing of remaining construction waste to the landfill • Minimizing remaining materials by taking preventive measures that include optimizing the use of materials, implementing effective and efficient construction methods and increasing the accuracy of estimates and orders • Impelent segregated collection and storage of waste to avoid cross contamination • Hazardous waste to be stored at the hazardous waste temporary storage	
ESS 1	Waste Management: Increased Domestic Waste (include Hazardous Waste)	Construction of Base Camp and Workshop	Domestic solid waste will also be produced, most likely in the form of food waste, plastic and food packaging, from workers during construction. Domestic waste will be generated continuously during the months of construction period. Activities at the base camp and workshop also has potential to produce hazardous waste, such as contaminated soil due to oil spill, oily rags, container of petroleum based product,	**Medium**	• Domestic waste management • Implement segregated collection and storage of waste to avoid cross contamination • Hazardous waste to be stored at the hazardous waste temporary storag	No

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
			spent lubricant, empty paint and maintenance chemicals containers and spill cleanup materials from oil and fuel spills.		• Contractors to prepare and implement spill response and emergency plans	
ESS 1	Wastewater management: Increased domestic wastewater	Construction of Base Camp and Workshop	Domestic wastewater will also be produced by the workers during construction.	**Medium**	Ensure that domestic wastewater management follows the SOP.	No
ESS 1	Climate Change/GHG Emission: Increased GHG emission	• Land Preparation • Base Camp and Workshop • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	GHG emission will generate from waste decomposition. Increased GHG emissions from machinery and vehicles. Land preparation within 4 to 6 ha areas will increase CO_2, N_2O, and CH_4, which leads to a lower heat reduction rate and increased air temperature.	**Medium**	• As much as possible to reuse wood from tree-cutting activities to support the construction activities. • To use only workable and well-maintained tolls, heavy machinery and vehicles with calculated utilisation to limit the usage of power/fuel consumption and emission • Climate change and GHG assessment to determine the required elements to reduce climate change risks is needed to be implemented in the construction.	No.
ESS 1	Biodiversity and Ecosystem Services : Habitat Loss	• Construction of access road (Associate facilities) • Land Preparation • Construction of Base Camp and Workshop • Construction of TPST facilities	Construction will involve tree clearance and earthwork within an area of 2.5 to 3 ha. Land clearing will remove existing vegetation which are habitats for fauna species. Clearing and construction activities may produce dust, noise,	**Medium**	Mitigation based on identified disturbed species/ habitat/ecosystem by the sub-project in biodiversity is required	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
		• TPA rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	bad air quality and odour which may impact the fauna within a 1 km radius.			
ESS 1	Biodiversity and Ecosystem Services : Roadkills and human-wildlife conflict due increase in construction traffic	Mobilization of Equipment and Materials	The construction and mobilization of heavy equipment may increase the roadkill for several species of fauna like small mammal and reptile, this can cause impact to the ecosystem.	**Medium**	Mitigation based on identified disturbed species/ habitat/ecosystem by the sub-project in biodiversity is required.	
ESS 1	Socio-economic: Workforce Opportunity	Recruitment Activities	Workforce recruitment at construction phase might cause job opportunity for local people, wages and working conditions, labor right and fair treatment.	**Medium**	Conduct a desktop review about the gender-disaggregated number and human resources required by the project compared to the gendered availability of local Manpower	Yes
ESS 1		Workforce release	Workforce release post-construction may lead to potential social issues related to unemployment or loss of income.	**Medium**	• Conduct a desktop review about the gender-disaggregated number and human resources required by the project compared to the gendered availability of local Manpower • Prepare workforce realease plan	Yes
ESS 1	Socio-economic: Business Opportunity	Construction of Base Camp and Workshop	The construction of a workers' base camp during the construction of this project will provide business opportunities for the surrounding community. These will include catering for workers, laundry and other basic	**Medium**	Conduct a desktop review about the number of businesses near the project area	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
			needs for the workers who will live in the base camp.			
ESS 1 & 2	Socio-economic: Wastepicker Relocation	• Temporary landfill construction • Waste disposal handling during construction (Associated	Land preparation activities during the construction phase will have an impact on the relocation of wastepickers' stalls. According to data from the TPA Sanggrahan UPTD, there are 69 wastepickers, comprising 49 women and 24 elderly individuals. This group is particularly vulnerable and may be disproportionately affected by the proposed changes. Any operational changes at the TPA could have a negative impact on the local economy, particularly affecting women and the elderly, who are among the most vulnerable groups in the community. The project development plan indicates that the location of the wastepicker stalls in the TPA will become the location of the project development. This will necessitate the cleaning up of non-permanent stalls.	**High**	• Conduct socialization • Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans • Develop livelihood restoration plans specifically targeting women and elderly wastepickers, ensuring gender sensitive and inclusive approaches. • Ensure compensation mechanisms consider the vulnerability of these groups.	Yes
ESS 1 & 2	Socio-economic: disruption of wastepickers' livelihoods	Land Preparation	Construction activities can cause significant disruption to wastepickers' livelihoods, particularly affecting women and the elderly who are more vulnerable to economic displacement. Wastepickers may still be able to engage in economic activities at the landfill site, but these may not be as optimal as they are now. temporary landfill relocation activities and other	**Medium**	• Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans • Implement targeted livelihood restoration programs with a focus on women and elderly wastepickers. • Offer skill development and alternative income	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
			construction activities at the landfill site can potentially disrupt wastepickers' livelihoods.		opportunities tailored to their needs. • Engage with wastepicker groups to ensure inclusive participation in decision-making.	
ESS 1	Socio-cultural: Community concern	• Recruitment • Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Mobilization, civil works, labor recruitment, and basecamp operation activities may raise new concerns and complaints from the surrounding community. These concerns may differ from the initial complaints experienced by the community during the construction phase	**Medium**	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Yes
ESS 1 & ESS 3	Socio-cultural: Sacred Site disturbance	Mobilization of Equipment and Materials	Near the TPA Sanggrahan, two sites about 500 metres away are considered sacred by the local community. These sites are the tomb of Mbah Selo Werso (Kramatan Bulu) and the Petilasan of Nyi Putri/Nyi Gandik. Although, there is no evidence that the landfill has affected the sacred site, the potential for disruption to the	Low	Ensure cultural sensitivity and engage with the community regarding any potential disturbances	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
			sacred site and annual community events needs to be monitored to avoid future social conflict.			
ESS 1	Transportation : Disruption to Land Traffic	Mobilization of Equipment and Materials	The mobilization of heavy vehicles and construction materials may increase traffic volume around the TPA Sanggrahan. The passage of heavy vehicles can disrupt community activities and potentially cause other issues, such as road damage. Construction mobilization may disrupt traffic, especially on the Kranggan-Kaloran road.	**High**	• Conduct a traffic impact assessment • Implement a traffic management plan	Yes
ESS 1	Transportation: Increase in Traffic Accidents	Mobilization of Equipment and Materials	The mobilization of heavy vehicles and construction materials may cause road damage, which could lead to traffic accidents.	**Medium**	• Assess the road safety risks • Implement traffic control measures	Yes
ESS 1	Community Health: Increase in Community Diseases	• TPA Rehabilitation • Temporary landfill Construction • Waste Disposal Handling During Construction (Associated Facilities)	One of the top diseases with the highest prevalence in the working area of Puskesmas Kranggan is acute respiratory infections (ISPA). The restructuring of the Sanggrahan waste disposal site (TPA) has the potential to increase the incidence of ISPA in the Puskesmas Kranggan area. Additionally, the restructuring of the TPA may also lead to a rise in the prevalence of other waste-related diseases, such as skin diseases and diarrhea.	**Medium**	• Conduct a baseline survey to identify disease prevalence for community around the project • Collecting secondary data about community health status	Yes
ESS 1	Community Health: Changes in Environmental Sanitation	• TPA Rehabilitation • Temporary landfill Construction • Waste Disposal Handling During Construction (Associated Facilities)	During the restructuring phase, there can be significant disturbances, such as increased traffic, noise, and air pollution, which can disrupt local communities and degrade environmental sanitation. If not managed properly, landfill restructuring can lead to soil and water contamination from leachate, especially if containment systems fail or are inadequate.	**Medium**	• Conduct a baseline survey to identify disease prevalence for community around the project • Collecting secondary data about community health status	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
ESS 1	Health and Safety: increase in work accidents	• Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	Workplace accident risks increase due to intensive physical activities, heavy equipment/vehicle use, and working at heights when constructing TPST building. Workers face hazards such as frequent exposure to hazardous materials, moving heavy equipment, electricity, and potential presence of dangerous gases at high concentrations (e.g. methane, H_2S) which may also pose fire hazard and can lead to serious injuries. Fatigue, insufficient training, and poor supervision further raise the risk of accidents.	**Medium**	• Conduct comprehensive risk assessments for all construction activities and risks (e.g. hazardous materials, dangerous gases, etc). • Implement a comprehensive Occupational Health and Safety (OHS) program with daily supervision and safety inspections. • Ensure proper use of Personal Protective Equipment (PPE), such as helmets, reflective vests, safety boots, and harnesses for working at heights. • Establish safety zones, restrict hazardous areas, and use early warning systems like alarms and signage. • Provide regular training and license required for workers on equipment use and safety procedures. • Implement a buddy system for heavy equipment operations to ensure workers have a partner for oversight and immediate assistance in case of an emergency. • Rotate tasks and provide drinking water to prevent	No

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
					fatigue and reduce the risk of errors.	
ESS 1	Health and Safety: increase in community accidents	• Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • Temporary landfill	Landfills located near residential areas or public access pose risks to surrounding communities, particularly from exposure to hazardous gases, waste leaks, and the movement of heavy vehicles. Children or residents who are unaware of the dangers of landfills may experience accidents, including getting trapped in waste piles or being injured by vehicles entering and exiting the site.	**High**	• Identify potential interactions between the community and vehicle routes as well as the landfill area. • Create a buffer zone or high security fence around the landfill to prevent unauthorized access. • Place warning signs and traffic signals around the landfill area to regulate the movement of heavy vehicles. • Regularly monitor air and water quality and take mitigation actions if pollution is detected. • Conduct outreach and education for the surrounding community about the dangers of the landfill, especially for children. • Manage drainage effectively to prevent leakage of liquid waste into the surrounding area.	Yes
Operation						
ESS 1	Air Quality: Increased Concentration of Particulate Matter (TSP,	• Operation of TPST including composting process • Operation of TPA	Waste pick-up trucks and the rotary dryer machine used in TPST operations will increase dust concentration in the ambient air. The RDF combustion by the offtaker could impact the air quality due to emissions such as	**Medium**	• Conduct regular monitoring to compare baseline and existing quality during operations to modify or evaluate implemented mitigation	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
	PM10 and PM2.5) and bioaerosols	• Combustion of RDF from offtaker	particulate matters generated during the combustion process. Soild waste in the landfill and the composting process will also emit dust and bioaerosols.		measures based on target threshold. • Only well-maintained heavy machinery/vehicles/tools/equipment can be used. • Tipping of waste from a low drop height to minimise dust and bioaerosols generation. • Enclose potentially dusty process areas such as tipping area, feedstock preparation, shredding, storage and packaging areas and provide local exhaust ventilation with dust collection system • Maintain optimal/adequate temperature and moisture content during composting process • Avoid over turning or over aeration during composting process • Cooperation agreement with the offtaker to ensure that the air pollution from RDF combustion is managed.	
ESS 1	Air Quality: Increased Gas Concentration (NO_2, SO_2, H_2S,	• Operation of TPST • Operation of TPA • Combustion of RDF from offtaker	The landfill, waste pick-up trucks, and the rotary dryer machine used in TPST operations and the RDF combustion process by offtaker will release pollutants into the ambient air, including CO, CO_2, SO_2, NO_2, VOCs, and hydrocarbons (HC).	**Medium**	• Conduct regular monitoring to compare baseline and existing levels during operations to modify or evaluate implemented mitigation	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
	VOC, NH_3, and HC)		Additionally, odors from waste decomposition and composting process in the TPST may cause discomfort and pose potential health risks to nearby communities.		measures based on target threshold. • Only well-maintained heavy machinery/vehicles/tools/equipment can be used. • Maintain optimal/adequate composting process conditions (e.g. temperature, moisture, oxyen content, pH, carbon and nitrogen ratio) and installation of odor control system at the TPST enclosed areas to minimise odor generation • Cooperation agreement with the offtaker to ensure that the air pollution from RDF combustion is managed	
ESS 1	Soil: Soil contamination	Operation of TPA	Leachate from landfills can contaminate soil with harmful substances like organic compounds, heavy metals, and toxins. If not properly managed, it seeps into the ground, increasing soil acidity, reducing fertility, and disrupting ecosystems. Accidental spills can spread contaminants, further impacting surrounding areas and water sources.	**Medium**	Soil quality monitoring	Yes
ESS 1	Water Quality: Surface Water Quality Pollution (TSS, TDS, pH,	• Operation of TPST • Operation of TPA	Surface water quality is likely to deteriorate due to contamination from landfill leachate. Leachate contains dissolved substances from the interstitial water of the disposed waste and its degradation products, along with potential	**Medium**	Surface water quality monitoring	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
	BOD, DO, and COD)		suspended solids, including pathogens. If not properly collected and treated, leachate can migrate from the landfill, leading to surface water contamination as it flows into nearby water bodies.			
ESS 1	Water Quality: Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)	Operation of TPA	Leachate from the landfill operation may contaminate groundwater quality through infiltration if not managed properly.	**Medium**	Ground water quality monitoring	Yes
ESS 1	Waste management: Increased Domestic Waste Generation (Including Hazardous Waste)	• Operation of TPST • Operation of TPA	Domestic solid waste will also be produced, most likely in the form of food waste, plastic and food packaging, from workers during operation. Domestic waste, will be generated continuously during the operation period. Operation stages has potential to produce hazardous solid waste, such as contaminated soil due to oil spill, oily rags, container of petroleum based product, wall paint can and spill cleanup materials from oil and fuel spills.	**Medium**	• Non-hazardous solid waste can be disposed directly to landfill unloading area. Prior to disposal, solid waste shall be separated at source where possible, to minimize contamination and maximize potential for reuse and recycling of materials. • The installation of temporary hazardous waste storage within the site to be further collected regularly by licensed third-party.	No
ESS 1	Wastewater Management: Increased Domestic Wastewater	• Operation of TPST • Operation of TPA	Wastewater will also be produced, most likely in the from workers during operation. Domestic waste, will be generated continuously during the operation period.	**Low**	Domestic wastewater management	No

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
ESS 1	Climate Change/GHG Emission: Increased GHG emission	• Landfill and facility operations • Utilization of perticide by the farmer of compost offtaker	Landfill and facility operations may reduce the possibility of absorbing CO_2, CH_4, and N_2O which leads to lower heat reduction rate and increase air temperature. In parallel, landfill gases (CH_4 and CO_2) will be generated as waste decompose in the landfill. Composting process will also emit CO_2 and small amounts of CH_4 and N_2O. The gases that will be generated from the landfill and composting are GHG and contribute to global warming phenomena. Utilization of pesticide may increase GHG emission.	**Medium**	• Installing gas collection system at the landfill site • Methane capture or flaring to mitigate GHG emission • To ensure good maintenance and calculated fuel consumption is implemented for landfill and facility operations. • Maintain the optimal temperature of the compost e.g. between 55°C and 65°C by daily temperature measurement • Maintain optimal/adequate temperature, moisture content, and oxygen content in the composting process by regular and efficient turning or aeration and adding bulking agents such as wood chips and dry leaves. • Maintain feedstock and nutrient balance in the compost (ideal ratio is roughly three parts browns to one part greens by volume) • Climate change assessment to determine the required elements to reduce climate change risks is needed to be implemented in the operations. • Training to the farmer	No

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
ESS 1	Biodiversity and Ecosystem Services	Landfill and facility operations	Landfill and facility operations may produce uncomfortable noise, bad air quality and odour which disturb the flora and fauna within 1,5 km radius.	**Medium**	Mitigation based on identified disturbed species/ habitat/ecosystem by the sub-project in biodiversity is required.	Yes
ESS 1	Social-Economic : Workforce Opportunities	• TPST/TPA Recruitment • Operation of TPST	The recruitment of workers, both skilled and unskilled, will be conducted openly to support the operation of the TPST. This provides employment opportunities for the local community.	**Medium**	Perform an employment impact assessment, focusing on job creation	Yes
ESS 1 & 2	Social-Economic : disruption of wastepickers' livelihoods	• Operation of TPST • Operation of TPA	The operation of the TPST allows waste arriving at the landfill to be processed directly at the facility. This has the potential to reduce the amount of waste that wastepickers can collect and, consequently, decrease their income.	**High**	Develop and implement livelihood restoration programs Provide alternative job opportunities	Yes
ESS 1	Social-Cultural : Community Concern	TPST/TPA Recruitment Operation of TPST	The operation of the TPST generates high expectations from the community; however, if the TPST causes negative impacts on the community, complaints will arise regarding its operations.	**Medium**	Conduct a baseline survey to identify community expectation and concern to the project. Review of community grievances about the project activity. Prepare Grievance redress mechanism	Yes
ESS 1	Community Health: Changes in Disease Prevalence and Patterns of Disease	Operation of TPST and TPA (residual waste cell)	The operation of TPST can have both positive and negative impacts on disease prevalence in an area. Effective management and community involvement are essential to maximize public health benefits while minimizing risks associated with waste disposal. Monitoring health outcomes and disease patterns in relation to TPST operations can help in assessing the effectiveness of integrated waste management strategies.	**Medium**	• Conduct a baseline survey to identify disease prevalence for community around the project • Collecting secondary data about community health status	Yes

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
ESS 1	Community Health: Changes in Environmental Sanitation	Operation of TPST including composting process and TPA (residual waste cell)	Properly managed TPSTs can improve overall sanitation in the area by reducing open dumping and controlling waste disposal, potentially leading to a decrease in vector-borne diseases (e.g., dengue fever, malaria) associated with poor waste management. Composting process within the TPST, if not properly implemented and managed, can cause additional odor generation and may attract vermins and unwanted wildlife within the TPST area which will pose health risk and result in community complains.	**Medium**	• Conduct a baseline survey to identify disease prevalence for community around the project • Collecting secondary data about community health status • Conduct regular monitoring to compare baseline and existing levels during operations to modify or evaluate implemented mitigation measures based on target threshold. • Maintain optimal/adequate composting process conditions (e.g. temperature, moisture, oxyen content, pH, carbon and nitrogen ratio) and installation of odor control system at the TPST enclosed areas to minimise odor generation • Implement good housekeeping practices within the TPST area and regular inspection for presence of vermins	Yes
ESS 1	Health & Safety : increase in work accidents and health concerns	• Operation of TPST • Operation of TPA	The risk of workplace accidents during the operational phase in TPST can increase due to various factors, including the operation of heavy machinery, interactions among workers, and waste handling processes.	**Medium**	• Conduct routine risk assessments to identify hazards in the landfill area, including working conditions and equipment.	No

AIIB ESS	Components/Risk	Project Activities	Interaction Description	Risk Category	Proposed Assessment/Mitigation	Baseline study Needed (Yes/No)
			Workers are often exposed to hazardous working conditions, such as unstable piles of waste, dangerous gases from landfill, emissions from TPST process operations, and the movement of large vehicles that can lead to accidents. A dirty and disorganized work environment can also contribute to the risk of accidents, such as slips, falls, or being injured by sharp objects.		• Audit work procedures to ensure compliance with safety measures and adequate training for workers. • Monitor past accidents to identify high-risk patterns or trends. • Implement a comprehensive safety training program covering emergency procedures and personal protective equipment (PPE). • Develop safe work procedures for all operational activities, including heavy machinery operation and waste handling. • Maintain strict supervision of worker activities and appoint safety officers on-site. • Install warning signs and markers in hazardous areas. • Ensure cleanliness and organization in the work area through regular cleaning. • Establish an effective communication system for reporting hazards, accidents, or emergencies for prompt action.	

5 ENVIRONMENTAL AND SOCIAL BASELINE

5.1 Environmental Baseline

5.1.1 This section describes the existing environmental sensitivities in the study area, which include relevant components of the physical environment. The purpose of describing environmental sensitivities is to describe the environmental characteristics of the Project site and surrounding area to identify key resources and receptors that will be affected by the Project.

5.1.2 The baseline environmental data collection consists of a two-stage approach:

1. Secondary baseline data review: this includes a review of relevant documents and records provided by the Client (including UKL-UPL, preliminary Environmental Impact Assessment, monitoring report), and relevant parties of the Sub-project. A desktop review of readily available information has also been conducted including climate, disaster risk, and land use data. Results of secondary baseline data review are provided below.
2. Primary baseline data collection and review: it has been collected by sampling in the Sub-project location. It covers aspects including ambient air quality, odour, noise and vibration, surface water quality, groundwater quality, leachate, and soil quality. The collection of environmental samples for the establishment of baseline data was planned in accordance with the national and international requirements. Data collection and analysis has been conducted by a laboratory accredited by the National Accreditation Committee of Indonesia (*Komite Akreditasi Nasional or KAN*) and registered under the Ministry of Environment and Forestry.

5.1.3 The number and sampling locations proposed for each environmental component is presented in **Table 5-1** and shown in **Figure 5-1.** Sampling locations of environmental components are determined based on the following considerations:

1. Air quality, odour, noise and vibration was based on dominant wind direction, settlements, and nearby public facilities that are likely to be affected by project activities;
2. Surface water was taken in river water flowing into the project area which includes the upstream, middle, outfall of leachate, and downstream sections;
3. Groundwater was taken from monitoring wells and wells of community around the project site;
4. Leachate was taken from leachate ponds, leachate outfalls, and drainage channels around the landfill; and
5. Soil was collected at the landfill, around the leachate pond, and surrounding areas.

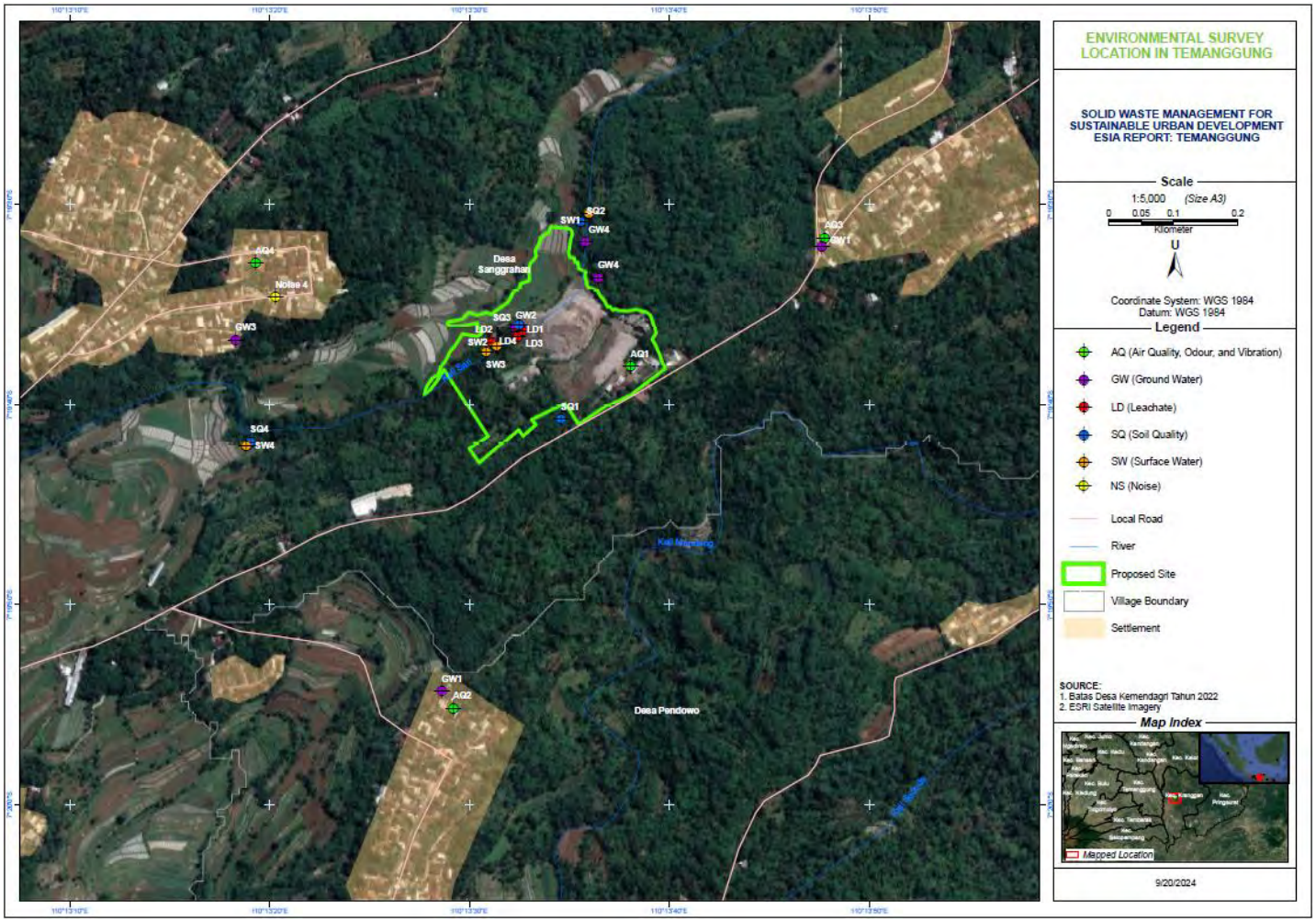
Table 5-1 Baseline Environmental Monitoring Locations for Temanggung Sub-project

No	Parameter	Code	Location	Longitude	Latitude	Distance and Direction from Project Site (m)
1	Air Quality	AQ1	TPA Sanggrahan	110,2272	-7,32723	30 meters Within the project site
		AQ2	Settlement in Dusun Losari	110,2248	-7,33199	533 meters towards North direction

No	Parameter	Code	Location	Longitude	Latitude	Distance and Direction from Project Site (m)
		AQ3	Settlement in Dusun Temandang 2	110,2299	-7,32546	355 meters towards South West direction
		AQ4	Settlement in Dusun Tegal Ombo	110,2220	-7,32581	459 meters towards Southeast direction
2	Odour	AQ1	TPA Sanggrahan	110,2272	-7,32723	30 meters Within the project site
		AQ2	Settlement in Dusun Losari	110,2248	-7,33199	533 meters towards North direction
		AQ3	Settlement in Dusun Temandang 2	110,2299	-7,32546	355 meters towards South West direction
		AQ4	Settlement in Dusun Tegal Ombo	110,2220	-7,32581	459 meters towards Southeast direction
3	Ground Water	GW1	Community well in Dusun Temandang 2	110,2246	-7,33175	560 meters towards Northeast direction
		GW2	West Monitoring Well in TPA Sanggrahan	110,2256	-7,32671	76 meters Within the project site
		GW3	Community Well in Dusun Tegal Ombo	110,2217	-7,32687	512 meters towards East direction
		GW4	East Monitoring Well in TPA Sanggrahan	110,2268	-7,32601	42 meters Within the project site
4	Leachate	LD1	Inlet LTP	110,2257	-7,32677	55 meters Within the project site
		LD2	Outlet LTP	110,2253	-7,32691	100 meters towards East direction
		LD3	LTP Leakage	110,2257	-7,32683	60 meters Within the project site
		LD4	Leachate Channel	110,2257	-7,32675	51 meters Within the project site
5	Noise	NS1	TPA Sanggrahan	110,2272	-7,32723	30 meters Within the project site
		NS2	Settlement in Dusun Losari	110,2248	-7,33199	533 meters towards North direction
		NS3	Settlement in Dusun Temandang 2	110,2299	-7,32546	355 meters towards South West direction
		NS4	Settlement in Dusun Tegal Ombo	110,2220	-7,32581	459 meters towards Southeast direction

No	Parameter	Code	Location	Longitude	Latitude	Distance and Direction from Project Site (m)
6	Soil Quality	SQ1	TPA Entrance	110,2263	-7,32797	81 meters towards East direction
		SQ2	Area near LTP	110,2265	-7,32523	130 meters towards South direction
		SQ3	Area near upstream river	110,2257	-7,32666	67 meters Within the project site
		SQ4	Area near river downstream	110,222	-7,32829	512 meters towards East direction
7	Surface Water	SW1	Upstream	110,2267	-7,32512	166 meters towards South direction
		SW2	Near LTP Outlet	110,2254	-7,32695	103 meters towards East direction
		SW3	After LTP Outlet	110,2252	-7,32704	134 meters towards East direction
		SW4	Downstream	110,2219	-7,32834	515 meters towards Northeast direction

Figure 5-1 Environmental Survey Location in Temanggung



Source: Baseline Survey, August 2024

5.1.4 Note that the study limitation for ESC is to provide one (1) seasonal data within the ESIA reporting period while another season is to be obtained from the Local Government. Based on the reporting period for this ESIA, ESC has conducted the dry season sampling and has collected the wet season data from the Local Government for comparison. However, the wet season data availability is limited to leachate, surface water quality, and ground water quality aspects.

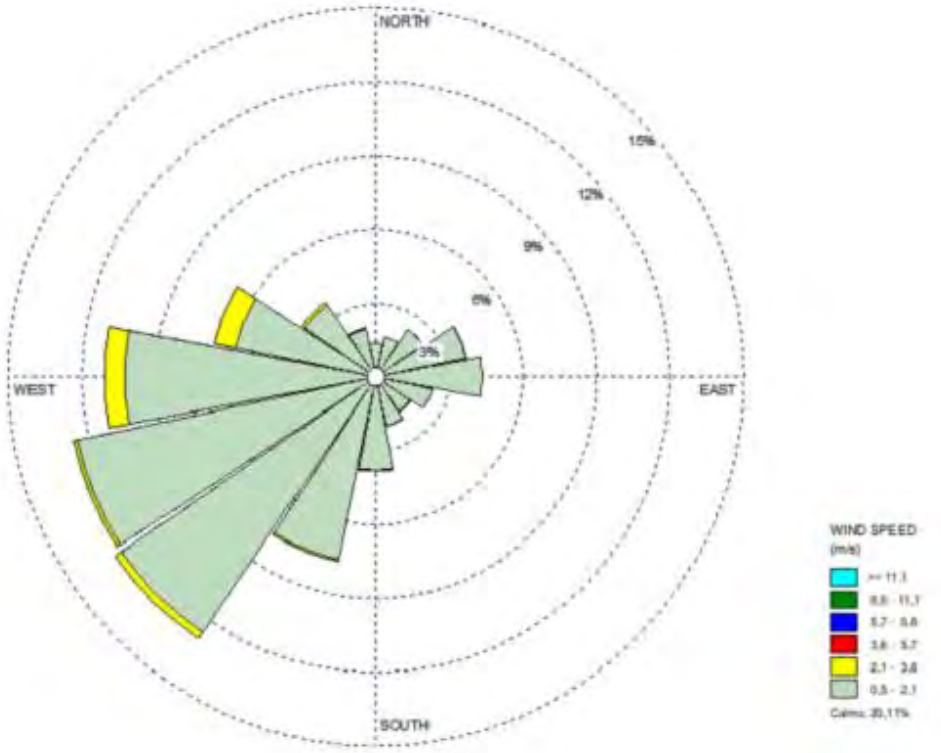
5.1.5 The environmental baseline plan and results based on the feasibility studies carried out for the Temanggung site are provided in this section.

Climate

5.1.6 Climate data has been taken from the UKL-UPL Report of TPST Sanggrahan as the available secondary data source from the DPRKPLH Temanggung Regency, released in 2023. The climate data consists of wind speed and direction, air temperature, relative humidity, and rainfall data.

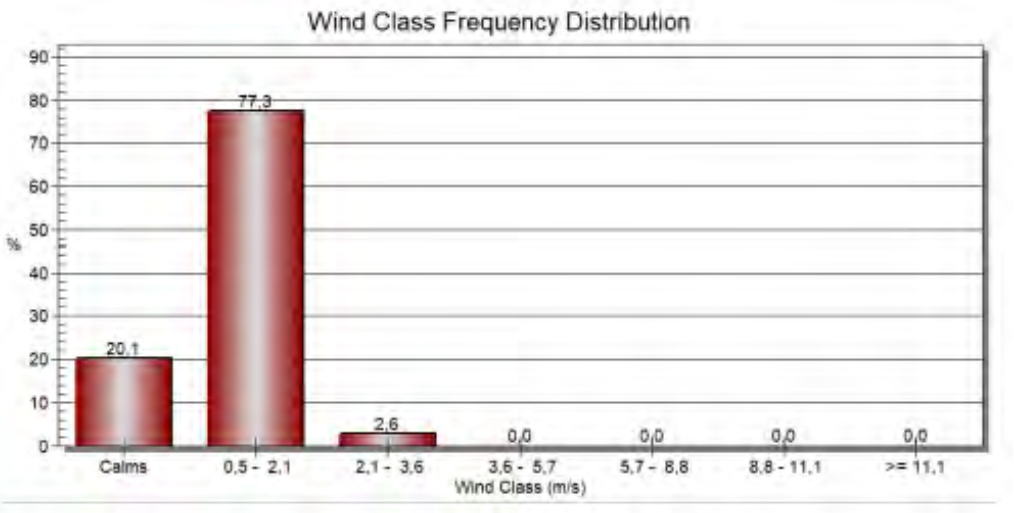
5.1.7 Wind speed and direction data are displayed in the form of a wind rose. A wind rose is a graph that provides an overview of how wind speed and direction are distributed at a location over a certain period. Windrose is depicted in a circular format with a frequency scheme of wind blowing from a certain direction. The length of each crown indicates the frequency of wind blowing from that direction. It has a value of zero at the center and continues to increase towards the edge. The following is a wind rose of wind data at the planned activity site from June 2022 to May 2023 sourced from ECMWF wind data.

Figure 5-2 Windrose from June 2022 to May 2023



Source: DPRKPLH, 2023

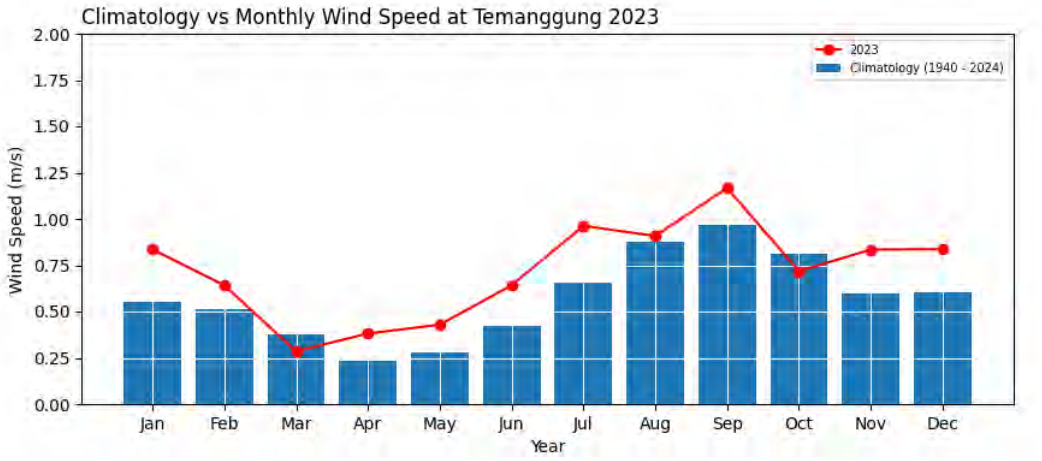
Figure 5-3 Wind Speed Frequency Distribution



Source: DPRKPLH, 2023

5.1.8 dominant wind comes from the southwest to the northeast with a percentage of 13% with a maximum wind speed of 3.6 m/s and an average speed of 0.84 m/s. This is also in line with the results of field observations conducted by the DPRKPLH Laboratory UPT which was carried out on May 25, 2023, which showed the wind direction from west to east.

Figure 5-4 Climatology and Wind Speed at Temanggung in 202



Source: DPRKPLH, 2023

5.1.9 The 2023 data show significant variability, with deviations from the climatology. The early months, especially from January to May, saw below average wind speeds, indicating calmer wind patterns than historical patterns. This period coincides with potential modulation by regional climate factors, which is most likely related to suppressed atmospheric circulation, as shown by analysis of the Niño and IOD phases simultaneously.

5.1.10 However, in June to September, wind speeds in 2023 exceeded the climatological average, especially peaking in August and September. This shift to above-average wind activity may indicate the influence of seasonal factors such as intensification of monsoon winds or interactions with local topography. Notably, this increase is consistent with the late stages of the dry season in Indonesia, when stronger pressure gradients between land and ocean

accelerate wind speeds, reflecting the transition from calm conditions earlier in the year to more dynamic atmospheric conditions.

5.1.11 The period of increasing wind speed is clearly synchronized with the positive phase of the IOD (IOD+), as evidenced by the dipole mode index in the third part of the graph. The IOD+ phase is typically associated with stronger easterly winds and increased wind activity, which is consistent with the peak wind speeds observed post-1960 and especially post-1990. In contrast, the IOD negative (IOD-) phase, particularly in the late 1950s and early 1980s, coincided with reduced wind speeds, thus reinforcing the important role of ocean-atmosphere coupling in modulating regional wind dynamics.

5.1.12 Likewise, the influence of the ENSO cycle is also clearly visible, where the El Niño phase (positive ONI) is generally associated with reduced wind speeds, because this event is related to weakening monsoon circulation and suppressed convection in the Indonesian archipelago. On the other hand, the La Niña phase (negative ONI) tends to increase regional wind speeds due to strengthening the Walker Circulation and increasing the strength of easterly winds throughout Southeast Asia.

5.1.13 The wind speed anomalies observed in 2023, particularly the below-average speeds early in the year and the above-average peaks during the dry season, can be contextualized within the broader climate system. The interaction between local climatology and larger-scale drivers such as ENSO and IOD is crucial in explaining these deviations. Specifically, the anomalous wind patterns in early 2023 may be attributed to neutral or weak El Niño conditions, which typically suppress wind speeds, while the surge in wind activity later in the year could be linked to the positive phase of the IOD, known for enhancing regional wind strength.

5.1.14 DJF (December, January, Februari) season representing the wet season associated with the Southeast Asian monsoon, shows a predominant wind direction from the west and northwest. This is consistent with the northeast monsoon (bearing southerly winds over the Indonesian region), as well as the presence of significant convective activity and moisture-laden air masses moving inland from the Indian Ocean. Wind speeds during this period tend to remain relatively moderate, likely due to the increased cloud cover and precipitation that typify the wet season.

5.1.15 The transition season from the wet to the dry period (MAM, March April May), exhibits more distributed wind directions but still retains a westerly component. The shift in wind directions during this season suggests the gradual weakening of monsoonal flow, as the Intertropical Convergence Zone (ITCZ) begins to migrate northward, allowing for more variable wind regimes and a decrease in convective activity. Wind speeds remain relatively low, reflecting the subdued pressure gradients typical of transitional seasons.

5.1.16 Corresponding to the peak dry season (JJa, June July August), shows a significant shift in wind direction and intensity. Winds during this period are predominantly from the south, as indicated by the strong, focused southerly wind directionality in the windrose diagram. This pattern is characteristic of the dry southeast monsoon, which brings drier and cooler air from the Australian continent. Wind speeds also exhibit a marked increase during this period, as the pressure gradient between the Australian high-pressure system and the Asian low-pressure system intensifies. This is the season with the highest wind speeds, indicating that the atmospheric conditions are conducive to stronger winds, with potential implications for local dust transport, fire risk, and other dry-season phenomena.

5.1.17 SON (September-October-November) shows the second transition period, where winds once again begin to shift, and a more northerly wind direction emerges. This is the precursor to the onset of the wet season, as the ITCZ migrates southward, and the atmospheric circulation starts transitioning towards the northeast monsoon phase. Wind speeds during this period begin to moderate, aligning with the transition back to the convective, precipitation-heavy conditions of the wet season.

5.1.18 The total windrose diagram, aggregating data from all seasons over the 1940–2024 period, highlights the dominant wind patterns over Temanggung. The most frequent wind directions are from the south and the west, reflecting the region's dual seasonal influences from the monsoonal systems. The total windrose also shows that while the majority of winds fall within lower wind speed categories (0.3–2.3 m/s), there is a significant portion of stronger winds (>1.6 m/s) during the JJA season, contributing to the region's overall wind regime.

5.1.19 The seasonal variation in wind patterns observed in Temanggung can be attributed to the region's sensitivity to large-scale climatic drivers, such as the El Niño-Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD). During El Niño events, weakened monsoonal circulations could lead to a reduction in wet season wind intensity, as well as delayed monsoon onset, which would shift the windrose patterns observed in DJF and MAM. Conversely, during La Niña years, enhanced convective activity could strengthen wet season winds, particularly those from the west, as convective cells are more active and the Walker Circulation is intensified. Similarly, the IOD's positive phase (IOD+) tends to enhance the southeast monsoon winds, particularly in JJA, amplifying the southerly wind patterns and leading to higher wind speeds during the dry season.

5.1.20 Analysis of surface wind direction and speed variations is needed to determine the influence of wind direction and speed on the distribution of environmental impacts that may arise from the activities to be carried out. Atmospheric stability, wind direction and speed greatly affect the distribution of air quality decline, and the distribution of increased noise.

5.1.21 Air temperature is a climate component that is influenced by several factors such as the angle of incidence of sunlight, duration of sunlight, altitude of location, atmospheric brightness and distance to the sea.

5.1.22 The air temperature data used for the analysis is air temperature data consisting of dew point temperature and temperature obtained from ECMWF data. The data that presented in the following table is the average dewpoint temperature and monthly temperature of Kranggan Sub-District from June 2022 to May 2023.

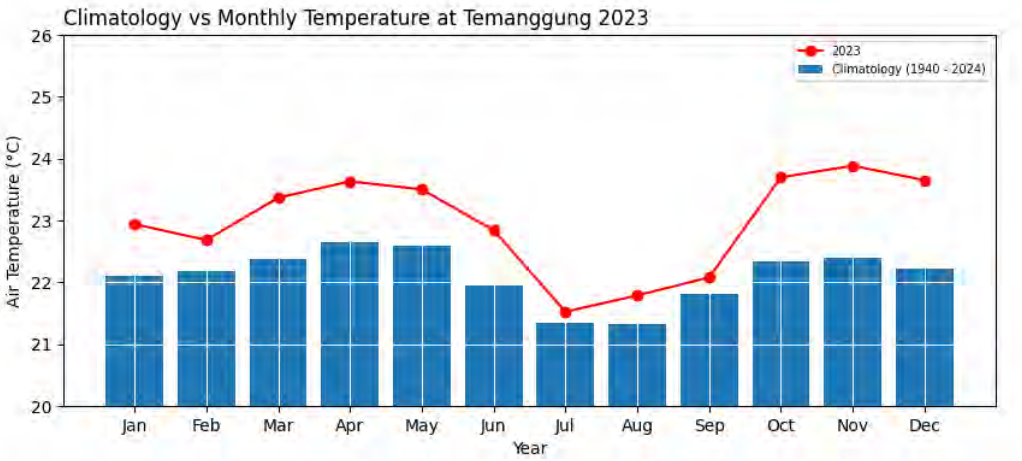
Table 5-2 Average Dew Point Temperature and Monthly Temperatur of Kranggan Sub-district for the Period June 202-May 2023

No.	Month	Average Dew Point Temperature (°C)	Average Temperature (°C)
1.	June	20.72	22.97
2.	July	20.25	22.95
3.	August	20.05	22.66
4.	September	20.39	22.95
5.	October	20.77	22.59
6.	November	21.41	23.19
7.	December	20.95	23.09
8.	January	20.83	23.15
9.	February	21.00	22.90
10.	March	21.08	23.60
11.	April	21.39	23.87

No.	Month	Average Dew Point Temperature (°C)	Average Temperature (°C)
12.	May	20.97	23.75
Average		**20.82**	**23.14**

Source: DPRKPLH, 2023

Figure 5-5 Climatology and Monthly Air Temperature at Temanggung in 2023



5.1.23 The climatological average, depicted by the blue lines, shows a relatively stable annual cycle, with moderate intra-annual temperature variability typical of tropical highland areas such as Temanggung. Historical climatology shows temperatures ranging between 21°C and 23°C, reflecting the equatorial position and moderate elevation of the area, which modulate extreme temperature fluctuations.

5.1.24 However, the red lines representing 2023 data show that recent temperature observations deviate from the long-term average, particularly in the warmer months of April to June and October to November. During this period, temperatures in 2023 exceeded the climatological average by a significant margin, indicating a potential warming anomaly for the year. These increased temperatures could be due to a combination of local meteorological factors and broader climate change impacts, particularly as 2023 coincides with the ongoing global warming trend.

5.1.25 Of particular note is the sharp increase in temperatures during October, which exceeded historical climatological values by almost 2°C. These significant anomalies could have implications for local agriculture, hydrology, and heat stress, especially in regions where livelihoods are often closely tied to climate-sensitive activities such as agriculture. These deviations could also be linked to the broader influence of ENSO or IOD events, which are known to exacerbate extreme climate conditions during their respective phases.

5.1.26 From a long-term perspective, the second figure shows a clear trend in air temperature in Temanggung over almost a century. While monthly temperatures show a marked seasonal oscillation, the overall pattern shows a progressive warming trend, particularly pronounced in the second half of the 20th century and into the 21st century. This is consistent with the global pattern of anthropogenic climate change, where increasing greenhouse gas emissions have contributed to rising surface temperatures in many regions. The increase in temperature in Temanggung, shown in the air temperature time series, reflects the global trend, particularly post-1980, where warming has been most pronounced.

5.1.27 Along with the air temperature data, the middle panel of the second figure shows the Oceanic Niño Index (ONI), an important measure of the phase of the El Niño-Southern Oscillation

(ENSO). Positive phases of El Niño are associated with warmer sea surface temperatures in the Pacific, which often lead to warming in Southeast Asia, while negative phases (La Niña) bring cooler conditions. There is a clear relationship between ENSO phase and local temperature anomalies, with warmer years often coinciding with strong El Niño events, as observed in the late 1990s and 2015–16. This influence underscores the significant impact of large-scale ocean–atmosphere interactions on Temanggung's regional climate.

5.1.28 The bottom panel depicts the Dipole Mode Index (DMI), which represents the Indian Ocean Dipole (IOD), another important driver of climate variability in the region. Similar to ENSO, the positive phase of the IOD (IOD+) often amplifies warmer and drier conditions over Indonesia, while the negative phase (IOD−) is associated with cooler and wetter conditions. Variability in the DMI correlates with some of the short-term temperature fluctuations seen in air temperature data, further illustrating the importance of understanding this index for predicting regional climate patterns.

5.1.29 Relative humidity (RH) is the comparison between actual air pressure and saturated air pressure. This relative humidity can describe the quantity of water vapor content in a particular location. RH data is obtained from the NASA website. The data presented in the following table is the average monthly RH of the activity site from June 2022 to May 2023.

Table 5-3 Average Monthly Relative Humidity (RH) of Kranggan Sub-district for the Period Juna 2022-May 2023

No.	Month	Average Relative Humidity (%)
1.	June	90.16
2.	July	90.02
3.	August	88.74
4.	September	88.31
5.	October	90.48
6.	November	90.98
7.	December	91.50
8.	January	91.40
9.	February	91.81
10.	March	89.35
11.	April	90.36
12.	May	90.01
Average		**90.26**

Source: DPRKPLH, 2023

5.1.30 Like air temperature, RH is also included as one of the climate elements that affect the distribution process of air pollutants. Low RH values will cause the concentration of pollutants in the atmosphere to increase. Low RH values are due to low actual air pressure so that pollutants do not allow them to move more widely in the air for dilution. As a result, pollutant levels remain high in a place in the air.

5.1.31 Information related to rainfall at the activity site was obtained from secondary data from BPS Temanggung Regency. Rainfall data for Kranggan Sub-District, Temanggung Regency in 2017-2021 is presented in the following table.

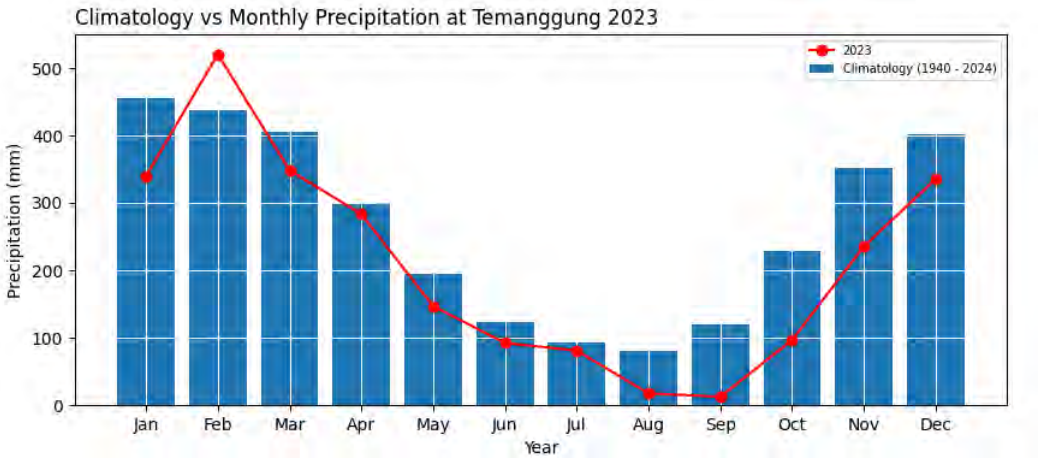
Table 5-4 Rainfall Data for Kranggan Sub-District 2017-2021

No.	Month	Rainfall (mm)				
		2017	2018	2019	2020	2021
1.	January	329	497	599	432	392
2.	February	374	292	518	332	398

No.	Month	Rainfall (mm)				
		2017	2018	2019	2020	2021
3.	March	216	484	610	347	407
4.	April	382	163	295	253.5	285
5.	May	106	108	118	336.5	74
6.	June	141	8	-	108.5	208
7.	July	28	-	-	69	46
8.	August	14	-	-	76.5	82
9.	September	60	-	-	39.5	151
10.	October	186	7	33	268	161
11.	November	358	259	105	182.5	525
12.	December	352	362	368	345.5	296
Total		**2,546**	**2,180**	**2,646**	**2,790.5**	**3,025**

Source: DPRKPLH, 2023

Table 5-5 Climatology vs Monthly Precipitation at Temanggung 2023



5.1.32 The first graph highlights the monthly precipitation patterns for Temanggung in 2023 relative to the long-term climatology (1940–2024). Typically, Temanggung experiences a distinct monsoonal rainfall regime, with high precipitation during the wet season (December–April) and low precipitation during the dry season (June–September). Climatological data indicate peak rainfall in January and a rapid decline through the mid-year dry season, followed by an increase in precipitation toward the end of the year, marking the onset of the subsequent wet season.

5.1.33 In contrast to the climatological average, the 2023 precipitation shows notable deviations. While January precipitation aligns closely with the long-term average, February 2023 experienced a substantial anomaly, with rainfall exceeding 500 mm—considerably higher than the climatological mean. This spike could be attributed to short-term meteorological disturbances, potentially linked to regional convective activity or tropical disturbances. Following this peak, a sharp decrease is observed, with rainfall levels declining steadily through the year, with a marked deficit during the dry season months of June, July, and August. This decline in rainfall, particularly lower than average during these months, suggests potential influences from broader climatic phenomena, possibly including El Niño conditions, which are known to suppress rainfall over this region.

5.1.34 By October, there is a modest increase in precipitation; however, the observed rainfall remains below the climatological average, suggesting a delayed onset of the wet season in 2023. Rainfall in November and December, while still lower than the historical average, begins to converge towards climatological norms, signaling a return to a more typical rainfall pattern

toward the end of the year. The overall behavior of the 2023 precipitation trend indicates a significant intra-annual variability, with early-year extremes and a prolonged dry season, which could have critical implications for water resource management and agriculture in the region.

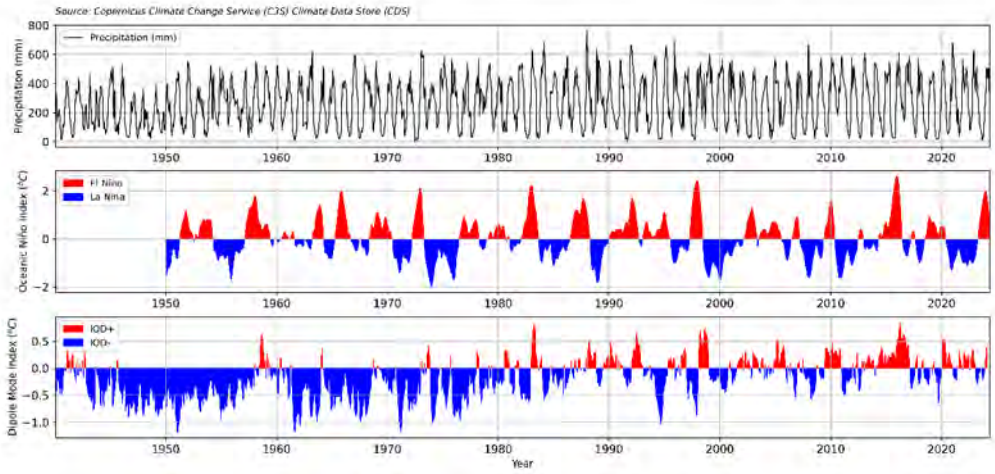
5.1.35 The second graph shows an extended historical context by correlating long-term precipitation trends with key climate drivers, particularly ENSO phases and the Indian Ocean Dipole. The top panel of the graph demonstrates the variability in monthly precipitation from the mid-20th century to the present, characterized by high interannual variability. While no definitive long-term trend in precipitation is evident, periods of increased or decreased rainfall often correspond to fluctuations in the Oceanic Niño Index (ONI) and the Dipole Mode Index (DMI), as depicted in the lower panels of the graph.

5.1.36 The middle panel shows the ENSO phases, with red bars indicating El Niño events and blue bars representing La Niña phases. El Niño phases, which are associated with warmer sea surface temperatures in the central and eastern Pacific, are generally linked to suppressed rainfall over much of Indonesia, including Temanggung. These dry conditions are evident during strong El Niño years such as 1997–1998, where significant negative anomalies in precipitation are observed. Conversely, La Niña phases, marked by cooler Pacific waters, often enhance rainfall in the region. Notably, during strong La Niña events, such as those in the 1970s and 2000s, there are corresponding periods of above-average precipitation.

5.1.37 The bottom panel depicts the influence of the IOD, with positive phases (IOD+) associated with reduced rainfall over Indonesia due to a westward shift of moisture, while negative phases (IOD-) typically enhance rainfall by driving more moist air over the region. Several periods of increased precipitation correlate with negative IOD phases, such as in the late 1990s and early 2010s, reinforcing the relationship between these climate drivers and regional precipitation variability.

5.1.38 Taken together, the historical data illustrate the complex interactions between regional precipitation and large-scale climatic phenomena. ENSO and IOD exert significant control over the interannual variability of precipitation in Temanggung, with El Niño and positive IOD phases generally leading to drier conditions, while La Niña and negative IOD phases are associated with wetter periods. The presence of both indices in determining rainfall highlights the compound effects of different climate systems in shaping the hydrological patterns of the region.

Table 5-6 Historical Air Temperature 1850-2020



5.1.39 This graph presents historical air temperatures (1850–2020) and future temperature projections (2020–2100) under various Shared Socioeconomic Pathways (SSPs). These scenarios include SSP1-2.6, SSP2-4.5, and SSP5-8.5, which represent different possible climate futures based on different levels of greenhouse gas (GHG) emissions and mitigation efforts.

5.1.40 The black line shows the historical air temperature trend in Temanggung from 1850 to 2020. During this period, temperatures fluctuated around 27°C to 28°C, with no significant long-term upward trend until the mid-20th century. However, by the late 20th century, a marked upward trend in temperatures was observed, consistent with a pattern of global warming driven by increasing concentrations of anthropogenic greenhouse gases. This trend became more pronounced after 1980, in line with accelerated industrialization and a corresponding increase in global carbon emissions.

5.1.41 Historical data show a gradual warming of about 1°C from pre-industrial levels to the present, consistent with global trends observed in other tropical regions. The post-2000 period, in particular, shows increasing temperature variability, with some years showing temperature spikes likely related to large-scale climate events such as El Niño, which typically bring warmer and drier conditions to Indonesia. This variability is likely an early sign of more pronounced changes in temperature conditions in the future under a range of emissions scenarios.

5.1.42 The red line represents the SSP1-2.6 scenario, which assumes aggressive global mitigation efforts to limit global warming to well below 2°C above pre-industrial levels, with an emphasis on achieving net-zero emissions by the mid-21st century. Under this scenario, temperature increases are relatively moderate, reaching around 30°C by the end of the century. The early to mid-21st century still sees variability in temperature, but the rate of increase slows significantly after 2050, suggesting that ambitious climate action can prevent extreme warming.

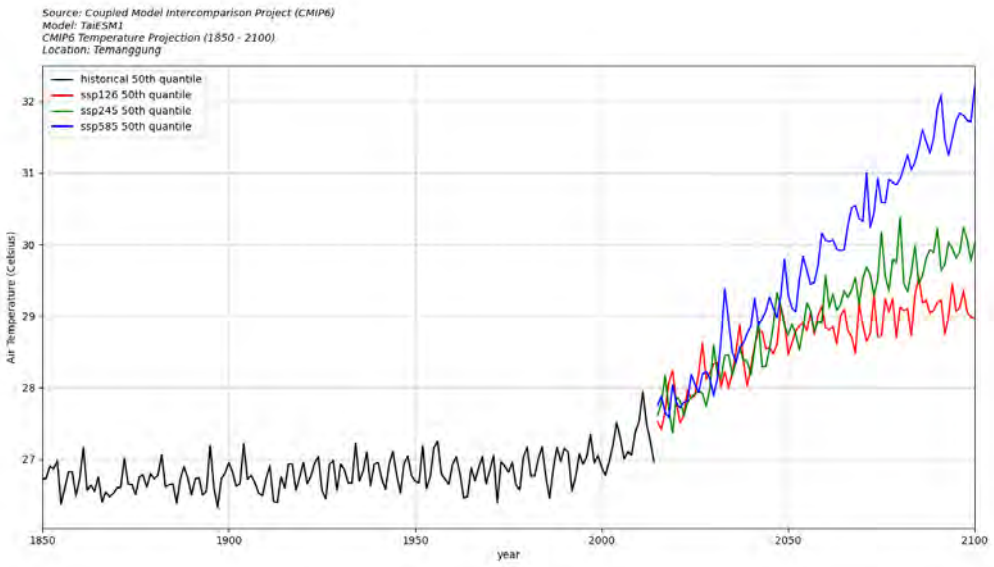
5.1.43 Despite this scenario's success in limiting temperature rise, it still projects a 2°C increase relative to historical averages. This suggests that even with strong mitigation efforts, Temanggung will experience warmer conditions compared to the 20th century. This increase could still have profound implications for local ecosystems, agriculture, and water resources, although the impacts would be significantly less severe than those predicted under higher emission scenarios.

5.1.44 The green line represents the SSP2-4.5 scenario, a middle-of-the-road projection in which some mitigation efforts are implemented, but global carbon emissions do not reach net-zero by the century's end. Under this scenario, the temperature increases more rapidly, reaching approximately 31°C by 2100. This scenario reflects a world where sustainable development is pursued but at a slower pace, resulting in moderate warming.

5.1.45 The blue line represents the SSP5-8.5 scenario, which assumes continued reliance on fossil fuels and minimal efforts to curb global carbon emissions. This pathway results in the most extreme warming, with temperatures reaching approximately 32°C by the end of the century. This represents a 5°C increase from historical averages, highlighting the catastrophic consequences of unmitigated climate change.

5.1.46 Under this scenario, the rate of warming accelerates dramatically after 2050, with frequent temperature spikes indicating increasingly volatile climate patterns. The implications for Temanggung under SSP5-8.5 are severe, including heightened risks of drought, agricultural failure, and public health crises related to extreme heat. The rapid and unchecked temperature rise would likely lead to widespread ecological disruption, with local flora and fauna potentially unable to adapt to such drastic changes. Additionally, the increased energy demand for cooling and the potential for crop failures could create socio-economic challenges, particularly for subsistence farmers.

Figure 5-6 Climate Projection Temanggung Area



Topography

5.1.47 The Temanggung Regency has varying relief, consisting of flat, nearly flat, gentle slopes, moderately steep, steep, and very steep areas. Based on the gradient, the Temanggung Regency is classified into four slope classes as follows:

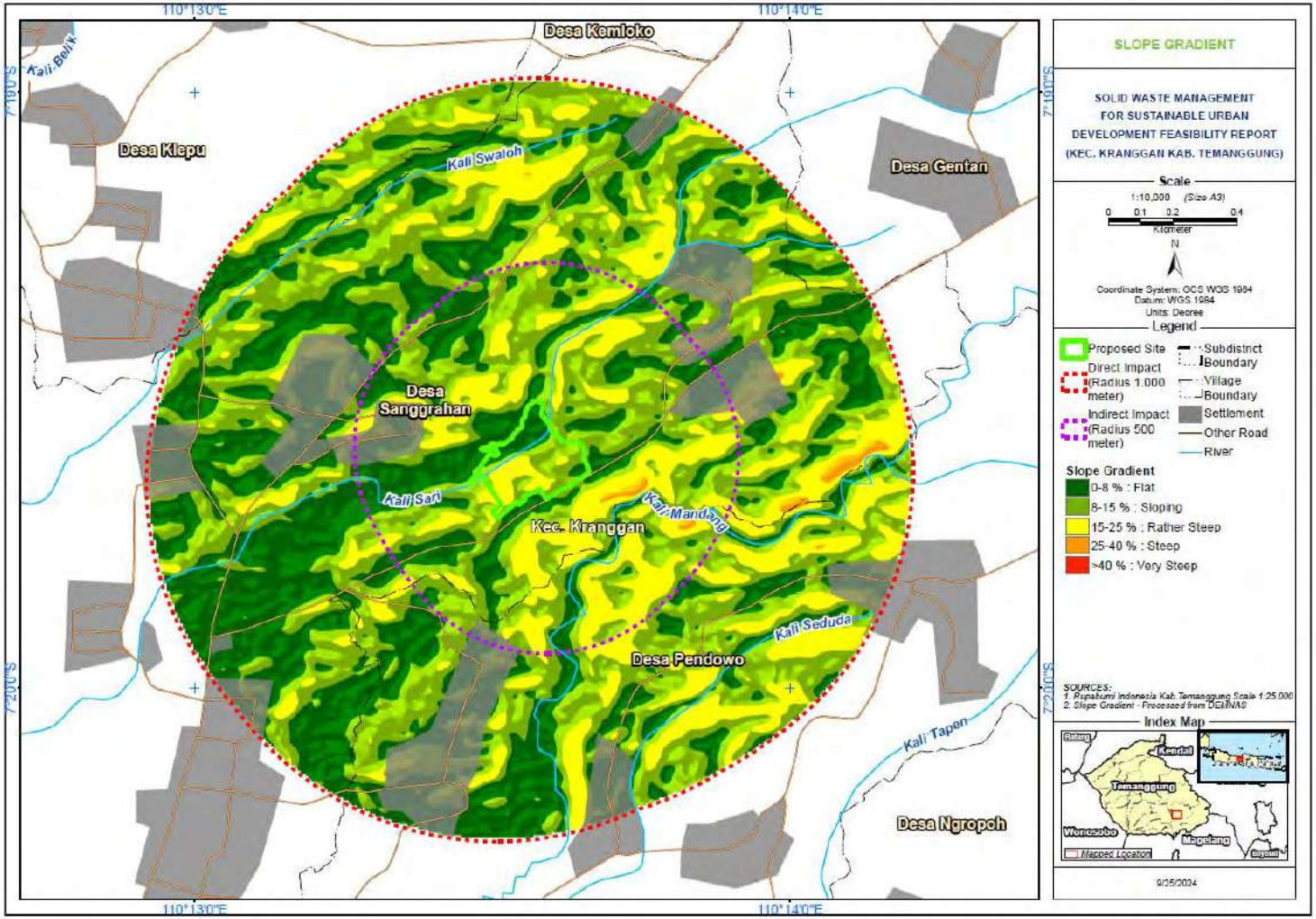
1. Slope class I with a gradient of 0–2%, covering an area of 50.90 hectares or 0.1% of the total area, distributed across parts of Candiroto and Bejen Districts.
2. Slope class II with a gradient of 2–15%, covering an area of 34,699 hectares or 40% of the total area, distributed across Bulu, Parakan, Tembarak, Kranggan, Pringsurat,

Kaloran, Kandangan, Temanggung, Candiroto, Jumo, Wonoboyo, Kledung, Bansari, Tlogomulyo, Kedu, and Bejen Districts.

3. Slope class III with a gradient of 15–40%, covering an area of 33,216 hectares or 38% of the total area, distributed across parts of Tretep, Wonoboyo, Ngadirejo, Tlogomulyo, Selopampang, Tembarak, Bulu, Kedu, Kandangan, Gemawang, Bejen, Parakan, Temanggung, Candiroto, Jumo, and Kledung Districts.
4. Slope class IV with a gradient of more than 40%, covering an area of 19,561 hectares or 22% of the total area, distributed across Kledung, Bansari, Bejen, Candiroto, Parakan, Bulu, Tlogomulyo, Pringsurat, Wonoboyo, Tretep, Tembarak, Jumo, and Gemawang Districts.

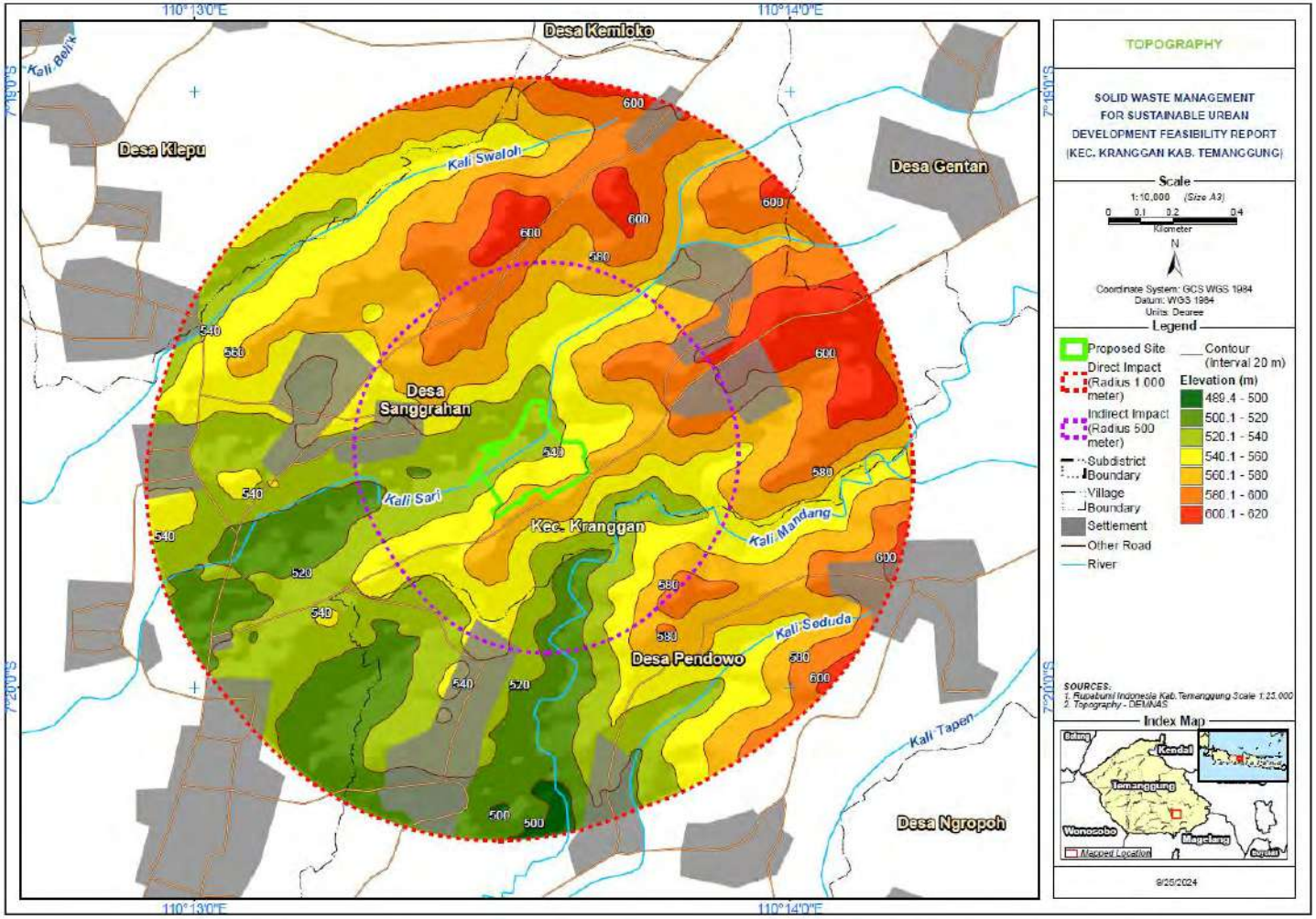
5.1.48 Based on the analysis of the digital elevation map of the study site and the field visit, it is observed that the project site is located at a slope gradient of 8 - 25% with the category of Sloping and Rather Steep above sea level. **Figure 5-8** presents the topography map showing the elevation of the project area is at 520 - 540 m above sea level.

Figure 5-7 Slope Gradient Map of Study Area



Source: Baseline Survey, August 2024

Figure 5-8 Topography Map of Study Area



Source: Baseline Survey, August 2024

Land Use

5.1.49 Land use in Temanggung Regency encompasses a variety of types, with dry land agriculture being the largest, covering 37,609.56 hectares or 42.81% of the total area. This land is primarily used for cultivating crops such as tobacco and vegetables. Irrigated rice fields cover 21,026.68 hectares or 23.93%, playing a crucial role in local food production, particularly rice. Plantations, covering 14,237.61 hectares or 16.21%, also contribute to the agricultural economy with commodities like coffee. Residential areas span 8,293.62 hectares or 9.44%, while forests, covering 6,239.22 hectares or 7.10%, provide essential environmental functions. Additionally, water bodies such as rivers and reservoirs account for 338.24 hectares or 0.38%, and industrial areas cover 110.58 hectares or 0.13%. The total land area of Temanggung Regency is 87,855.51 hectares.

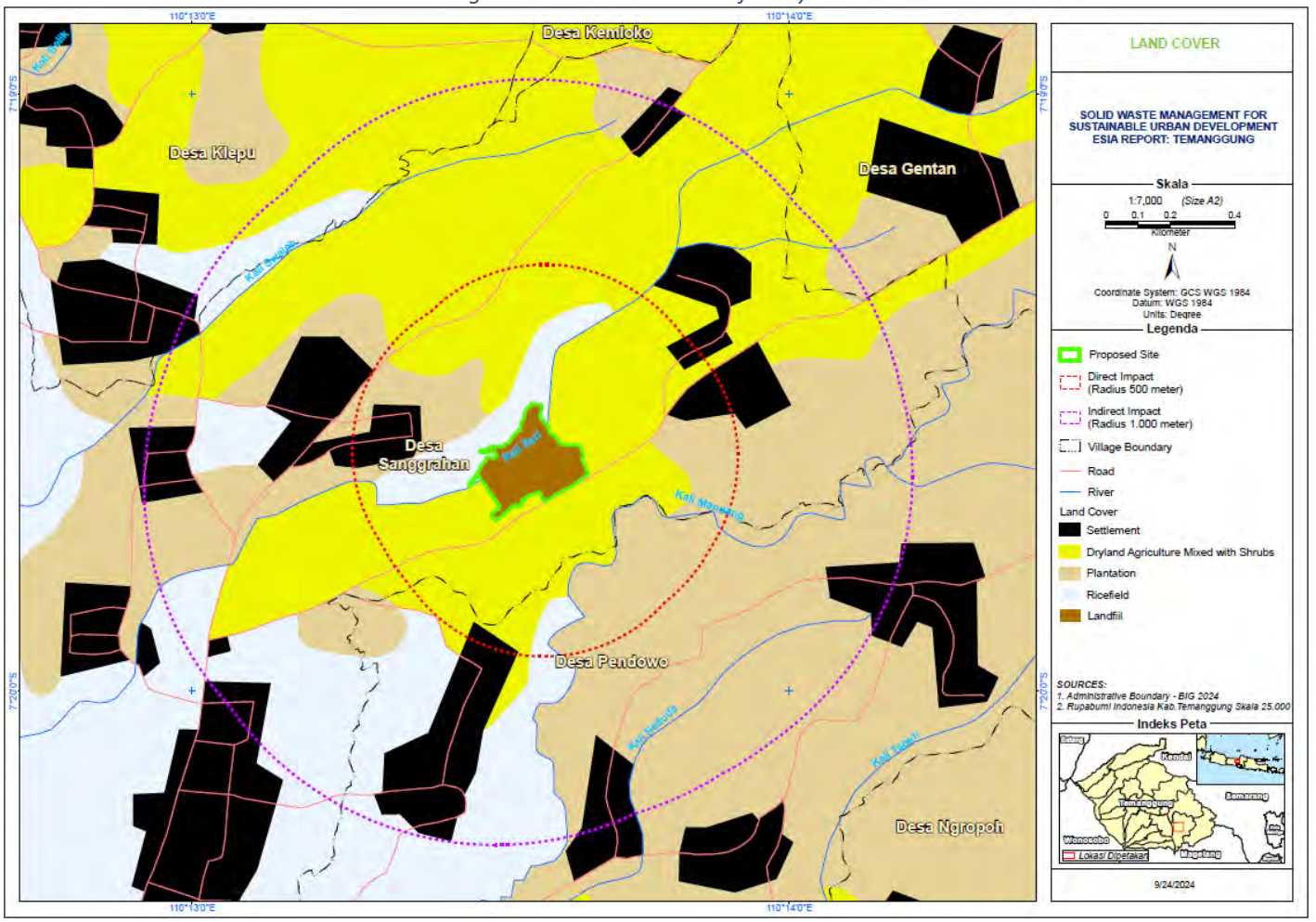
Table 5-7 Land Use of Temanggung Regency

No	Land Cover	Area (Ha)	Personates (%)
1	River/Reservoir/Dam/Freshwater	338,24	0,38
2	Forest	6.239,22	7,10
3	Plantation	14.237,61	16,21
4	Residential Area	8.293,62	9,44
5	Irrigated Rice Fields	21.026,68	23,93
6	Dry land agriculture	37.609,56	42,81
7	Industrial Area	110,58	0,13
Total		87.855,51	100,00

Source : Regional Regulation of Temanggung Regency No 2 of 2024 Concerning Environmental Protection and Management Plan Temanggung Regency 2024-2054

5.1.50 Land use around study is dominated by dryland agriculture, plantations, paddy fields, and settlements. Dryland agriculture used for the cultivation of tobacco and vegetable crops, which are the main commodities. Plantations in this area are often planted with perennial crops such as coffee, which support the local economy. Irrigated rice fields play an important role in rice production to meet the food needs of the community. The existence of the landfill requires good management to maintain the quality of soil and water used by the surrounding community.

Figure 5-9 Land Use of Study Area



Source: Baseline Survey, August 2024

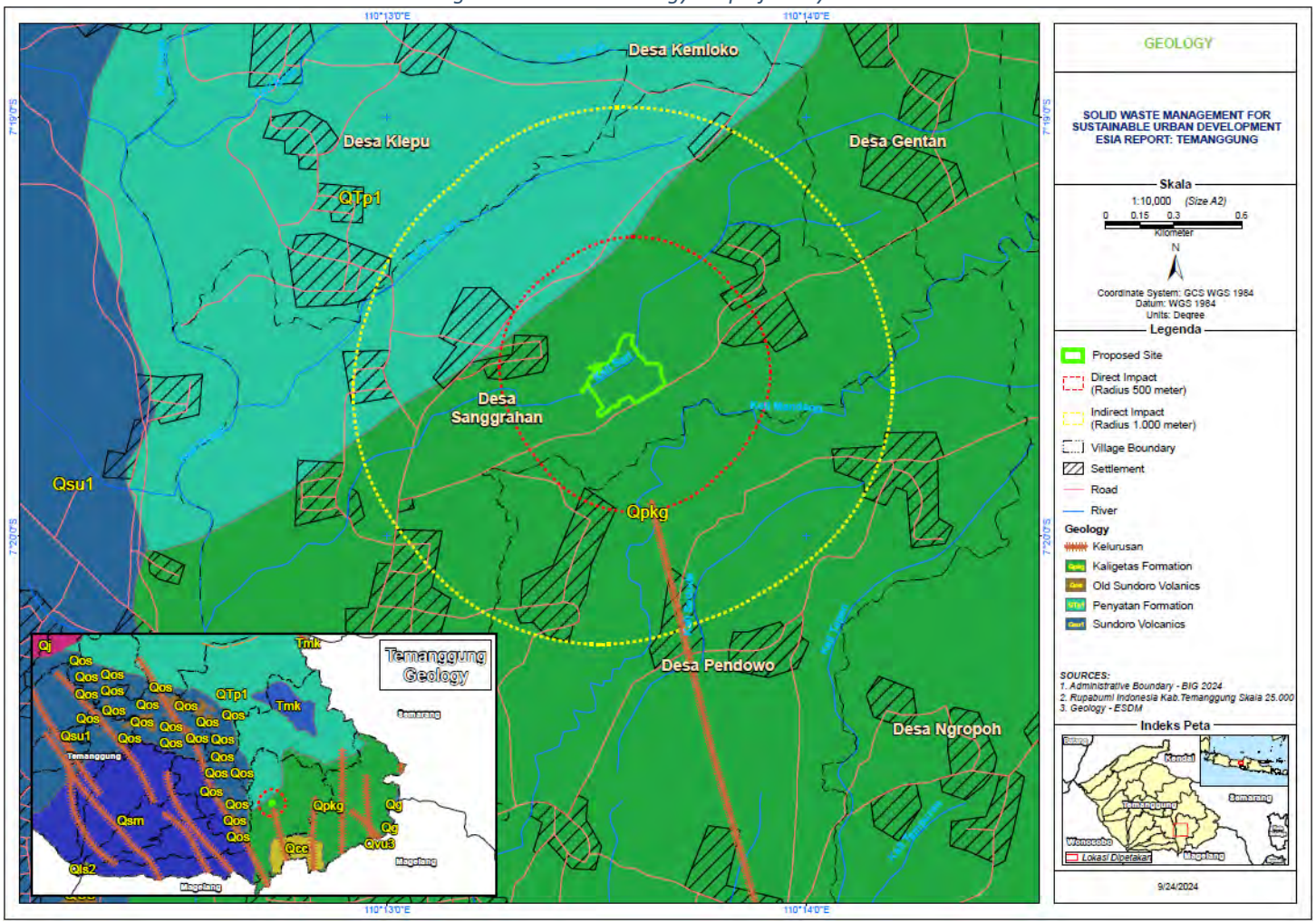
Geology

5.1.51 Temanggung Regency, located in the Sindoro and Sumbing mountains, has volcanic rock formations from both mountains. Based on the geological structure, the Temanggung Regency area can be grouped into 9 zones as follows:

1. The Sindoro Volcanic Rock with an area of 18,369 hectares (21.2%) is spread across parts of Bansari District, Ngadirejo District, part of Parakan District, part of Kledung District, part of Candiroto District, part of Jumo District, Kedu District, and Temanggung District.
2. The Sumbing Volcanic Rock with an area of 16,365 hectares (18.9%) is located in parts of Selopampang District, Tlogomulyo District, Bulu District, Tembarak District, part of Kledung District, part of Parakan District, part of Kedu District, and part of Temanggung District.
3. The Old Sindoro Volcanic Rock with an area of 1,360 hectares (1.6%) is located in parts of Kedu District, Jumo District, Kandangan District, Temanggung District, Parakan District, and Gemawang District.
4. The Gilipetung Volcanic Rock with an area of 477 hectares (0.6%) is located in parts of Pringsurat District.
5. The Jembangan Volcanic Rock with an area of 4,368 hectares (5%) is located in parts of Tretep District, Candiroto District, and Wonoboyo District.
6. The Merbabu Volcanic Rock with an area of 272 hectares (0.3%) is located in parts of Pringsurat District.
7. The Volcanic Cone Deposit with an area of 1,318 hectares (1.5%) is located in parts of Kranggan District and Pringsurat District.
8. The Kali Getas Formation with an area of 17,957 hectares (20.7%) is spread across parts of Bejen District, Tretep District, Candiroto District, Kaloran District, Kranggan District, Tembarak District, Pringsurat District, Temanggung District, and Selopampang District. The Kerek Formation with an area of 4,349 hectares (5%) is in parts of Gemawang District, Kaloran District, Kandangan District, Bejen District, and Candiroto District. Ambient Air.

5.1.52 The study site consists of the Kali Getas formation and the Penyatan formation. The Kali Gates formation is an important geological formation, consisting of sedimentary rocks such as sand, silt, and gravel deposited in a river or delta environment, resulting from volcanic activity around Mount Sindoro and Mount Sumbing. It consists of layers of volcanic rocks, including andesite, basalt and tuff, formed as a result of volcanic activity from Mount Sindoro and Mount Sumbing.

Figure 5-10 Geology Map of Study Area



Source: Baseline Survey, August 2024

Ambient Air

5.1.53 Ambient air quality data collection for the baseline monitoring has been conducted via primary data i.e. direct measurements in the field. The ambient air quality data is benchmarked against the World Bank Group (WBG) General EHS Guidelines for Ambient Air Quality Measurement and the Republic of Indonesia Government Regulation no. 22 of 2021 concerning Implementation of Environmental Protection and Management (Appendix VII). The air quality assessments at the sampling locations considers meteorological factors, namely wind direction and speed, air temperature, and air humidity.

5.1.54 The air quality sampling activity was carried out at four (4) locations in the vicinity of the sub-project. The locations were selected based on the criteria aimed to capture ambient air quality condition for the RDF project location and landfill. Sampling points are sited nearby the sub-project's sensitive receptors (for example, residential areas, schools, place of worship, etc.). Documentation of air quality sampling is shown below.

Figure 5-11 Air Quality Sampling Documentation





5.1.55 Ambient air quality samples were taken by circulating air using an air pump into an absorber solution for specific averaging period per parameter. Each reagent will identify one parameter being analysed, namely SO_2, NO_2, CO, HC and O_3. Dust particulates and Lead (Pb) were analysed using the gravimetric method which is captured by a High-Volume Sampler equipped with a filter paper. The list of parameters and analysis method utilised for the Ambient Air Quality Monitoring is depicted in **Table 5-8** below:

Table 5-8 Parameters and Analysis Method for Ambient Air Quality

No	Parameters	Measurement Time	GOI Standard[1)] (µg/m³)	WHO Guideline[2)] (µg/m³)	Method
1.	Sulphur Dioxide (SO_2)	1 hour	150		SNI 7119-7:2017
		24 hours	75	125 (IT-1)	
				50 (IT-2)	
				20 (Guideline)	
2.	Carbon Monoxide (CO)	1 hour	1000		6.4-IK-GQA-040
3.	Nitrogen Dioxide (NO_2)	1 hour	200	200 (Guideline)	SNI 7119-2:2017
		24 hours	65		
4.	Ozone (O_3)	1 hour	150		SNI 7119-2:2017
		8 hours	100	160 (IT-1)	
				100 (Guideline)	

No	Parameters	Measurement Time	GOI Standard[1)] (µg/m³)	WHO Guideline[2)] (µg/m³)	Method
5.	Non-methane Hydrocarbons (NMHC)	3 hours	160		SNI 7119.13:2009
6.	Dust particulate < 100µm (TSP)	24 hours	230		SNI 7119-3:2017
	Dust particulate < 10 µm (PM_{10})	24 hours	75	70 (IT-1)	SNI 7119.15:2016
				50 (IT-2)	
				30 (IT-3)	
				50 (Guideline)	
	Dust particulate < 2,5 µm ($PM_{2,5}$)	24 hours	55	75 (IT-1)	SNI 7119.15:2016
				50 (IT-2)	
				37,5 (IT-3)	
				25 (Guideline)	
7.	Lead l (Pb)	24 hours	2		SNI 7119-4:2017

Source:

1) Government Regulation no. 22/2021 Appendix VII on Ambient Air Quality Standard
2) International Finance Corporation (IFC), 2007. Environmental, Health, and Safety (EHS) Guidelines - General EHS Guidelines: Introduction

5.1.56 The results from the air quality analysis are compared with standard values in the WBG General EHS Guidelines for Ambient Air Quality and the national quality standards applicable to ambient air quality referring to Government Regulation No. 22 of 2021 (Appendix VII). The results are shown in **Table 5-9**.

Table 5-9 Results of the Baseline Ambient Air Quality

No	Parameters	Measurement Time	Results				GOI Standard	WHO Standard
			AQ1	AQ2	AQ3	AQ4		
1.	Sulphur Dioxide (SO_2)	1 hour	<20	<20	<20	26	150	
2.	Carbon Monoxide (CO)	1 hour	2,821	277	1022	<185	10,000	
3.	Nitrogen Dioxide (NO_2)	1 hour	42.2	18.6	28.5	47.3	200	200 (Guideline)
4.	Ozone (O_3)	1 hour	18.4	20.4	19.6	30.5	150	
5.	Non-methane Hydrocarbons (NMHC)	3 hours	<5.23	<5.23	<5.23	<5.23	160	
6.	Dust particulate < 100µm (TSP)	24 hours	74.2	76.5	57.6	83.1	230	
	Dust particulate < 10 µm (PM_{10})	24 hours	28.3	20.4	19.4	28.4	75	70 (IT-1)
								50 (IT-2)
								30 (IT-3)
								50 (Guideline)
	Dust particulate < 2,5 µm ($PM_{2,5}$)	24 hours	19.5	13.2	10.3	18.5	55	75 (IT-1)
								50 (IT-2)
								37,5 (IT-3)
								25 (Guideline)
7.	Lead l (Pb)	24 hours	<0.01	<0.01	<0.01	<0.01	2	

Source: Baseline Survey, August 2024

5.1.57 **Table 5-9** shows the air quality results for sampling locations AQ1, AQ2, AQ3 and AQ4 which was tested against the given parameters. The results obtained were found to be within the stipulated limits of the national and international requirements for all sampling locations.

Odour

5.1.58 The impression of odour is different for each odour parameter. The spicy impression and sharp odour piercing the nose are caused by ammonia. The impression of smelling like rotten vegetables is generated by the presence of methyl mercaptan and methyl sulphide. The hydrogen sulphide parameter gives the impression of an odour like rotten eggs and styrene has a sharp odour impression like the smell of plastic pipes or footwear making materials.

5.1.59 The equipment used for the analysis of odour was a gas chromatograph and spectrophotometer. Primary data samples of odour were collected and analysed by KAN accredited laboratories. The result was compared to the national odour level standards refer to Decree of The Minister of Environment No. 50 of 1996. Types of odour parameters and the methodology can be seen in table below.

Table 5-10 Parameters and Method Analysis for Odour

No.	Parameters	Unit	Quality Standard*	Method
1	Ammoniac (NH_3)	ppm	2	Indophenol method
2	Methyl mercaptan (CH_3SH)	ppm	0.002	Gas absorption
3	Hydrogen sulfide (H_2S)	ppm	0.02	a. Mercury thiocyanate
				b. Gas absorption
4	Methyl sulfide $(CH_3)_2S$	ppm	0.01	Gas absorption
5	Stirena ($C_6H_5CH=CH_2$)	ppm	0.1	Gas absorption

Source: * Decree of the Minister of Environment No. 50 Year 1996 concerning Odour Level Standards

5.1.60 The results of odour analysis from baseline condition are shown in table below.

Table 5-11 Results of the Baseline Odour Quality

No.	Parameters	Unit	Results				Quality Standard
			AQ1	AQ2	AQ3	AQ4	
1	Ammoniac (NH_3)	ppm	2	0.31	0.046	0.027	2
2	Metil mercaptan (CH_3SH)	ppm	<0.001	<0.001	<0.001	<0.001	0.002
3	Hydrogen sulfide (H_2S)	ppm	0.003	<0.001	0.009	0.005	0.02
4	Methyl sulfide $(CH_3)_2S$	ppm	<0.01	<0.01	<0.01	<0.01	0.01
5	Stirena ($C_6H_5CH=CH_2$)	ppm	0.000092	0.000051	0.00059	0.000006	0.1

Source: Baseline Survey, August 2024

5.1.61 The table above shows the odour analysis results for sampling locations AQ1, AQ2, AQ3 and AQ4 which was tested against the given parameters. The results obtained were found to be within the stipulated limits of the national requirements for all sampling locations.

Noise

5.1.62 The noise sampling points were located at the same location as the ambient air quality sampling points. Typical monitoring periods sufficient for statistical analysis are 48 hours with the use of noise monitors capable of logging data continuously over this time period, hourly, or more frequently. Noise monitors were located approximately 1.5 m above the ground and no closer than 3 m to any reflecting surface i.e. wall. In general, the noise level limit is represented by the background or ambient noise levels that would be present in the absence of the facility or noise source(s) under investigation.

5.1.63 The sound level meter used was the type 2 Sound Level Meter (SLM) which is a general-purpose model. The SLM must have a calibration certificate from an authorized institution. In addition to guaranteeing the accuracy of noise measurements, before each measurement, the sensitivity of the SLMs were checked using a portable Sound Calibrator (with valid Sound

Calibrator calibration certificates) and any variations in sensitivity over the measurement sessions were noted.

5.1.64 The noise level limit in Indonesia is standardized by Decree of the Minister of Environment No. 48 of 1996. In the Decree, noise levels are limited depending on the usage of the area. For example, in residential areas, the noise level limit is set at 55 dBA with 3 dBA tolerance. The noise baseline analysis was refer to the national standard as stated in the Decree (shown in **Table 5-12** below) and to the international standards refer to IFC World Bank Environmental, Health, and Safety Guidelines – Noise Management criteria (shown in **Table 5-13**).

Table 5-12 The National Standard of Noise Level Limit

No	Area	Noise Level (dBA)
1	Residential Area	55
2	Trade and Services	70
3	Offices	65
4	Green open spaces	50
5	Industrial areas	70
6	Government offices and public places	60
7	Recreational area	70
8	Airport, train station and harbour	70
9	Cultural sites	60
10	Hospitals and other health services	55
11	School and other educational services	55
12	House of worship	55

Source: Decree of the Minister of Environment No. 48 of 1996 on Noise Level

Table 5-13 The international Standard of Noise Level Limit

No	Receptor	Unit	One Hour Lage (Dba)	
			Day Time 7:00 – 22:00	Night Time 22:00 – 7:00
1	Residential, institutional, education	dBA	55	45
2	Industrial, commercial	dBA	70	70

Source: IFC World Bank EHS Guidelines – Noise Management

5.1.65 Analysis of noise is carried out by comparing the measurement result with the national and international noise level limit. For the national standard, the limit depends on the usage of the area. AQ1 was in the landfill, included in the public places category (noise level limit is 60 dBA). Meanwhile, the remaining sample points were in the residential area (noise level limit is 55 dBA). The results of noise measurement in baseline condition are shown in table below.

Table 5-14 Result of the Baseline Noise Level Analysis

		AQ1	AQ2	AQ3	AQ4	WB EHS Standard
GOI Standard (dBA)		60	55	55	55	
First Day	daytime noise	54.4	51.0	50.7	50.8	55
	nighttime noise	42.4	40.8	41.4	41.0	45
	24h noise	52.9	49.7	49.6	49.5	
Second day	daytime noise	53.8	50.7	49.9	49.9	55
	nighttime noise	41.9	41.9	41.3	40.9	45
	24h noise	52.3	49.6	48.8	48.8	

Source: Baseline Survey, August 2024

5.1.66 Table above shows the noise analysis for all sampling locations meets the national and international standard.

Vibration

5.1.67 The vibration sampling points were located at the same location as the ambient air quality sampling points. Vibration level data were collected directly in the field by recording the vibration level at each sampling location using vibration meter. These data records were analysed statistically to obtain average values for vibration levels at a location. Analysis of vibration was carried out by comparing the result with the Quality Standards of Minister of Environment Decree No. 49/1996 concerning Vibration Level Standards as presented in **Table 5-15**.

Table 5-15 Mechanical Vibration Level Standards based on Damaged Impact

Vibration Parameter	Unit	Frequency (Hz)	Vibration Limit, Peak, Mm/S			
			Category A	Category B	Category C	Category D
- Vibration Speed	mm/s	4	< 2	2 - 27	> 27 – 140	> 140
		5	< 7.5	< 7.5 - 25	> 25 – 130	> 130
		6.3	< 7	<7 - 21	> 21 – 110	> 110
		8	< 6	< 6 - 19	> 19 – 100	> 100
- Frequency	Hz	10	< 5.2	< 5.2 - 16	> 16 – 90	> 90
		12.5	< 4.8	< 4.8 - 15	> 15 – 80	> 80
		16	< 4	< 4 - 14	> 14 – 70	> 70
		20	< 3.8	< 3.8 - 12	> 12 – 67	> 67
		25	< 3.2	< 3.2 - 10	> 10 – 60	> 60
		31.5	< 3	< 3 - 9	> 9 – 53	> 53
		40	< 2	< 2 - 8	> 8 – 50	> 50
		50	< 1	< 1 - 7	> 7 – 42	> 42

Source: KepMenLH no. 49 / 1996 on Vibration Level
Remarks:
Category A : does not cause damage
Category B : possible cracking of the plaster (crack/ slip of the plaster on load-bearing walls (in special cases))
Category C : possible damage to structural components of the load-bearing wall
Category D : damage to the load-bearing wall

5.1.68 The results of vibration analysis in baseline condition are shown in the table below.

Table 5-16 Results of Vibration Analysis

No.	Sampling Locations	Unit	Vibration (mm/s)	Vibration Level Standard (mm/s)
1	AQ 1	Mm per second	0.5	< 2
2	AQ 2	Mm per second	0.1	< 2
3	AQ 3	Mm per second	0.1	< 2
4	AQ 4	Mm per second	0.2	< 2

Source: Baseline Survey, August 2024

5.1.69 Table above shows the vibration analysis for all sampling locations which was measured using direct method for the vibration rate. The results obtained were found to be under the stipulated limits of the national requirements.

Groundwater

5.1.70 Groundwater samples were collected at 2 monitoring wells within the landfill and 2 community wells around the landfill area. The selected community wells were based on the potential to be affected by sub-project activities. Location of the groundwater sampling points is shown in **Figure 5-12**.

5.1.71 The sampling method used for groundwater quality analysis is the Indonesian National Standard (SNI 6989.58: 2008) concerning Water and Wastewater - Part 57: Sampling Methods

for Surface Water and Indonesian National Standard (SNI 6989.58: 2008) concerning Water and Wastewater - Part 58: Methods for Groundwater Sampling. Groundwater quality parameters will be measured in situ and ex-situ. In-situ water quality parameters were obtained using a portable multi-probe meter system, while ex-situ parameters were collected through sampling and sent to an accredited laboratory for analysis. Groudnwater sampling activity was documented as shown in figure below.

Figure 5-12 Groundwater Sampling Activity Documentation





5.1.72 The ground water quality parameters taken are referred to the Minister of Health Regulation No. 2 of 2023 concerning Implementing Regulations of Government Regulation Number 66 of 2014 concerning Environmental Health (**CHAPTER II: SBMKL of Water Media for Hygiene and Sanitation Purposes)** and Minister of Environment and Forestry Regulation No. P.59/Menlhk/Setjen/Kum.1/7/2016 concerning Leachate Quality Standards for Businesses and/or Activities Waste Processing, Appendix II Parameters of Ground Water Quality to be Monitored in Monitoring Wells/Test Wells. The groundwater quality parameters and analysis method are presented in **Table 5-17** below.

Table 5-17 Groundwater Quality Parameters and Analysis Methods

No	Parameters	Quality Standard		Unit	Method
A	PHYSICS				
1	Odour	No odour	No odour	-	Organoleptic
2	Colour	15	10	TCU	7.2/IK/GQA/WQ/046
3	Total Dissolved Solids, TDS	500	<300	mg/L	SNI 6989.27:2019
4	Turbidity	5	<3	NTU	6.4/IK/GQA/027
5	Taste	No taste	-	-	Organoleptic
6	Temperature	Air temperature ± 3	Air temperature ± 3	-	SNI 06-6989.23:2005
B	CHEMICAL				
1	pH	6.5 - 8.5	6.5 - 8.5	-	SNI 6989.11:2019
2	Florida, F^-	1.5	-	mg/L	SNI 06-6989.29-2005
3	Nitrogen, Nitrate as N (NO_3-N)	10		mg/L	7.2/IK/GQA/WQ/043
4	Nitrogen, Nitrite as N (NO_2-N)	1	3	mg/L	SNI 06-6989.9-2004
5	Chrome, Hexavalent, Cr^{6+}	0.05	-	mg/L	ASTM D1687-86

No	Parameters	Quality Standard		Unit	Method
6	Cyanide, CN	0.1	0.01	mg/L	7.2/IK/GQA/WQ/058
7	Total hardness as $CaCO_3$	500	-	mg/L	SNI 06-6989.29-2005
8	Sulfate, SO_4	400	-	mg/L	SNI 6989.20:2019
9	Chloride, Cl^-		-		SNI 6989.19:2009
10	Hydrogen Sulphide, H_2S		-		SNI 6989.70:2009
C	METALS		-		
1	Mercury, Dissolved Hg	0.001		mg/L	SNI 6989-78:2019
2	Arsenic, As Dissolved	0.05	-	mg/L	SNI 6989-81-2018
3	Cadmium, Cd Dissolved	0.005	-	mg/L	SNI 06-6989.38-2005 (GFA)
4	Selenium, Se Dissolved	0.01	-	mg/L	SNI 6989-83:2018 (Hydrid)
5	Iron, Fe Dissolved	0.3	-	mg/L	SNI 6989.84:2019 (AAS)
6	Manganese, Mn Dissolved	0.4	0.2	mg/L	SNI 6989.84:2019 (AAS)
7	Zinc, Zn Dissolved	15	0.1	mg/L	SNI 6989.84:2019 (AAS)
8	Lead, Pb Dissolved	0.05	-	mg/L	SNI 6989.46:2009
9	Barium, Ba Dissolved*		-		SNI 6989.84:2019 (AAS)
10	Copper, Cu Dissolved*	0.2	-	mg/L	SNI 6989.84:2019 (AAS)
11	Aluminum, Al Total*		-		SNI 06-6989.36-2005
12	Silver Ag Total		-		
13	Sodium, Na		-		
D	MICROBIOLOGY*		-		
1	E. Coli	0		CFU/100 mL	7.2/IK/GQA/MQ/021
2	Total Coliform	50	0	CFU/100 mL	7.2/IK/GQA/MQ/022
			0		

Source:
Minister of Health Regulation No. 2 of 2023 and
Minister of Environment and Forestry Regulation No. P.59/Menlhk/Setjen/Kum.1/7/2016

The result of groundwater quality analysis as a baseline condition of the Sub-project is shown in **Table 5-18**. The table below shows the groundwater analysis results for sampling locations GW1, GW2, GW3, and GW4, which was tested against the given parameters. The results obtained were found to be within the stipulated limits of the local requirements for all sampling locations.

Table 5-18 Result of Groundwater Quality Analysis

No	Parameters	Unit	Results				Quality Standard	SBMKL
			GW 1	GW 2	GW3	GW 4		
A	PHYSICAL							
	Depth	m	4.5	1.5	5	4		
1	Odour	-	No odour	No odour	No odour	No odour	No odour	No odour
2	Colour	TCU	2	< 1.2	4	2	15	10
3	Total Dissolved Solids, TDS	mg/L	60	28	79	60	500	<300
4	Turbidity	NTU	0.4	0.19	0.66	0.49	5	<3
5	Taste	-	No taste	No taste	No taste	No taste	No taste	-
6	Temperature	-	28.9	28.8	29.2	29	Air temperature ± 3	Air temperature ± 3
B	CHEMICAL							
1	pH	-	6.9	7.1	7.1	6.9	6.5 - 8.5	6.5 - 8.5
2	Florida, F^-	mg/L	0.025	0.018	0.033	0.020	1.5	-
3	Nitrogen, Nitrate as N (NO_3-N)	mg/L	0.010	0.008	0.029	0.005	10	
4	Nitrogen, Nitrite as N (NO_2-N)	mg/L	0.0050	0.0020	0.016	0.019	1	3
5	Ammoniacal Nitrogen NH_3-N	mg/L	Not available	Not available	Not available	Not available	-	-
6	Chrome, Hexavalent, Cr^{6+}	mg/L	<0.003	< 0.003	0.0030	< 0.003	0.05	0.01
7	Cyanide, CN	mg/L	0.0016	< 0.001	0.029	< 0.001	0.1	-
8	Total hardness as $CaCO_3$	mg/L	9.56	7.56	16.20	11.2	500	-
9	Sulfate, SO_4	mg/L	20.6	15.2	46.2	38.2	400	-
10	Chloride, Cl^-	mg/L	8.56	5.98	18.8	15.6		-
11	Hydrogen Sulphide, H_2S	mg/L	<0.001	< 0.001	< 0.001	< 0.001		-
C	METALS							
1	Mercury, Dissolved Hg	mg/L	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.001	-
2	Arsenic, As Dissolved	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.05	-
3	Cadmium, Cd Dissolved	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	0.005	-
4	Selenium, Se Dissolved	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.01	-
5	Iron, Fe Dissolved	mg/L	< 0.013	< 0.013	< 0.013	< 0.013	0.3	0.2
6	Manganese, Mn Dissolved	mg/L	< 0.007	< 0.007	< 0.007	< 0.007	0.4	0.1
7	Zinc, Zn Dissolved	mg/L	< 0.004	< 0.004	< 0.004	< 0.004	15	-
8	Lead, Pb Dissolved	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	0.05	-
9	Barium, Ba Dissolved*	mg/L	< 0.277	< 0.277	< 0.277	< 0.277		-
10	Copper, Cu Dissolved*	mg/L	< 0.006	< 0.006	< 0.006	< 0.006	0.2	-
11	Aluminum, Al Total*	mg/L	< 0.1	< 0.1	< 0.1	< 0.1		-
12	Silver Ag Total	mg/L	< 0.003	< 0.003	<0.003	< 0.003		-
13	Sodium, Na	mg/L	Not available	Not available	Not available	Not available		-
D	MICROBIOLOGY*							

No	Parameters	Unit	Results				Quality Standard	SBMKL
			GW 1	GW 2	GW3	GW 4		
1	E. Coli	CFU/100 mL	0	0	0	0	0	0
2	Total Coliform	CFU/100 mL	0	0	0	0	50	0

Source: Baseline Survey, August 2024

5.1.73 Hydrogeological conditions in Temanggung Regency mostly have productive aquifer characteristics with a wide distribution. The results of groundwater quality measurements show the condition of groundwater quality in the study area is still below the quality standard, therefore it is still utilized by the surrounding community. Keranggan district is a project development location and has productive aquifers. The results of groundwater flow direction mapping show the direction of groundwater flow towards the northwest, the groundwater flow direction map can be seen in **Figure 5-13**.

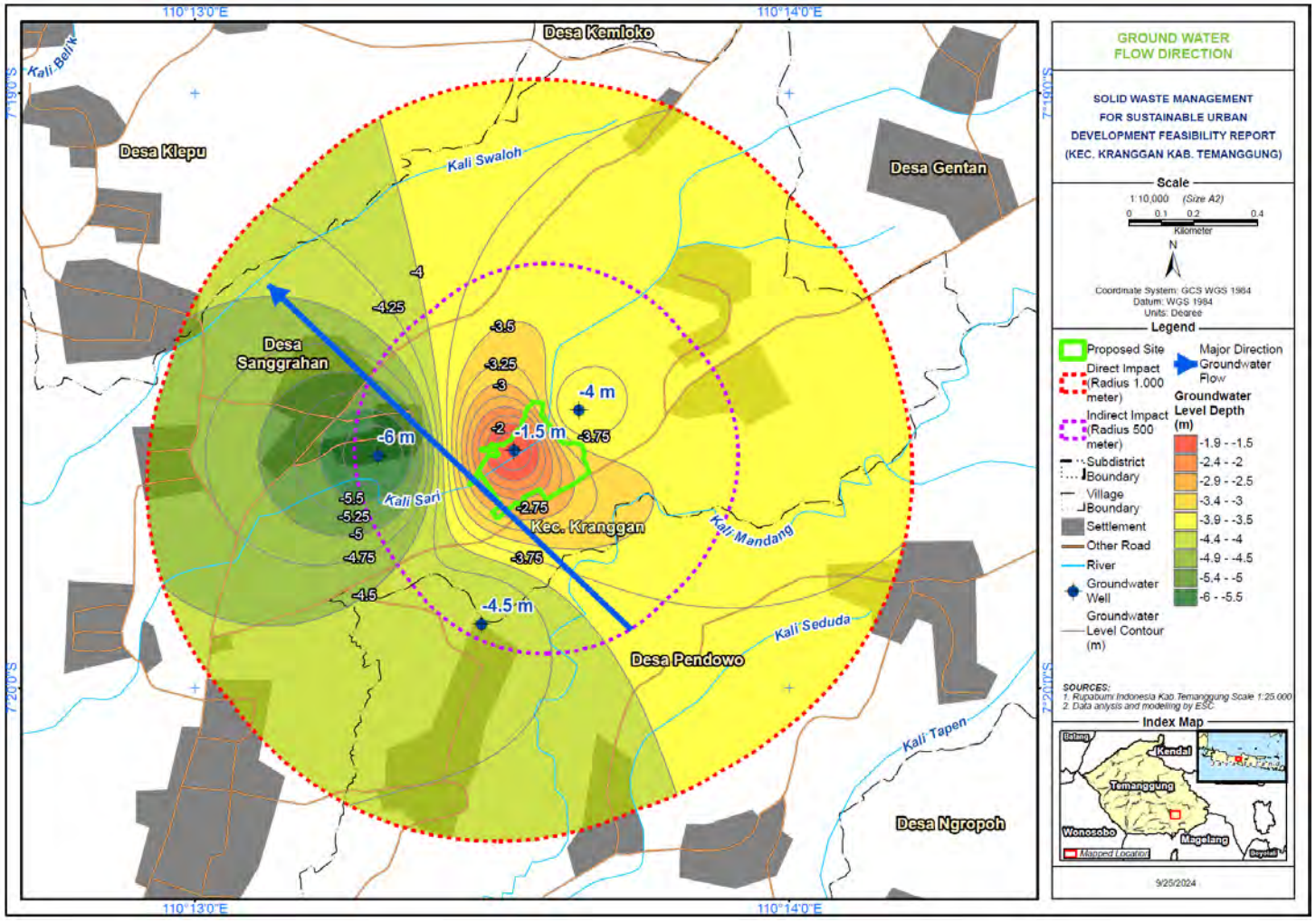
5.1.74 As a comparison, DPRKPLH (Dinas Perumahan Rakyat dan Kawasan Permukiman dan Lingkungan Hidup) which the responsible environmental agency in Temanggung Regency has monthly monitoring data for GW2 sampling point. However, the parameter was limited to 6 parameters and the data was compared to the domestic wastewater quality standard as stated in the Ministry of Environmental and Forestry Regulation No. 68 of 2016. The monitoring data of the groundwater quality from June 2022 until May 2023 is shown in **Table 5-19**. Based on the data, all parameters **were found to be within the stipulated limits.**

Table 5-19 Monitoring Well Analysis Result of June 2022 to May 2023

No	Parameter	Unit	Quality Standard	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023
A	Physical														
1	Odour	-	No odour	Odour	Odour	No odour	No odour	No odour	No odour	No odour	No odour	No odour	No odour	-	No odour
2	Total Dissolved Solid, TDS	mg/L	1000	186	194	210	184	190	174	184	156	180	159	-	141
3	Taste	-	No taste	No taste	No taste	No taste	No taste	No taste	No taste	No taste	No taste	No taste	No taste	-	No taste
4	Temperature	C	Air temperature $\pm$ 3	23	23	24	24	25	24.5	25	24	24	23	-	25
B	Chemical														
1	pH	-	6.5-8.5	7.1	7.14	7.2	7.15	6.98	7.02	7.13	7.08	6.19	6.33	-	6.5
2	Iron, Fe	mg/L	1	1.38	0.24	0.42	0.17	0.32	-	-	-	-	-	-	-

Source: DPRKPLH, 2023

Figure 5-13 Ground Water Flow Direction Map



Source: Baseline Survey, August 2024

Leachate

5.1.75 TPA Sanggrahan has Leachate Treatment Plant (LTP) contained of sediment ponds. However, the LTP is not functioning properly that could pollute environment. To check the leachate quality, leachate sampling was conducted from 4 sample points, namely inlet (AL-1), outlet (AL-2), spilled leachate (AL-3), and leachate channel (AL-4).

5.1.76 The leachate sampling method was referred to the Indonesian National Standard (SNI 6989.57:2008) on Water and Liquid Waste. Leachate was collected with a dipper then moved to a sample bottle, preserved, and stored in a cool box. The samples were labelled based on the sampling point, and then the samples were sent to an accredited laboratory accredited by the National Accreditation Committee (KAN). Parameters and Methods of Analysis for Leachate Water Quality is presented in table below. Documentation of leachate sampling is shown in

Table 5-20 Leachate Quality Parameters and Analysis Method

No.	Parameters	Unit	Analysis Method	Quality Standard
1	pH	mg/L	SNI 6989.11:2019	6-9
2	BOD	mg/L	SNI 6989.72:2009	150
3	COD	mg/L	SNI 6989.2:2019	300
4	TSS	mg/L	SNI 6989.3-2019	100
5	Total N	mg/L	Addition	60
6	Mercury	mg/L	IKM.KHT-92 (Mercury Analyzer)	0.005
7	Total Cadmium	mg/L	SM Ed.23rd 3120 B, 3030 E-2017	0.1

Source: Minister of Environment and Forestry Regulation No. P.59/Menlhk/Setjen/Kum.1/7/2016 Leachate Quality Standards for Businesses and/or Activities at Waste Final Processing Sites Appendix I

Figure 5-14 Documentation of Leachate Sampling Activity





5.1.77 **The results from the leachate analysis were compared** to the Indonesian National Standard (SNI 6989.57:2008) on Water and Liquid Waste, with reference to the Minister of Environment and Forestry Regulation No. P.59/Menlhk/Setjen/Kum.1/7/2016 Leachate Quality Standards for Businesses and/or Activities at Waste Final Processing Sites Appendix I. The results of the leachate analysis were found to comply to the stipulated limits of the national regulations for all parameters. The leachate analysis results are shown in table below.

Table 5-21 Result of Leachate Quality Analysis

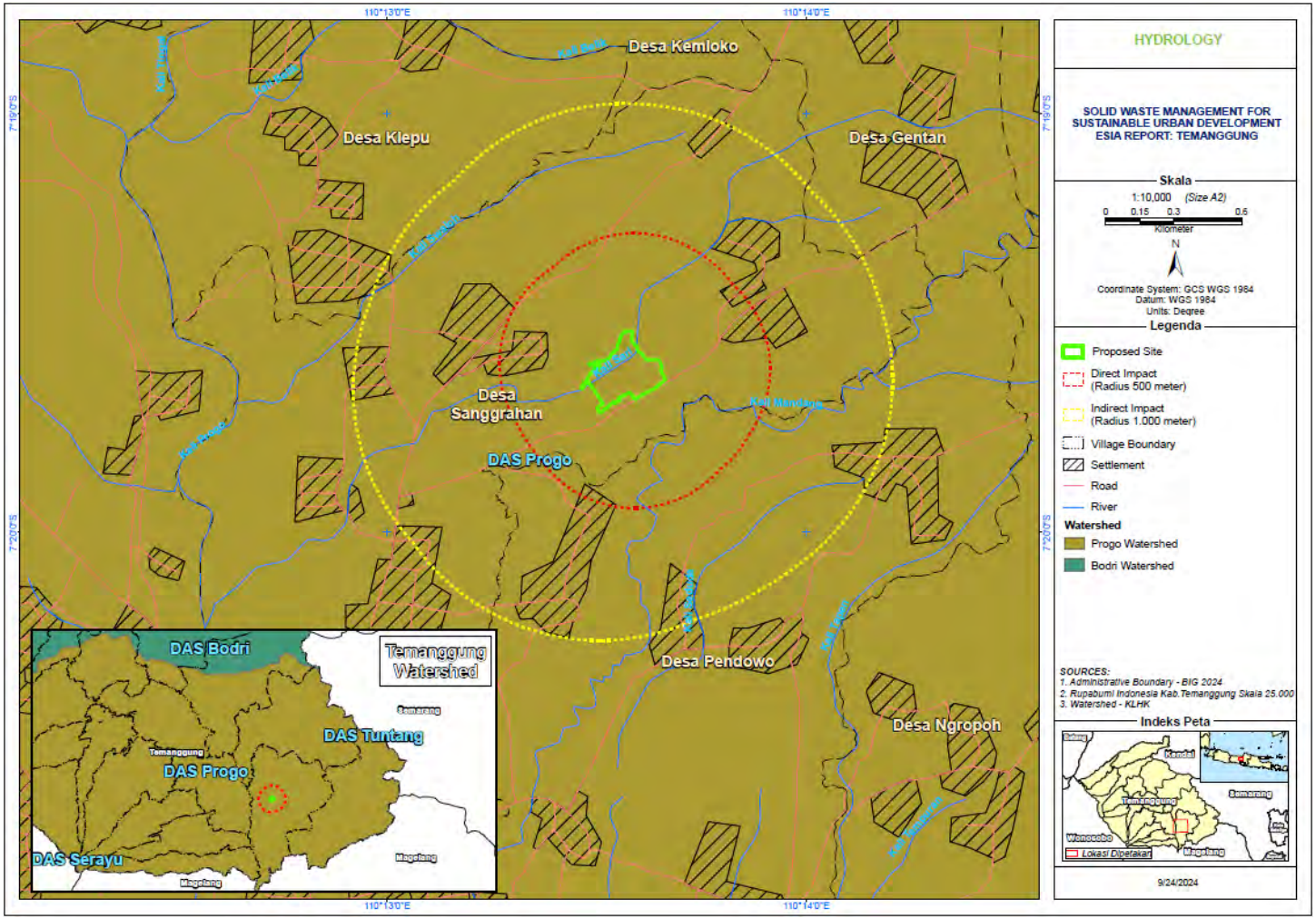
No	Parameters	Unit	Results				Quality Standard
			AL 1	AL 2	AL3	AL 4	
A	Physic						
1	Temperature	-	30	29	31	30	38
2	Total Dissolved Solids, TDS	mg/L	160	133	150	166	2000
3	Total Suspended Solids, TSS	mg/L	39	28	33	40	200
B	Chemical						
1	pH	-	6.9	6.7	6.9	6.5	6 - 9
2	Chrome, Hexavalent, Cr^{6+}	mg/L	0.010	0.006	0.012	0.049	0.1
3	Cyanide, CN	mg/L	0.009	0.005	0.016	0.020	0.05
4	Sulfide, S^{2-}	mg/L	0.012	0.008	0.010	0.012	0.05
5	Florida, F^-	mg/L	0.050	0.028	0.040	0.056	2
6	Chlorin, Cl_2	mg/L	0.029	0.030	0.032	0.040	1
7	Ammoniacal Nitrogen NH_3-N	mg/L	0.028	0.045	0.052	0.069	1
8	Nitrogen, Nitrate as N (NO_3-N)	mg/L	0.029	0.025	0.028	0.040	20
9	Nitrogen, Nitrite as N (NO_2-N)	mg/L	0.002	0.0022	0.0030	0.0038	1
10	Total Nitrogen	mg/L	1.2	1.0	1.5	2.2	-
11	Biological Oxygen Demand, BOD_5	mg/L	8.6	5.6	12.2	19.3	50
12	Chemical Oxygen Demand, COD	mg/L	20.6	17.2	29.6	70.6	100
13	MBAS	mg/L	0.010	0.013	0.028	0.030	5
14	Phenol, C_6H_5OH	mg/L	< 0.001	< 0.001	< 0.001	0.001	0.5
15	Oil and Grease	mg/L	< 0.6	0.67	< 0.6	1.0	10
C	Metal						
1	Iron, Fe Dissolved	mg/L	0.015	0.019	0.019	< 0.013	5
2	Manganese, Mn Dissolved	mg/L	< 0.007	< 0.007	< 0.007	< 0.007	2
3	Barium, Ba total	mg/L	< 0.277	< 0.277	< 0.277	< 0.277	2
4	Copper, Cu Total	mg/L	< 0.006	< 0.006	< 0.006	< 0.006	2
5	Zinc, Zn Total	mg/L	< 0.004	< 0.004	< 0.004	< 0.004	5
6	Chromium, Cr total	mg/L	< 0.022	< 0.022	< 0.022	< 0.022	0.5
7	Cadmium, Cd Total	mg/L	0.00010	0.00016	0.00014	0.00033	0.05
8	Mercury, Total Hg	mg/L	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.002
9	Lead, Pb Total	mg/L	0.0022	0.0029	0.0029	< 0.0002	0.1
10	Tin, Sn total	mg/L	< 0.00004	< 0.00004	< 0.00004	< 0.00004	2
11	Arsenic, As Total	mg/L	< 0.0002	< 0.0002	< 0.0002	0.00021	0.1
12	Selenium, Se Total	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.05
13	Nickel, Ni Total	mg/L	< 0.022	< 0.022	< 0.022	< 0.022	0.2
14	Cobalt, Co Total	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	0.4

Source: Baseline Survey, August 2024

Hydrology

5.1.78 The analysis of hydrological conditions in the project area is important as it will provide information related to water flow patterns, distribution of water resources, and potential project impacts on the environment such as flood risk identification, as well as sustainable water resources management planning. In addition, hydrological maps assist in the evaluation of impacts on aquatic ecosystems and planning of mitigation measures required to reduce the negative impacts of the project on the hydrological system. Figure 5-15 below shows the hydrological condition at the study site which is included in the Proga watershed, there are 4 (four) rivers that cross the study area, namely Kali Sari, Kali Sewaloh, Kali Mandang and Kali Sadura. Based on field observation, the 2 rivers, namely Kali Sari and Kali Mandang, are permanent rivers that flow throughout the year, however, during the dry season the flow rate is low.

Figure 5-15 Hydrology Map of Study Area



Source: Baseline Survey, August 2024

Surface Water

5.1.79 The sampling location for surface water was proposed based on the availability of river near to the study location. Surface water quality sampling was proposed at 4 points, namely upstream (SW1), near LTP outlet (SW2), after LTP outlet (SW3), and downstream (SW4). The sampling method used for surface water (water samples collected from rivers) refers to the Indonesian National Standard (SNI 6989.57:2008) concerning Water and Liquid Waste-Part 57: Surface Water Sampling Methods. In situ measurements were taken for several parameters, namely pH, DO, and temperature. Meanwhile, Ex-situ parameters were collected through sampling and sent to an accredited laboratory accredited by the National Accreditation Committee (KAN).

5.1.80 The criteria used for surface water quality analysis was based on Government of Indonesia Regulation No. 22 Year 2021 regarding the Implementation of Environmental Protecting and Management (Appendix VI), typically for Class 2. The quality parameters and analysis method are presented in table belowTable 5-22.

Table 5-22 Surface Water Quality Parameters and Analysis Method

No	Parameters	Quality Standard	Unit	Method
A	PHYSICAL			
1	Odour	No odour	-	Organoleptic
2	Colour	15	TCU	7.2/IK/GQA/WQ/046
3	Total Dissolved Solids, TDS*	500	mg/L	SNI 6989.27:2019
4	Turbidity	5	NTU	6.4/IK/GQA/027
5	Taste	No taste	-	Organoleptic
6	Temperature	Air temperature ± 3	-	SNI 06-6989.23:2005
B	CHEMICAL			
1	pH	6.5 - 8.5	-	SNI 6989.11:2019
2	Florida, F-	1.5	mg/L	SNI 06-6989.29-2005
3	Nitrogen, Nitrate as N (NO3-N)	10	mg/L	7.2/IK/GQA/WQ/043
4	Nitrogen, Nitrite as N (NO2-N)	1	mg/L	SNI 06-6989.9-2004
5	Chrome, Hexavalent, Cr6+	0.05	mg/L	ASTM D1687-86
6	Cyanide, CN	0.1	mg/L	7.2/IK/GQA/WQ/058
7	Total hardness as CaCO3	500	mg/L	SNI 06-6989.29-2005
8	Sulfate, SO4	400	mg/L	SNI 6989.20:2019
9	Chloride, Cl-			SNI 6989.19:2009
10	Hydrogen Sulphide, H2S			SNI 6989.70:2009
C	METALS			
1	Mercury, Dissolved Hg	0.001	mg/L	SNI 6989-78:2019
2	Arsenic, As Dissolved	0.05	mg/L	SNI 6989-81-2018
3	Cadmium, Cd Dissolved	0.005	mg/L	SNI 06-6989.38-2005 (GFA)
4	Selenium, Se Dissolved	0.01	mg/L	SNI 6989-83:2018 (Hydrid)
5	Iron, Fe Dissolved	0.3	mg/L	SNI 6989.84:2019 (AAS)
6	Manganese, Mn Dissolved	0.4	mg/L	SNI 6989.84:2019 (AAS)
7	Zinc, Zn Dissolved	15	mg/L	SNI 6989.84:2019 (AAS)
8	Lead, Pb Dissolved	0.05	mg/L	SNI 6989.46:2009
9	Barium, Ba Dissolved			SNI 6989.84:2019 (AAS)
10	Copper, Cu Dissolve			SNI 6989.84:2019 (AAS)
11	Aluminum, Al Total	0.2	mg/L	SNI 06-6989.36-2005
12	Silver Ag Total			
13	Sodium, Na			
D	MICROBIOLOGY			

No	Parameters	Quality Standard	Unit	Method
1	E. Coli	0	CFU/100 mL	7.2/IK/GQA/MQ/021
2	Total Coliform	50	CFU/100 mL	7.2/IK/GQA/MQ/022

Source: Government of Indonesia Regulation No. 22 Year 2021

Figure 5-16 Documentation of Surface Water Sampling Activity





5.1.81 The distance of the progo river tributary, where surface water sampling was conducted, is approximately 10 m from the landfill.

5.1.82 The result of the surface water quality analysis is presented in **Table 5-23**. Based on the result, the value of Chlorin for SW2, SW3, and SW4 points didn't meet the surface water quality standard for Class 2.

Table 5-23 Results of the Surface Water Quality Analysis

No	Parameters	Unit	Results				Quality Standard (Class 2)
			SW 1	SW 2	SW 3	SW 4	
A	Physic						
1	Temperature	-	30.0	30.8	30.2	29.2	Air temperature ± 3
2	Total Dissolved Solids, TDS*	mg/L	129	142	155	134	1000
3	Total Suspended Solids (TSS)	mg/L	16	22	28	20	50
4	Colour	Pt-Co Unit	3.0	5.0	6.0	4.0	50
5	Flow	m^3/s	0.023	0.012	0.016	0.025	-
6	Garbage	-	N/A	N/A	N/A	N/A	None
B	Chemical						
1	pH	-	6.9	7.2	7.2	7.6	6 - 9
2	Biochemical Oxygen Demand (BOD)	mg/L	1.2	2.9	2.4	1.9	3
3	Chemical Oxygen Demand (COD)	mg/L	3.82	5.22	7.2	6.3	25
4	Dissolved Oxygen (DO) Nitrogen	mg/L	4.6	4.3	4.1	4.0	4
5	Total Phosphate (P)	mg/L	0.036	0.059	0.072	0.090	0.2
6	Nitrogen, Nitrate as N (NO3-N)	mg/L	1.2	1.5	1.8	2.0	10
7	Ammoniacal Nitrogen NH_3-N	mg/L	0.036	0.059	0.089	0.10	0.2
8	Boron, B	mg/L	0.080	0.10	0.15	0.16	1

No	Parameters	Unit	Results				Quality Standard (Class 2)
			SW 1	SW 2	SW 3	SW 4	
9	Chrome, Hexavalent, Cr^{6+}	mg/L	0.003	0.005	0.010	0.012	0.05
10	Chloride, Cl^-	mg/L	26.9	34.9	60.8	49.6	300
11	Cyanide, CN	mg/L	< 0.001	0.0016	0.0018	0.0013	0.02
12	Florida, F^-	mg/L	0.045	0.069	0.088	0.060	1.5
13	Total Nitrogen	mg/L	1.5	1.8	2.2	2.9	15
14	Nitrite as N (NO_2-N)	mg/L	0.0050	0.0030	0.0020	0.0028	0.06
15	Sulphate, SO_4^{2-}	mg/L	20.8	35.6	28.9	39.2	300
16	Chlorin, Cl_2	mg/L	0.028	**0.030**	**0.032**	**0.041**	0.03
17	Hydrogen Sulfide, H_2S	mg/L	0.0016	0.0016	0.0013	0.0015	0.002
18	Oil and Grease	mg/L	< 0.6	< 0.6	< 0.6	< 0.6	1
19	MBAS	mg/L	0.029	0.040	0.029	0.051	0.2
20	Phenol, C_6H_5OH	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	0.005
C	Metal						
1	Arsenic, As Dissolved	mg/L	0.00028	0.00033	0.00029	0.00036	0.05
2	Cobalt, Co Dissolved	mg/L	< 0.02	< 0.02	0.020	0.026	0.2
3	Barium, Ba Dissolved	mg/L	< 0.277	< 0.277	< 0.277	< 0.277	-
4	Selenium, Se Dissolved	mg/L	< 0.0002	< 0.0002	0.00023	< 0.0002	0.05
5	Cadmium, Cd Dissolved	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	0.01
6	Copper, Cu Dissolve	mg/L	< 0.006	< 0.006	< 0.006	< 0.006	0.02
7	Iron, Fe Dissolved	mg/L	< 0.013	< 0.013	< 0.013	< 0.013	-
8	Lead, Pb Dissolved	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	0.03
9	Manganese, Mn Dissolved	mg/L	< 0.007	< 0.007	< 0.007	< 0.007	-
10	Mercury, Dissolved Hg	mg/L	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.002
11	Zinc, Zn Dissolved	mg/L	< 0.004	< 0.004	< 0.004	< 0.004	0.05
12	Nickel, Ni dissolved	mg/L	< 0.022	< 0.022	< 0.022	< 0.022	0.05
D	Biological						
1	Total Coliform	CFU/100 mL	210	350	480	580	5000
2	Fecal Coliform	CFU/100 mL	94	170	220	310	1000

Source: Baseline Survey, August 2024

5.1.83 The plankton and benthos analysis were conducted to know the biota of the surface water condition in the Sub-project. The analysis results are presented in **Table 5-24** and **Table 5-25**.

Table 5-24 Results of Plankton Analysis

SW 1		SW 2		SW 3		SW 4	
Individual	Result (Cell/ L)	Individual	Result (Cell/ L)	Individual	Result (Cell/ L)	Individual	Result (Cell/ L)
PHYTOPLANKTON							
BACILLARIOPHYCEAE		**BACILLARIOPHYCEAE**		**BACILLARIOPHYCEAE**		**BACILLARIOPHYCEAE**	
Denticula sp.	64	*Pinnularia* sp.	16	*Fragilaria* sp.	92	*Fragilaria* sp.	40
Fragilaria sp.	36	*Rophalodia* sp.	56	*Pinnularia* sp.	76	*Pinnularia* sp.	80
Navicula sp.	88	*Surirella* sp.	88	*Terpsinoe* sp.	92	*Rophalodia* sp.	20
CYANOPHYCEAE		**CYANOPHYCEAE**		**CYANOPHYCEAE**		*Surirella* sp.	96
Anabaena sp.	24	*Anabaena* sp.	52	*Oscillatoria* sp.	140	**CYANOPHYCEAE**	
CHLOROPHYCEAE		*Oscillatoria* sp.	140	**EUGLENOPHYCEAE**		*Anabaena* sp.	20
Ankistrodesmus sp.	144	**CHLOROPHYCEAE**		*Phacus* sp.	124	*Oscillatoria* sp.	4
Cosmarium sp.	108	*Cosmarium* sp.	84	**CHLOROPHYCEAE**		**CHLOROPHYCEAE**	
		Dictyosphaerium sp.	96	*Ankistrodesmus* sp.	72	*Ankistrodesmus* sp.	68
				Dictyosphaerium sp.	40	*Dictyosphaerium* sp.	76

SW 1		SW 2		SW 3		SW 4	
Individual	Result (Cell/ L)	Individual	Result (Cell/ L)	Individual	Result (Cell/ L)	Individual	Result (Cell/ L)
				Netrium sp.	48	*Netrium* sp.	60
				Scenedesmus sp.	88	*Ulothrix* sp.	12
				Ulothrix sp.	24		
Total	464	**Total**	560	**Total**	796	**Total**	476
Total Taxa (S)	6	**Total Taxa (S)**	8	**Total Taxa (S)**	10	**Total Taxa (S)**	10
Diversity Index (H')	1.64	**Diversity Index (H')**	1.93	**Diversity Index (H')**	2.20	**Diversity Index (H')**	2.06
Equality Index (E)	0.92	**Equality Index (E)**	0.93	**Equality Index (E)**	0.96	**Equality Index (E)**	0.90
Domination Index (D)	0.21	**Domination Index (D)**	0.16	**Domination Index (D)**	0.12	**Domination Index (D)**	0.14
ZOOPLANKTON							
ROTIFERA		**PROTOZOA**		**PROTOZOA**		**PROTOZOA**	
Monostylla sp.	92	*Vorticella* sp.	20	*Arcella* sp.	144	*Vorticella* sp.	32
Philodina sp.	136	**ROTIFERA**		*Vorticella* sp.	172	**CRUSTACEAE**	
Polyarthra sp.	88	*Monostylla* sp.	72	**CRUSTACEAE**		*Nauplius (stadia)*	52
		Polyarthra sp.	24	*Nauplius (stadia)*	172	**NEMATODA**	
		NEMATODA		**NEMATODA**		*Nematoda Worm* (sp1)	128
		Nematoda Worm (sp1)	48	*Nematoda Worm* (sp1)	136		
Total	316	**Total**	164	**Total**	624	**Total**	212
Total Taxa (S)	3	**Total Taxa (S)**	4	**Total Taxa (S)**	4	**Total Taxa (S)**	3
Diversity Index (H')	1.08	**Diversity Index (H')**	1.26	**Diversity Index (H')**	1.38	**Diversity Index (H')**	0.93
Equality Index (E)	0.98	**Equality Index (E)**	0.91	**Equality Index (E)**	1.00	**Equality Index (E)**	0.85
Domination Index (D)	0.35	**Domination Index (D)**	0.31	**Domination Index (D)**	0.25	**Domination Index (D)**	0.45

Source: Baseline Survey, August 2024

Table 5-25 Results of Benthos Analysis

SW 1		SW 2		SW 3		SW 4	
Individual	Result (Ind/ m^2)	Individual	Result (Ind/ m^2)	Individual	Result (Ind/ m^2)	Individual	Result (Ind/ m^2)
MACROBENTHOS							
OLIGOCHAETA		**DIPTERA**		**GASTROPODA**		**GASTROPODA**	
Lumbriculus sp.	22	*Polypedilum sp.*	33	*Melanoides sp.*	22	*Melanoides sp.*	11
GASTROPODA		**OLIGOCHAETA**		*Lymnaea* sp.	22	*Lymnaea* sp.	33
Melanoides sp.	22	*Lumbriculus sp.*	11	**INSECTA**		*Rophalodia* sp.	20
Lymnaea sp.	22	**GASTROPODA**		*Chironomus* sp.	11	*Surirella* sp.	96
		Melanoides sp.	22				
Total	66	**Total**	66	**Total**	55	**Total**	44
Total Taxa (S)	3	**Total Taxa (S)**	3	**Total Taxa (S)**	3	**Total Taxa (S)**	2
Diversity Index (H')	1.58	**Diversity Index (H')**	1.46	**Diversity Index (H')**	1.52	**Diversity Index (H')**	0.81
Equality Index (E)	1.00	**Equality Index (E)**	0.92	**Equality Index (E)**	0.96	**Equality Index (E)**	0.81
Domination Index (D)	0.33	**Domination Index (D)**	0.39	**Domination Index (D)**	0.36	**Domination Index (D)**	0.63

Source: Baseline Survey, August 2024

Soil

5.1.84 Soil data collection related to soil characteristics (soil physical and chemical properties) was carried out by direct measurement in the field and sampling of soil physical and chemical properties using hand augers and ring samplers for further testing at KAN accredited

laboratories. Identification of soil characteristics was conducted to determine the compliance of soil condition with the soil quality standard regulated in Ministry of Health Regulation No.2 of 2023 on Environmental Health.

5.1.85 Soil samples were collected in areas adjacent to leachate ponds and land uses that are affected by landfill activities such as rice fields. Identification of soil characteristics was carried out for identified soil layers/horizons using a hand auger as well as soil profiling up from 4 locations. The soil quality parameters and analysis method are shown in table below.

Table 5-26 Soil Quality Parameters and Analysis Method

No	Parameters	Unit	Method
I	Physical Quality:		
1	Bulk Density	gr/cc	Gravimetric
2	Total Pore Space	%	Calculation
3	Moisture Content At pF		
	1.00	%	Gravimetric
	2.00	%	Gravimetric
	2.54	%	Gravimetric
	4.25	%	Gravimetric
4	Pore Drainage		Gravimetric
	Very Fast	%	Gravimetric
	Fast	%	Gravimetric
	Slow	%	Gravimetric
5	Available Water	%	Gravimetric
6	Permeability	cm/jam	Perchloration
II	Chemical Quality:		
1	pH in Water (pH H2O 1:1)	-	PH meter
2	pH in KCl (pH KCl 1:1)	-	PH meter
3	C - Organic	%	Walkley & Black
4	N Total	%	Kjehdahl
5	C:N ratio	Ratio	Calculation
6	Available P	mg/100g	Bray I
7	Acid Exchangeable Cations		
	Aluminium (Al-dd)	cmol/Kg	1N KCl Extraction
	Hydrogen (H-dd)	cmol/Kg	1N KCl Extraction
8	Exchangeable Base Cations		
	Potassium (K)	cmol/Kg	NH4OAc 1N Extraction (pH 7)
	Sodium (Na)	cmol/Kg	NH4OAc 1N Extraction (pH 7)
	Calcium (Ca)	cmol/Kg	NH4OAc 1N Extraction (pH 7)
	Magnesium (Mg)	cmol/Kg	NH4OAc 1N Extraction (pH 7)
9	Cation Exchange Capacity (CEC)	cmol/Kg	Volumetry
10	Base Saturation	%	Calculation
11	Heavy Metals		
	Copper (Cu)	mg/Kg	AAS
	Zinc (Zn)	mg/Kg	AAS
	Lead (Pb)	mg/Kg	AAS
	Cadmium (Cd)	mg/Kg	AAS
12	Texture 3 Fractions		

No	Parameters	Unit	Method
	Sand	%	Pipette
	Dust	%	Pipette
	Clay	%	Pipette
13	Oil and Fat	%	Soxlet

5.1.86 The result of the soil characteristic sampling is shown in table below. Based on its comparison to the national soil quality standard in environmental health aspect, all soil samples meets the heavy metal parameters.

Table 5-27 Result Soil Characteristic Sampling

No	Parameter	Unit	SQ 1	SQ 2	SQ 3	SQ 4	Standard*	Standard**
I	Physical Quality:							
1	Bulk Density	gr/cc	1.18	1.21	1.18	1.19	--	--
2	Total Pore Space	%	55.47	54.34	55.47	55.09	--	--
3	Moisture Content at pF						--	--
	1.00	%	50.4	49.7	49.7	49.6	--	--
	2.00	%	43.9	43.3	43.3	43.2	--	--
	2.54	%	40.7	40.2	40.2	40.1	--	--
	4.25	%	20.8	20.5	20.5	20.5	--	--
4	Pore Drainage						--	--
	Very Fast	%	-	-	-	-	--	--
	Fast	%	3.4	3.1	4.0	3.8	--	--
	Slow	%	7.2	7.5	7.4	7.5	--	--
5	Available Water	%	12.5	13.8	17.7	23.3	--	--
6	Permeability	cm/hour	0.80	0.57	0.88	0.89	--	--
II	Chemical Quality:						--	--
1	pH in Water (pH H2O 1:1)	-	4.8	4.3	4.4	5.0	--	--
2	pH in KCl (pH KCl 1:1)	-	3.6	3.8	3.6	3.8	--	--
3	C - Organic	%	2.2	2.1	3.1	2.4	--	--
4	N Total	%	0.2	0.3	0.2	0.2	--	--
5	C:N ratio	Ratio	10.5	6.8	16.3	10.9	--	--
6	Available P	mg/100g	6.5	7.0	7.9	8.5	--	--
7	Acid Exchangeable Cations						--	--
	Aluminum (Al-dd)	cmol/Kg	2.18	2.51	2.45	2.57	--	--
	Hydrogen (H-dd)	cmol/Kg	1.53	1.69	1.66	1.35	--	--
8	Exchangeable Base Cations						--	--
	Potassium (K)	cmol/Kg	0.69	0.57	0.58	0.60	--	--
	Sodium (Na)	cmol/Kg	0.24	0.19	0.21	0.20	--	--
	Calcium (Ca)	cmol/Kg	4.11	4.19	4.26	4.25	--	--
	Magnesium (Mg)	cmol/Kg	1.50	1.65	1.70	1.54	--	--
9	Cation Exchange Capacity (CEC)	cmol/Kg	20.8	29.5	28.0	28.3	--	--
10	Base Saturation	%	31.4	22.4	24.1	23.3	--	--
11	Heavy Metals							
	Copper (Cu)	mg/Kg	2.4	2.4	2.3	2.2	< 30	<65
	Zinc (Zn)	mg/Kg	13.7	10.9	15.0	13.5	< 120	<200
	Lead (Pb)	mg/Kg	0.3	0.2	0.3	0.2	< 300	<50
	Cadmium (Cd)	mg/Kg	0.3	0.2	0.2	0.3	< 3	<1.5
12	Texture 3 Fractions							
	Sand	%	18.3	17.7	25.9	19.6	--	--
	Dust	%	26.8	35.0	27.8	24.8	--	--
	Clay	%	54.9	47.3	46.3	55.6	--	--

No	Parameter	Unit	SQ 1	SQ 2	SQ 3	SQ 4	Standard*	Standard**
13	Oil and Fat	%	< 0.05	< 0.05	< 0.05	< 0.05	--	--

*Ministry of Health Regulation No. 2/2023

** ANZECC/ARMCANZ Sediment Quality Guidelines

-- denotes no creening criteria are available under the standards presented.

Source: Baseline Survey, August 2024

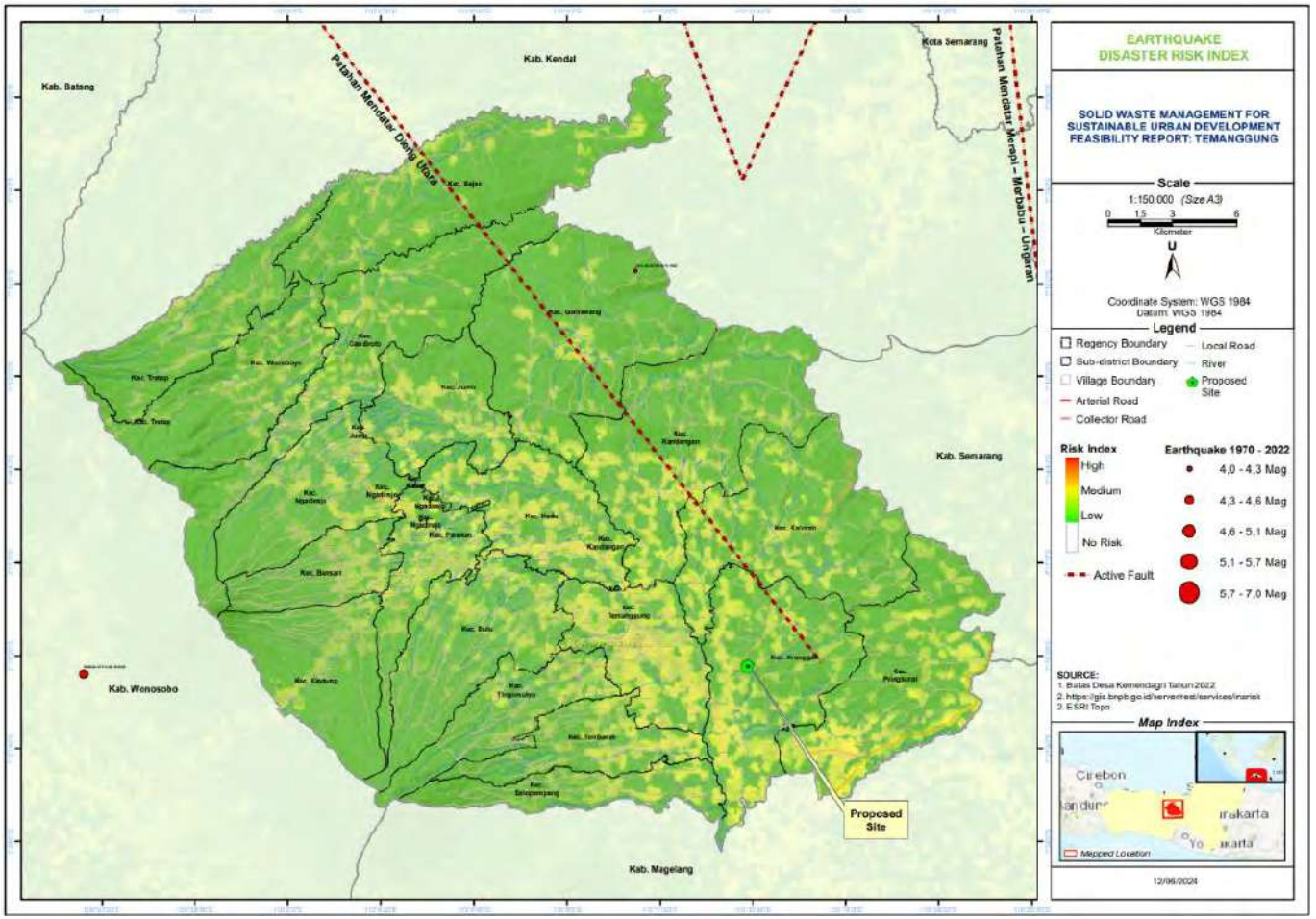
Disaster Risk

5.1.87 Based on the 2021 Indeks Risiko Bencana Indonesia (IRBI) Book, Temanggung Regency's disaster risk index is 121.33 (medium category). Furthermore, according to the Risk Index per Threat:

- Earthquake Disaster Risk Index (13.66 high)
- Volcano Risk Index (16.18 high)
- Land and Forest Fire Disaster Risk Index (22.77 high)
- Landslide Disaster Risk Index (15.18 high)
- Drought Disaster Risk Index (15.18 high).

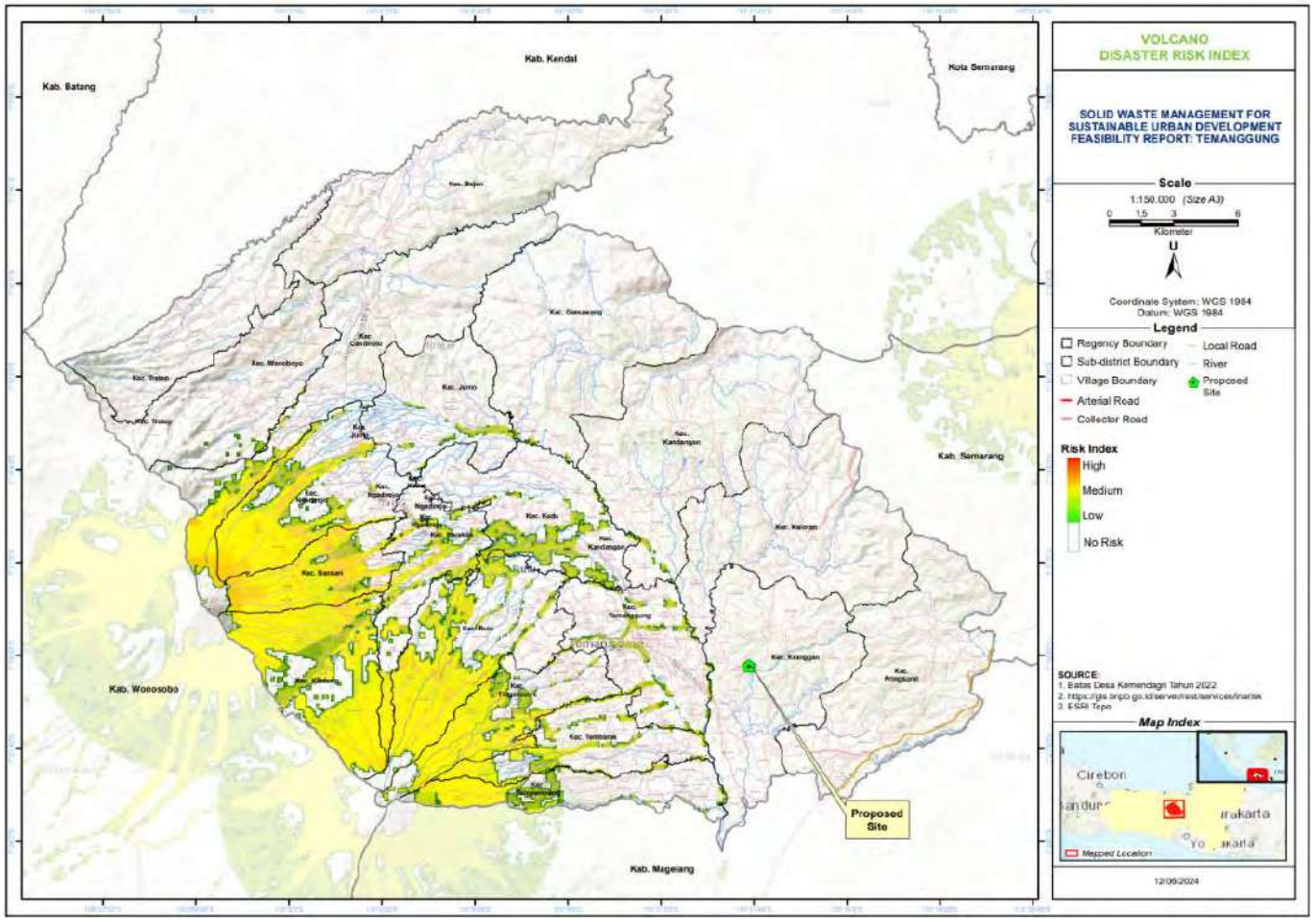
5.1.88 Based on data from the Temanggung Regency RTRW for 2011-2031, Kranggan District is not included as a location prone to hurricanes, landslides, and floods. However, Kranggan District has the potential for drought disasters. The disaster risk distribution maps in Temanggung Regency are presented in **Figure 5-17** to **Figure 5-21** below.

Figure 5-17 Seismic Hazard Map in Temanggung



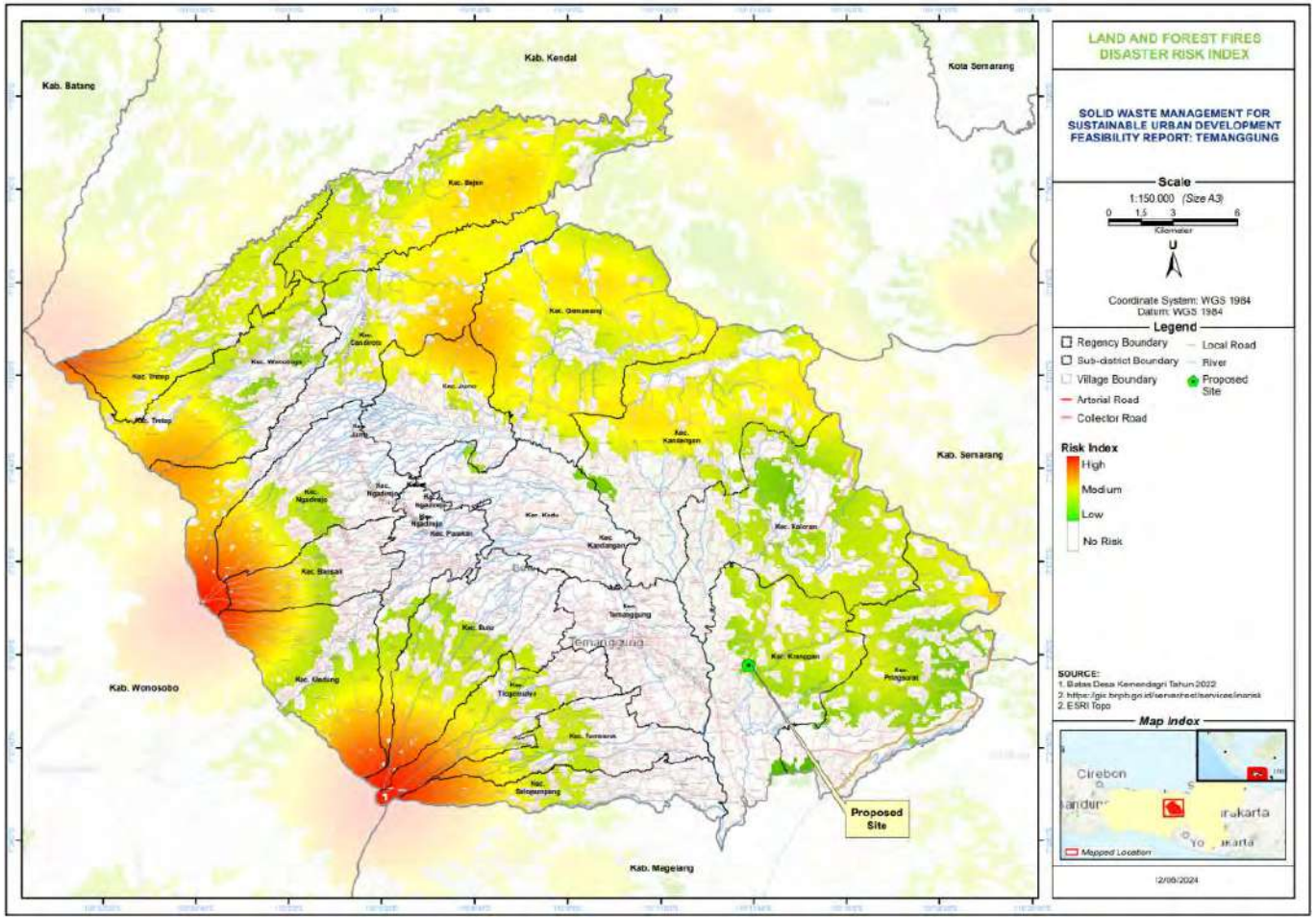
Source: Baseline Survey, August 2024

Figure 5-18 Map of Vulnerability to Volcanic Disasters in Temanggung Regency



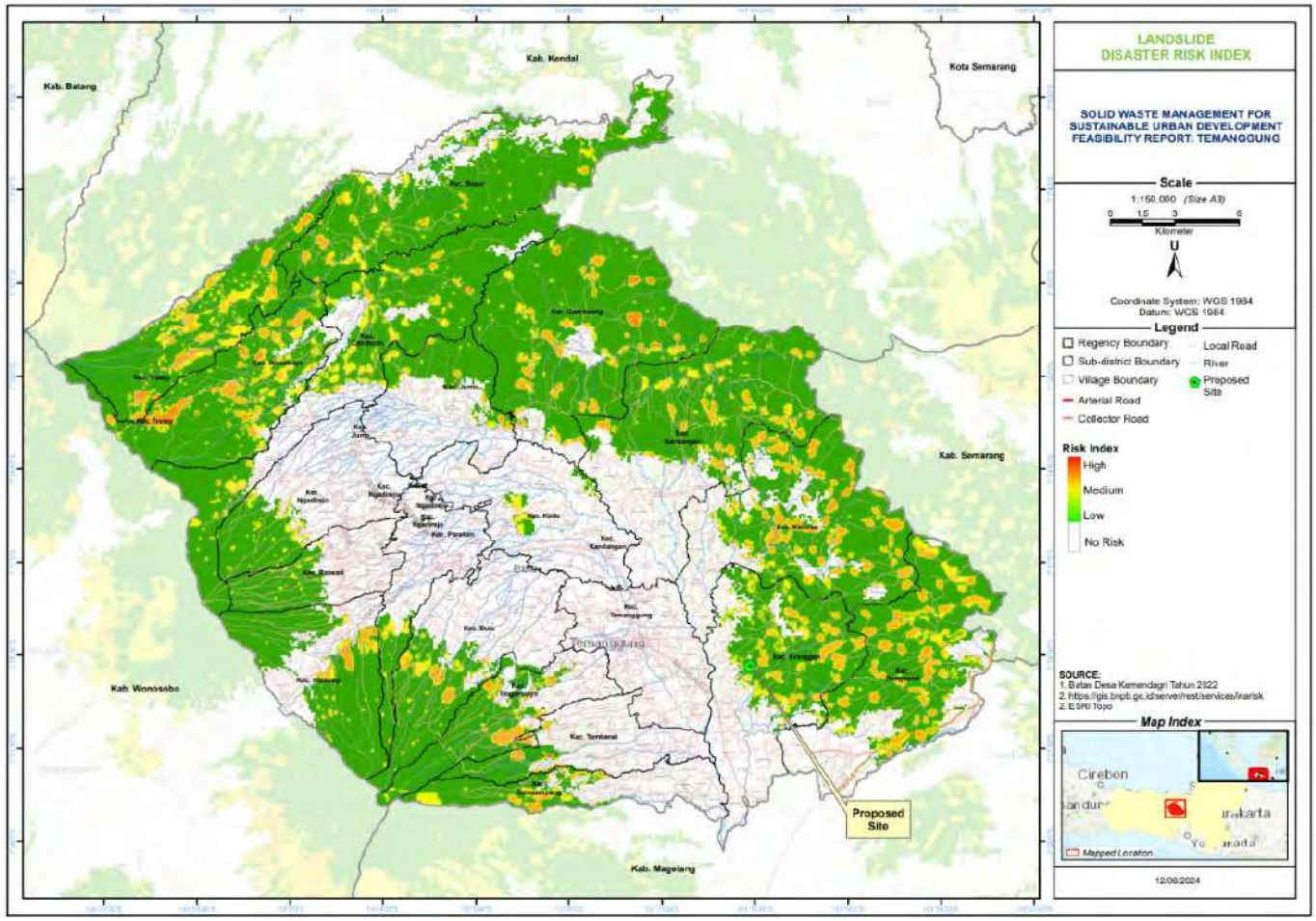
Source: Baseline Survey, August 2024

Figure 5-19 Land and Forest Fires Disaster Risk in Temanggung Regency



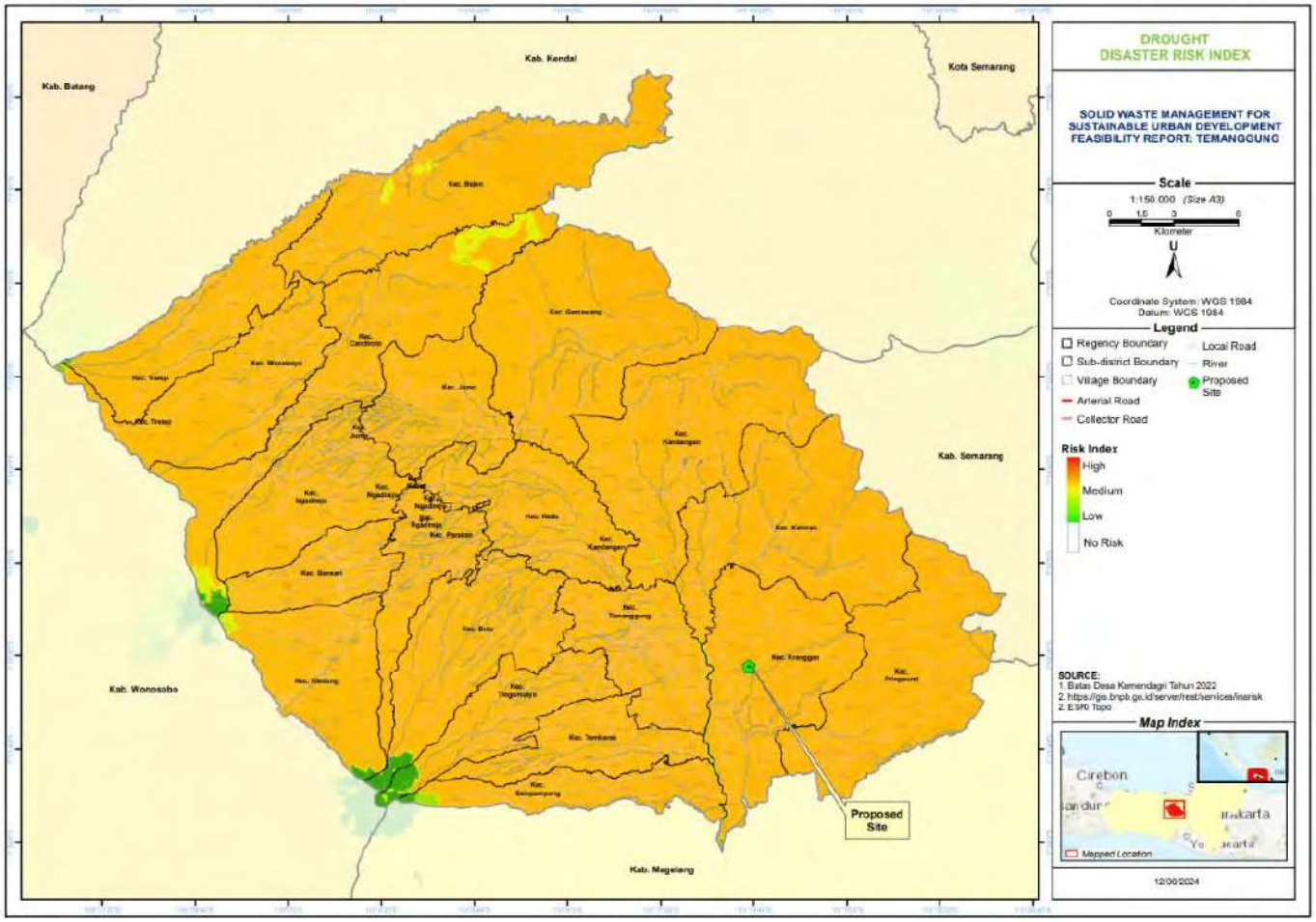
Source: Baseline Survey, August 2024

Figure 5-20 Landslide Disaster Risk in Temanggung Regency



Source: Baseline Survey, August 2024

Figure 5-21 Drought Disaster Risk in Temanggung Regency



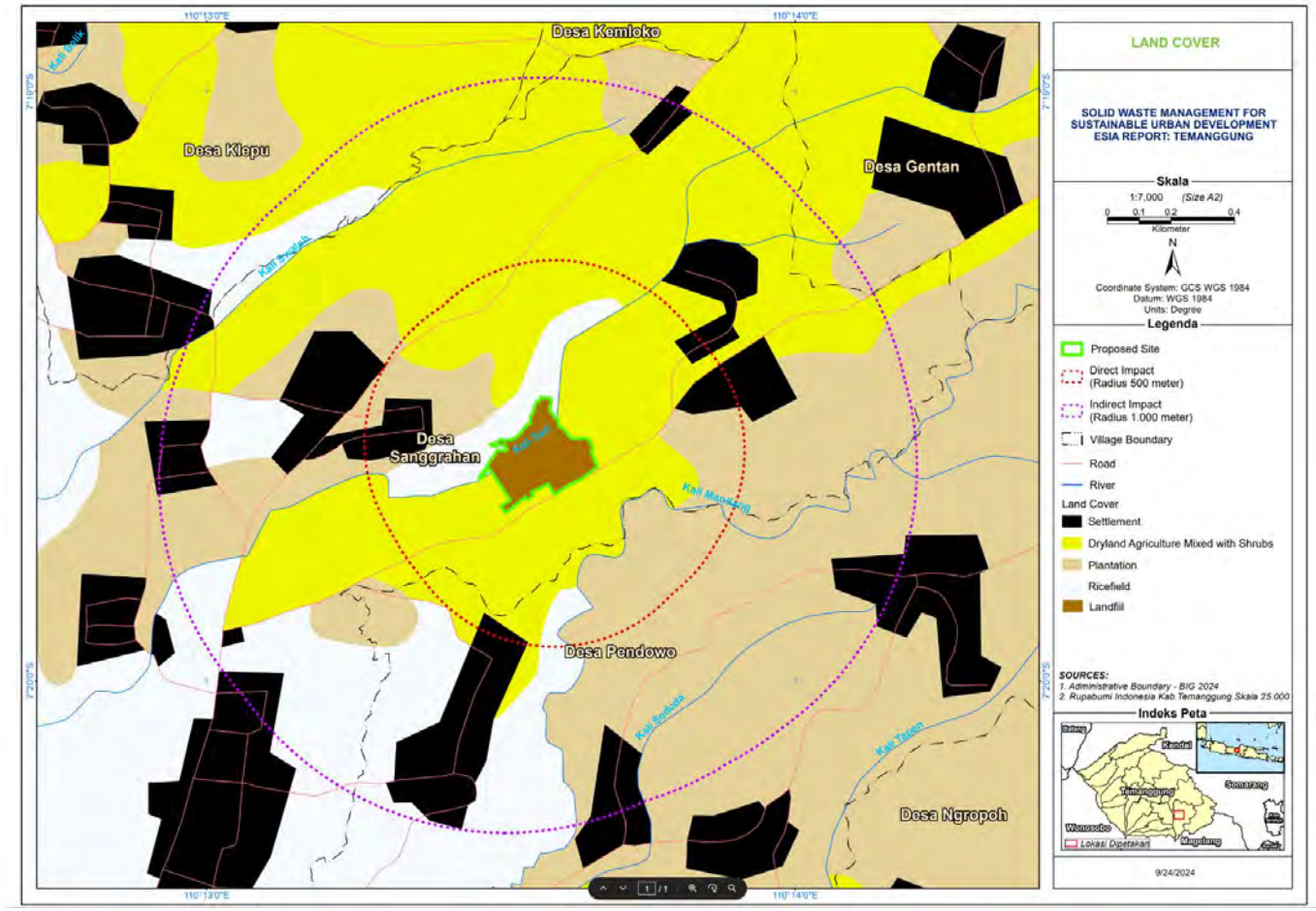
Source: Baseline Survey, August 2024

5.2 Biodiversity Baseline

Site Description

5.2.1 From the feasibility study, the project area is within a garden area comprising of mainly hardy plants and dry fields. The vegetation surrounding the project area is dominated by rice fields and along the boundaries of the land, there were chinese albiza (*Albizia chinesis*) trees and a variety of grass species, such as, elephant grass (*Pennisetum purpureum*), nutgrass (*Cyperus rotundus*), and Bermuda grass (*Cynodon dactylon*). Based on social FGD, the biodiversity around the landfill is noteworthy, featuring various animals like monitor lizards, egrets, and squirrels, alongside the growth of fruit and timber trees, contributing to the ecological richness of the area.

Figure 5-22 Land Cover Map



Source: Baseline Survey, August 2024

Species Conservation Status

5.2.2 Species conservation statuses follow the IUCN Red List of Threatened Species, which is available as an online database. The IUCN Red List is an indicator of the health of the world's biodiversity, and provides information about the range, population size, habitat and ecology, use and/or trade, threats and conservation actions that will help inform necessary conservation decisions. The IUCN Red List categories and criteria are listed in **Table 5-28**.

Table 5-28 IUCN Red List Categories and Criteria

Category	Criteria
Extinct (EX)	A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
Extinct in the Wild (EW)	A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
Critically Endangered (CR)	A taxon is Critically Endangered (CR) when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.
Endangered (EN)	A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.
Vulnerable (VU)	A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.
Near Threatened (NT)	A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.
Least Concern (LC)	A taxon is Least Concern when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened.
Not Evaluated (NE)	A taxon is Not Evaluated when it has not yet been evaluated against the criteria. Not Evaluated species are not published on the IUCN Red List.
Data Deficient (DD)	A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking.

5.2.3 Species that appear in the appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES; **Table 5-29**) and the Indonesian Regulation of Minister of Environment and Forestry No. P.106 (2018) are indicated in the results.

Table 5-29 CITES Appendix Categories and Criteria

Category	Criteria
Appendix I	Species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
Appendix II	Species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.
Appendix III	Species that are protected in at least one country, which has asked other CITES parties for assistance in controlling the trade.

Survey Methodology

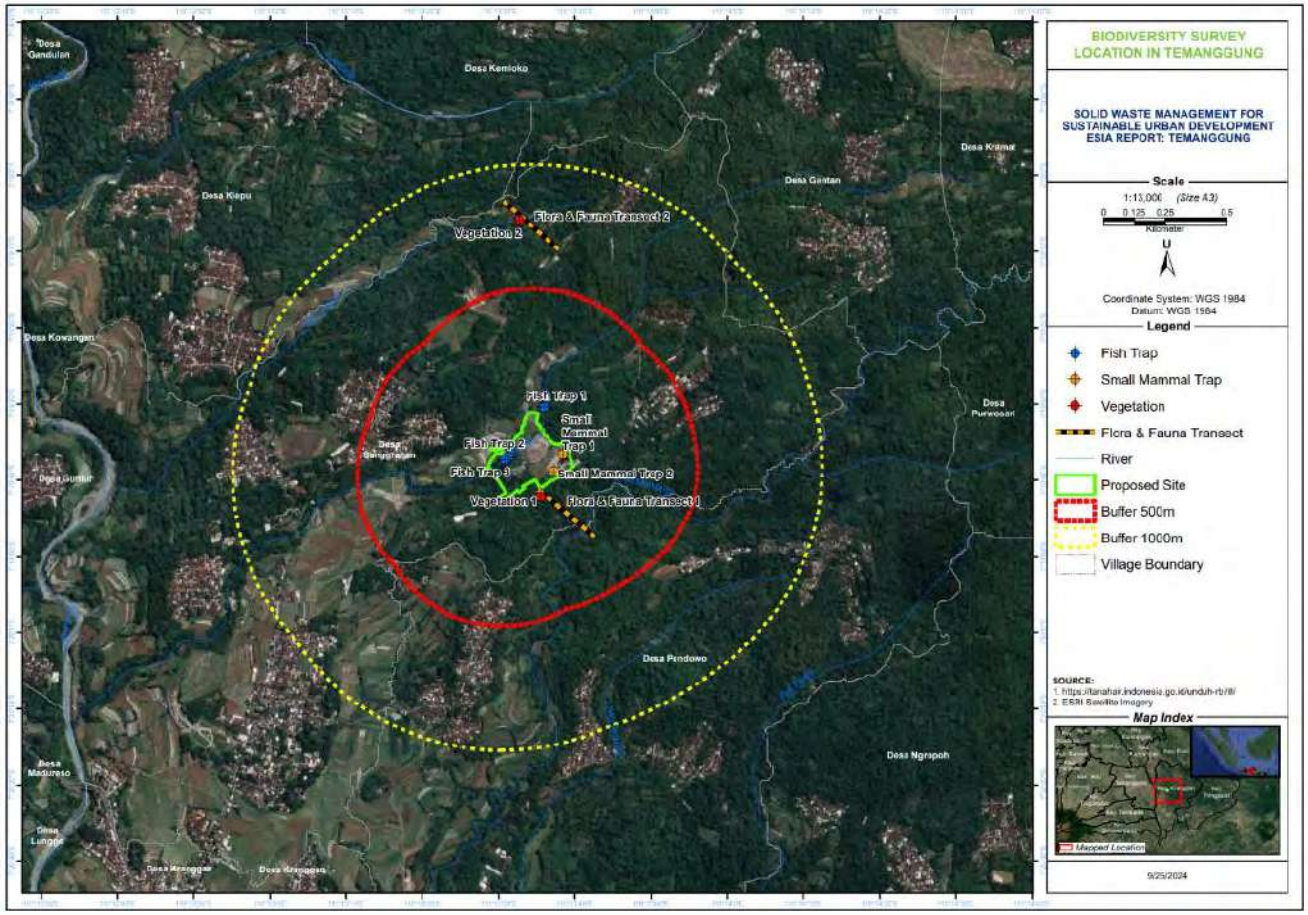
5.2.4 Baseline surveys were conducted for plants, mammals, herpetofauna, birds, and aquatic fauna within and around the sub-project area. Following the area of influence as defined in the inception report, biodiversity baseline surveys were conducted at the following three locations:

- TPA – Within the sub-project area boundary (walking surveys covering the entire sub-project area);
- FF1 – 200m transect within the directly affected area (within 500m radius from the sub-project site);
- FF2 – 200m transect at the indirectly affected area (between 500m and 1000m radius from the sub-project site)

5.2.5 On the walking surveys and at the 200m transects, and the following taxa were surveyed on each transect:

- Plant
- Birds
- Mammals
- Herpetofauna (amphibians and reptiles)

Figure 5-23 Map of Biodiversity Survey Transects and Sampling Points



Source: Baseline Survey, August 2024

Terrestrial Flora

5.2.6 Walking surveys for terrestrial flora covering the area within the sub-project boundary were conducted, as well as along the 200m transects in FF1 and FF2. In addition, one 10m x 10m plot was set up at FF1 and FF2 each to identify all plants within the plot.

5.2.7 The general vegetation characteristics and types were recorded, and a species list was compiled from all the surveys.

Terrestrial Fauna

5.2.8 Terrestrial fauna were surveyed by walking surveys within the sub-project boundary and on the 200m transects at FF1 and FF2. Survey timings and frequencies are listed in (**Table 5-30**) Table 5-30. Observations of birds, mammals, and herpetofauna were identified to species and counted. Besides direct observations of the fauna, indirect evidence of their presence was also recorded, such as footprints, faeces, and claw marks found.

Table 5-30 Summary of biodiversity survey methods, frequencies and timings

No.	Taxa	Survey Method	Survey Frequency / Times
1	Terrestrial Flora • Plants	Transects (3 locations - TPA, FF1, FF2) 10m x 10m Vegetation plots (2 locations - FF1, FF2)	0730 – 1730 (one day at each location)
2	Terrestrial Fauna • Birds • Mammals (excluding bats) • Herpetofauna (amphibians and reptiles)	Walking surveys (TPA) Transects (2 locations - FF1, FF2)	0730 – 1730 (one day at each location) 1900 – 2130 (one-time inside sub-project boundary)
		Small mammal traps (2 locations – see **Figure 5-23**)	One Time (24 hours)
3	Aquatic Fauna • Fish • Crustaceans	Fish trap (3 locations – see **Figure 5-23**)	One Time (24 hours)

5.2.9 For mammals, in addition to walking and transect surveys, two small mammal traps were deployed within the sub-project boundary (**Figure 5-23**) for 24 hours. All species trapped were recorded and released.

Aquatic Fauna

5.2.10 Aquatic fauna was surveyed via traps set up at three locations along a water stream that runs through the TPA, FF1 and FF2 (**Figure 5-23**). Two traps were placed within the proposed site boundary (TPA), while the final trap was placed just outside of the proposed site boundary and within FF1 (500m buffer zone).

Baseline Results

Terrestrial Flora

5.2.11 The vegetation around the site is largely secondary forest interspersed with crop land such as rice and coconut. Based on these observations, and together with results from the feasibility study, the site is considered to be Modified Habitat following IFC PS 6 definitions. Existing conditions within the project location and surrounding can be viewed in **Figure 5-24**.

Figure 5-24 Ground view of vegetation at survey areas

A) Vegetation within the project boundary (TPA)





B) Vegetation at FF1





C) Vegetation at FF2



5.2.12 A total of 185 terrestrial flora species from 52 families were identified from the baseline survey (**Appendix D**). Five flora species of conservation significance were found . Only one of the five species is endemic to Java – Bombay Blackwood (*Dalbergia latifolia*). The Bombay Blackwood has been over exploited as the high-quality timber harvested from the tree are utilised for making furniture's, musical instruments, wood for decorative work etc. Similar to the Bombay Blackwood, excessive exploitation for use in furniture, construction, medicinal use etc, has seen the True Cinnamon (*Cinnamomum verum)* species classified as Vulnerable (VU) in the IUCN.

Table 5-31 Flora species with endangered and/or protection status

No	Family	Scientific Name	English Name	Local name	Growth habit	Conservation status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
1	Arecaceae	*Adonidia merrillii*	Manila Palm	Palem putri	Tree	VU	-	-	No	+		
2	Fabaceae	*Albizia julibrissin*	Mimosa	Pohon putra persia	Tree	VU	-	-	No	+		+
3	Fabaceae	*Dalbergia latifolia*	Bombay Blackwood	Sonobrits	Tree	VU	App. II	-	Yes	+	+	+
4	Laminaceae	*Tectona grandis*	Teak	Jati	Tree	EN	-	-	No	+	+	+
5	Lauraceae	*Cinnamomum verum*	True Cinnamon	Kayu manis	Tree	VU	-	-	No	+		

5.2.13 Only 25% of the species that were identifiable to species level were native to the Jawa region.

Terrestrial Fauna

5.2.14 A total of 29 species were identified from the terrestrial surveys, comprising of 18 birds, nine herpetofauna and to mammal species (Table 5-32). In addition, only a single observation could not be identified to species level and was only classified to genus level (*Limnonectes sp.*). Of the species observed, although none were of conservation significance under the International Union of Conservation for Nature (IUCN), four species were cited in the CITES Appendix II and/or the Indonesian Regulation of Minister of Environment and Forestry No. P.106 (2018) (P.106). All species were recorded on the walking surveys and transects, but no mammals were recorded from the mammal traps.

5.2.15 The most common observed bird was the Tahiti Swallow (*Hirundo tahitica*), which was observed all along TPA, FF1 and FF2 (**Table 5-32**). Other common birds include the Small Minivet (*Pericrocotus cinnamomeus*) and the Sooty-headed Bulbul (*Pycnonotus aurigaster)*, both of which had a preference to forested landscapes.

5.2.16 Of the 18 species of bird observed, only one of the species was classified as threatened under the CITES App. II and is protected under the P.106 (2018) – Oriental Honey-buzzard (*Peris ptilorhynchus*).

5.2.17 Of the nine herpetofauna that could be classified to species level, three species were of conservation importance (**Table 5-32**) – Southern Indonesia Spitting Cobra (*Naja sputatrix*; CITES App. II, P.106 protected), Common Water Monitor (*Varanus salvator;* CITES App. II, P.106 protected) and Tokay Gecko (*Gekko gecko*; CITES App. II, P.106 protected). These species have been protected under CITES App II as they are part of a large of list of species that are involved in the illegal wildlife trade.

5.2.18 Only two mammal species were recorded as part of the surveys (**Table 5-32**), and both have no protection status. The Plantain Squirrel (*Callociurus notatus*) is endemic to the Jawa region, while the Lesser Dog-faced Fruit Bat (*Cynopterus brachyotis*) although native to Indonesia, the species is not endemic to the Jawa region.

Table 5-32 Terrestrial Fauna Species List from the Baseline Survey

No	Family	Local Name	Common Name	Scientific Name	Conservation Status			Native	Location		
					IUCN	CITES	P.106		TPA	FF1	FF2
Birds											
1	Halcyonidae	Burung cekakak Jawa	Javan Kingfisher	*Halcyon cyanoventris*	LC	-	-	Yes	3	-	1
2	Alcedinidae	Burung cekakak sungai	Collared Kingfisher	*Todiramphus chloris*	LC	-	-	Yes	-	2	1
3	Campephagidae	Burung sepah kecil	Small Minivet	*Pericrocotus cinnamomeus*	LC	-	-	Yes	8	-	8
4	Estrildidae	Burung bondol jawa	Javan Munia	*Lonchura leucogastroides*	LC	-	-	Yes	4	-	3
5	Aegithinidae	Burung cipoh kacat	Common lora	*Aegithina tiphia*	LC	-	-	Yes	2	3	-
6	Nectariniidae	Burung madu sriganti	Olive-backed Sunbird	*Cinnyris jugularis*	LC	-	-	No	1	-	-
7	Nectariniidae	Burung madu kelapa	Brown-throated Sunbird	*Anthreptes malacensis*	LC	-	-	Yes	-	1	-
8	Columbidae	Burung merpati domestik	Rock Pigeon	*Columba livia domestica*	-	-	-	No	4	-	-
9	Columbidae	Burung perkutut	Zebra Dove	*Geopelia striata*	LC	-	-	Yes	1	-	2
10	Turnicidae	Burung gemak loreng	Barred Buttonquail	*Turnix suscitator*	LC	-	-	Yes	-	1	-
11	Picidae	Burung caladi tilik	Sunda Pygmy Woodpecker	*Picoides moluccensis*	LC	-	-	Yes	-	1	2
12	Picidae	Burung caladi ulam	Freckle-breasted Woodpecker	*Dendrocopos analis*	LC	-	-	Yes	-	-	1
13	Cuculidae	Burung kedasih ungu	Violet Cuckoo	*Chrysococcyx xanthorhynchus*	LC	-	-	Yes	-	1	-

No	Family	Local Name	Common Name	Scientific Name	Conservation Status			Native	Location		
					IUCN	CITES	P.106		TPA	FF1	FF2
14	Pycnonotidae	Burung cucak kutilang	Sooty-headed Bulbul	*Pycnonotus aurigaster*	LC	-	-	Yes	15	5	7
15	Hirundinidae	Burung layang-layang batu	Tahiti Swallow	*Hirundo tahitica*	LC	-	-	Yes	45	11	11
16	**Accipitridae**	**Burung sikep madu**	**Oriental Honey-buzzard**	***Pernis ptilorhynchus***	**LC**	**App II**	**Protected**	**Yes**	**-**	**-**	**1**
17	Dicruridae	Burung srigunting kelabu	Ashy Drongo	*Dicrurus leucophaeus*	LC	-	-	Yes	-	-	3
18	Megalaimidae	Burung takur ungkut-ungkut	Coppersmith Barbet	*Psilopogon haemacephalus*	LC	-	-	Yes	-	-	2
Herpetofauna											
19	Colubridae	Ular pohon malabar	Malabar Vine Snake	*Ahaetulla malabarica*	-	-	-	No	2	-	-
20	**Elapidae**	**Ular kobra**	**Southern Indonesian Spitting Cobra**	***Naja sputatrix***	**LC**	**App II**	**-**	**Yes**	**1**	**-**	**-**
21	**Varanidae**	**Biawak air asia**	**Common Water Monitor**	***Varanus salvator***	**LC**	**App II**	**-**	**Yes**	**1**	**-**	**-**
22	Agamidae	Bunglon surai	Maned Forest Lizard	*Bronchocela jubata*	LC	-	-	Yes	5	1	-
23	Scincidae	Kadal kebun	Common Mabuya	*Eutropis multifasciata*	LC	-	-	Yes	2	-	
24	**Gekkonidae**	**Tokek**	**Tokay Gecko**	***Gekko gecko***	**LC**	**App II**	**-**	**Yes**	**1**	**-**	**-**
25	Ranidae	Katak kongkang kolam	Schlegel's Frog	*Chalcorana chalconota*	LC	-	-	Yes	2	-	-
26	Ranidae	-	Large White-lipped Frog	*Chalcorana megalonesa*	LC	-	-	No	1	-	-

No	Family	Local Name	Common Name	Scientific Name	Conservation Status			Native	Location		
					IUCN	CITES	P.106		TPA	FF1	FF2
27	Rhacophoridae	Katak pohon bergaris	Java Whipping Frog	*Polypedates leucomystax*	LC	-	-	Yes	1	-	-
28	Dicroglossidae	-	-	*Limnonectes* sp.	-	-	-	-	2	-	-
Mammals											
29	Sciuridae	Bajing kelapa	Plantain squirrel	*Callociurus notatus*	LC	-	-	-	2	1	-
30	Pteropodidae	Codot krawar	Lesser Dog-faced Fruit Bat	*Cynopterus brachyotis*	LC	-	-	No	3	-	-

Source: Baseline Survey, August 2024

Aquatic Fauna

5.2.19 A total of two aquatic species were found from the aquatic surveys.

5.2.20 The Common Barb (Barbodes binotatus) is a species that is naturally distributed in Indonesia and the Jawa region. Globally it has an IUCN status of least concern.

5.2.21 The other aquatic species observed could only be identified to genus level – *Macrobrachium sp*. The genus is found in Indonesia with at least 12 species and either of native origin or introduced.

Table 5-33 Aquatic fauna species found from the baseline survey

No	Family	Local Name	Common Name	Scientific Name	Conservation Status			Native	Count
					IUCN	CITES	P.106		
1	Palaemonidae	Udang sungai	Freshwater Prawn	*Macrobrachium* sp.	-	-	-	-	15
2	Cyprinidae	Ikan wader bintik dua	Common Barb	*Barbodes binotatus*	LC	-	-	-	4

5.3 Social-economic Baseline

5.3.1 The sub-project is located at TPA Sanggrahan in Losari Hamlet, Sanggrahan Village, Kranggan Sub-District. There are two directly affected villages (Sanggrahan and Pendowo Villages) and two indirectly affected villages (Klepu and Gentan Villages). The identification of impacted villages is based on the distance from the sub-project location, with directly affected villages within a 500-meter radius and indirectly affected villages situated between 500 meters and 1 kilometer from TPA. The area of influence for Social can be seen in **Figure 5-26**.

5.3.2 Primary data collection in affected villages was carried out through interviews with key informants, FGDs with community representatives and observations to obtain a picture of the socio-economic and cultural conditions of the community as well as community perceptions of the project. Social data collection was carried out using a variety of methods, including a literature review (secondary data), household surveys, key informant interviews (KIIs), focus group discussions (FGDs) and field observations. These methods provided a comprehensive understanding of the socio-economic and cultural conditions of the communities directly affected by the project.

5.3.3 Literature review and secondary data : Secondary data was collected from various sources such as government reports, relevant agencies and academic studies related to the socio-economic and environmental conditions in the project area.

5.3.4 Household survey: The household survey was conducted using purposive sampling to collect detailed information on the socio-economic and cultural conditions of the respondents affected by the project. Topics covered included respondent characteristics, household economic status, economic activities, identification of vulnerable groups (including indigenous peoples), community health and safety, and public perception and acceptance of the project. Target respondents included wastepickers, land users and waste collectors.

Figure 5-25 Social Baseline Activities



Interviews with Wastepickers



Interviews with Wastepickers



Focus Group Discussion



Interview with stakeholders

Source : Baseline Survey, August 2024

5.3.5 Key Informant Interviews (KII): Interviews were conducted with key stakeholders, including village leaders, traditional and religious leaders, heads of health centres (puskesmas), waste collectors, and representatives of government and non-government organisations operating in the vicinity of the landfill. The interviews focused on gathering information on the social, economic and cultural profile of the community, security conditions (including conflict history), local employment and economy (including agriculture and small businesses), public infrastructure, ecosystem services, public health and community perceptions of the project.

5.3.6 Focus Group Discussions (FGDs): FGDs were conducted with two groups: men and women. The male group included representatives of village officials, community leaders, religious leaders and youth leaders, while the female group included representatives of women leaders, youth and vulnerable groups (such as agricultural workers near the landfill and wastepickers who bring their children to work). The discussions gathered information on the community's knowledge of the project, their socio-economic and cultural conditions, public facilities, safety (including gender-based violence), and the community's expectations, concerns and acceptance. Stakeholder identification at village and sub-district level was also part of the discussions.

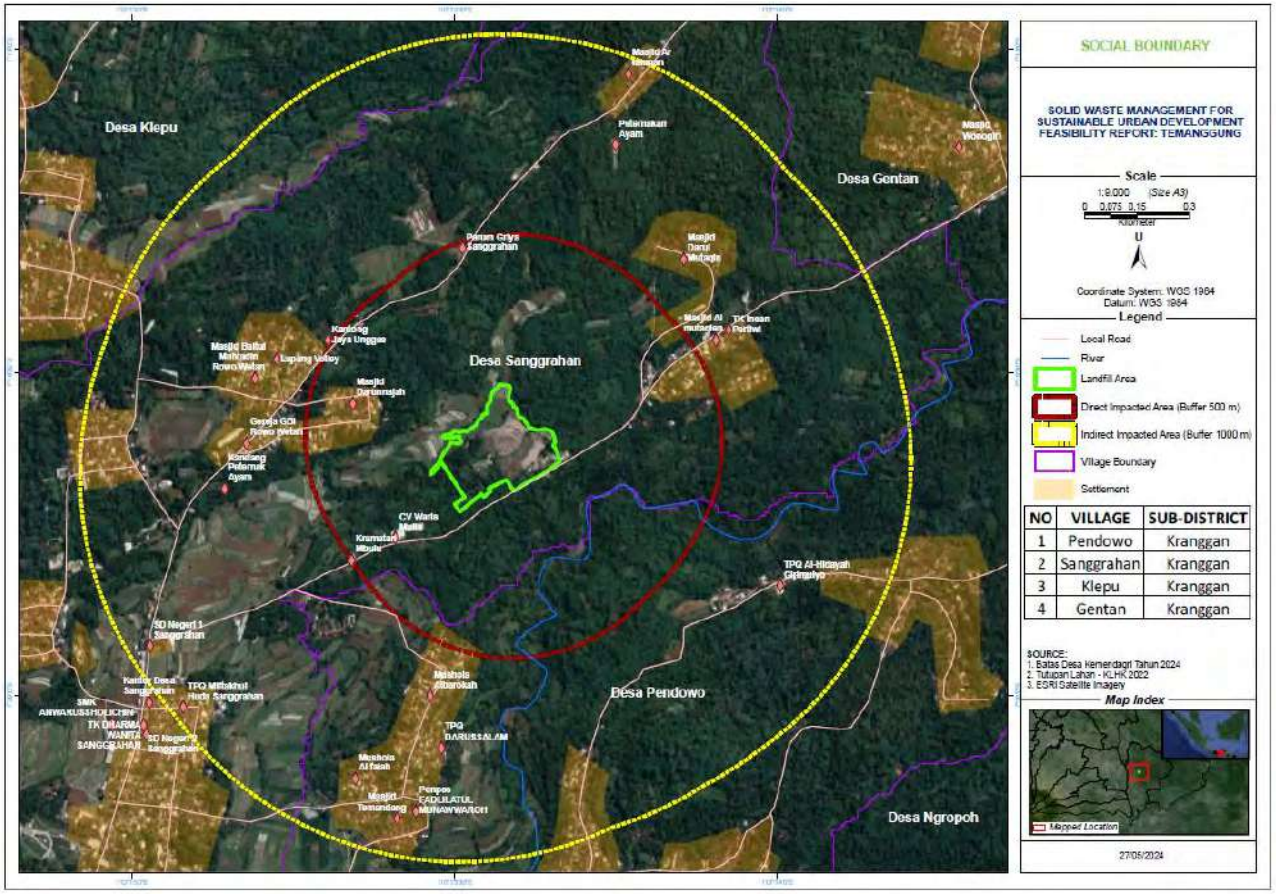
5.3.7 Field observations: Field observations were conducted to gather information on community conditions and sensitive receptors, such as public infrastructure, socio-cultural and economic activities, and cultural heritage sites in the vicinity of the project site. Direct observations of cultural and archaeological sites were also carried out, with a focus on those in the vicinity of the proposed project activities.

5.3.8 The collection of primary data involved various stakeholders located around the project site, as well as stakeholders associated with the project's implementation. Below are the details of the number of stakeholders engaged during the primary data collection process.

Table 5-34 Number of Stakeholders Engaged during Baseline Survey

No	Activities	Gender		Total
		Male	Female	
1	HH Survey of Wastepickers	28	39	67
2	HH Survey of Land Users	3	1	4
3	HH Survey of Waste Collectors	3	0	3
4	KII with Field Workers	9	0	9
5	KII with Head of Village	4	0	4
6	KII with Communities	1	2	3
7	KII with Puskesmas Kranggan	2	3	5
8	Workshop with DPRKPLH	4	1	5
9	FGD with Communities	9	2	11
Total		**63**	**48**	**111**

Figure 5-26 Area of Influence for Social Collecting Data in Temanggung Sub-project



Source : Baseline Survey, August 2024

Project Affected People

5.3.9 Project-Affected People (PAPs) are individuals, households, or communities who experience direct effects, whether beneficial or adverse, as a result of a development project. These effects may include economic or physical displacement, loss of livelihoods, or alterations in access to resources and services.

5.3.10 The development of the Sanggrahan Waste Processing Site (TPST) may affect several communities living near the TPA Sanggrahan or engaged in activities around the landfill. These communities include wastepickers, waste collectors and land cultivators near the landfill. There are 67 wastepickers who make their living at the TPA Sanggrahan, organised under the Non-Organic Waste Sorting Association (PPSNO). The waste collected by the wastepickers is then sold to collectors who visit the site on a rotating basis. There are three collectors who buy waste from the wastepickers at the TPA Sanggrahan. The landowners affected by the project include village officials who own bengkok land to the north of the landfill. The bengkok land, which was originally close to the landfill, was exchanged for another piece of land still within Sanggrahan village. There are four farmers entitled to this land.

5.3.11 Project-affected people have been identified around the TPA Sanggrahan site, as listed by gender in the following table.

Table 5-35 Affected People List

No	Status	Male	Female	Total PAP	HH
1	Wastepickers	28	39	67	47
2	Land user	3	1	4	4
3	Waste Collectors	3	0	3	3
4	Field Workers	150	27	177	N/A

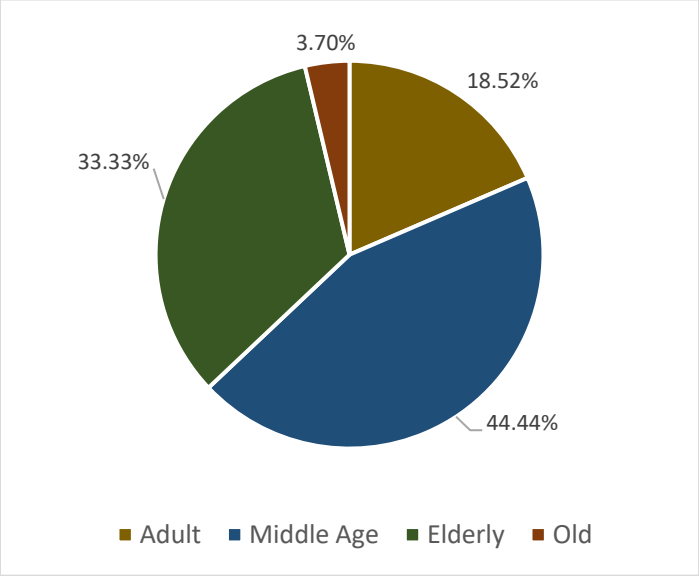
Source : Baseline Survey, August 2024

5.3.12 Based on age, a portion of the project-affected people belongs to the elderly population or older age groups. According to the World Health Organization (WHO), the age classification from adulthood onwards is as follows:

- 25 – 44 years of age: Adult
- 45 – 59 years of age: Middle age
- 60 – 74 years of age: Elderly
- 75 – 90 years of age: Old
- Above 90 years of age: Very old

5.3.13 In general, the majority of the head of Household in the study area are middle age, with approximately 44.44% being middle-aged and 33.33% being elderly. Below is the detailed age distribution of project affected people in TPA Sanggrahan based on WHO classification.

Figure 5-27 Age Distribution of Head of PAP Households in TPA Sanggrahan



Source: Baseline Survey, August 2024

Wastepickers

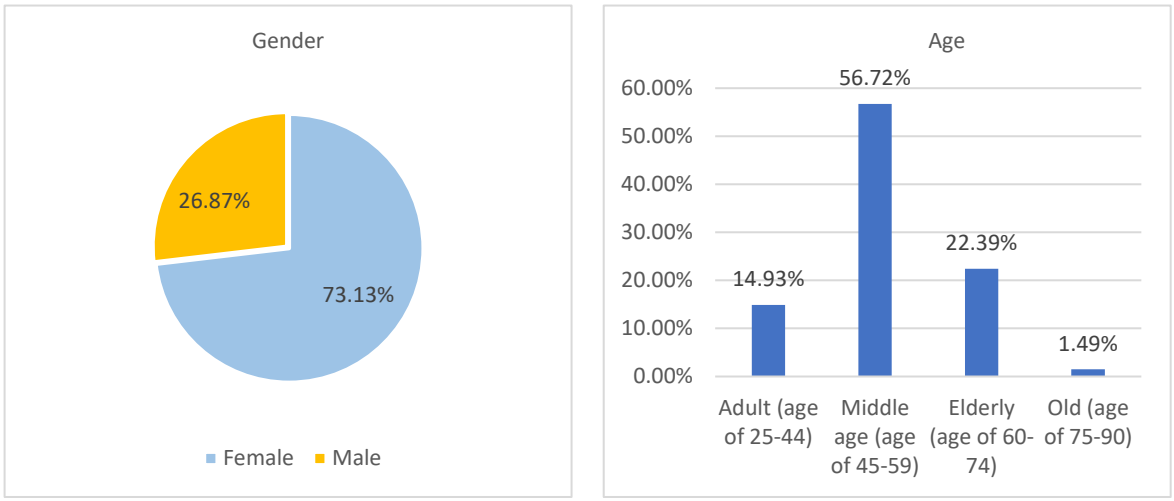
Profile and General Information

5.3.14 Based on census data, 46 out of 47 households in TPA Sanggrahan depend on wastepickers as their main livelihood. Gender data shows that the majority of household heads are male, accounting for 72% of the total, while only 28% are female. In terms of marital status, 72% of household heads are married, while the remaining 28% are widows. The composition of the household varies according to the gender of the household head, the number of family members and their involvement in TPA activities. In male-headed households, the average number of family members per household is three. In contrast, female-headed households have an average of two family members per household.

5.3.15 In terms of age, the distribution shows that most household heads are in the middle-aged (40%) and elderly (36%) age groups, indicating that the majority of wastepickers are over 45 years old. Meanwhile, 19% are in the adult group and only 4% are in the elderly category. These data indicate that the wastepicker population at this site is dominated by people of middle to older age, who may require special attention in terms of their health needs and physical work capacity, especially for the elderly and the aged.

5.3.16 According to the data from the UPTD TPA Sanggrahan, 58.21% of wastepickers in the PPSNO are women, while the remaining 47.79% are men. A census conducted among wastepickers at the TPA Sanggrahan indicates that 46 households work as wastepickers, five of which are led by widows serving as heads of household. The majority of wastepickers belong to the middle-aged group, comprising 56.72% of the total. The second-largest age group is the elderly, accounting for 22.39%. Additionally, one wastepicker has been identified as belonging to the "old" age group, at 79 years old.

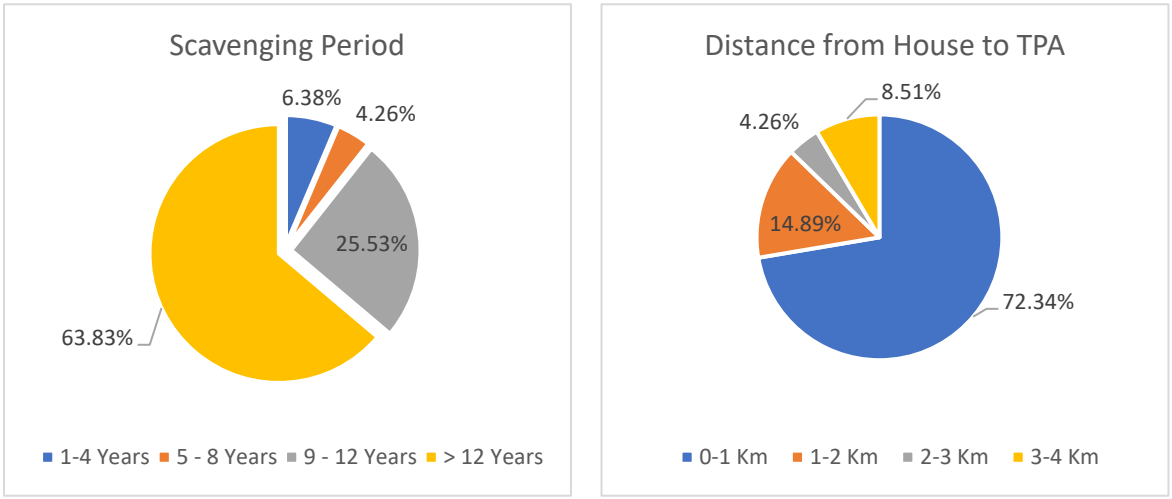
Figure 5-28 Distribution of Wastepicker by Gender, Marital Status, and Age



Source : Baseline Survey, August 2024

5.3.17 The length of time that wastepickers have worked at the TPA Sanggrahan varies. Most wastepickers (63.88%) have worked there for more than 12 years, while only a small group (4.26%) have worked there for 5-8 years. The majority of wastepickers come from Losari Hamlet, where the landfill is located. In terms of distance, most wastepickers (72.34%) live within 1 km of the landfill, while a smaller group (8.51%) live 3-4 km away. During the baseline survey, it was also found that the wastepickers had brought their families with them with special needs.

Figure 5-29 Wastepicking Time and Distance from Wastepicker's House to TPA



Source : Baseline Survey, August 2024

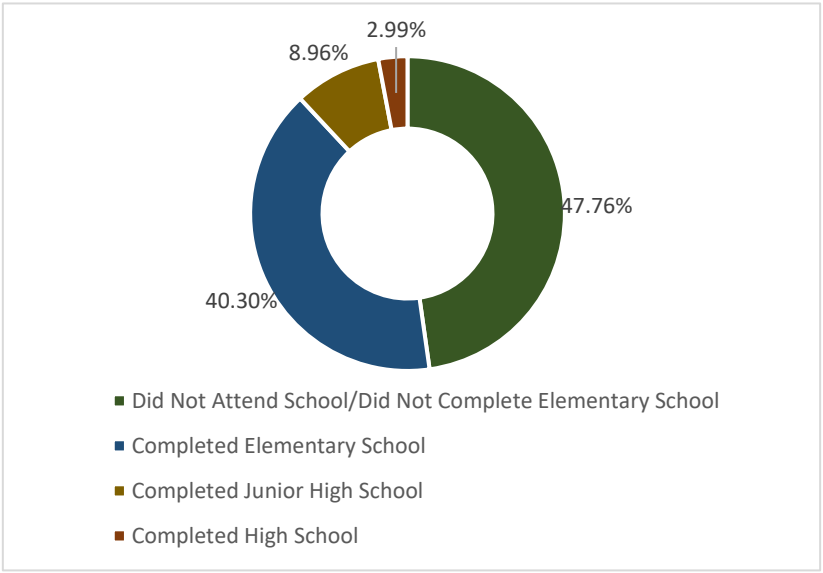
Figure 5-30 Wastepicker and her granddaughter with disability



Source : Baseline Survey, August 2024

5.3.18 All wastepickers at the TPA Sanggrahan identified themselves as belonging to the Javanese ethnic group. In addition, the majority of waste pickers were Muslim, with only one person belonging to another faith. In total, 56.72% of the waste pickers were from Losari Hamlet, which is part of Sanggrahan Village, where TPA Sanggrahan is located. Aside from Losari hamlet, other hamlets serve as the source of waste pickers, including Temandang, Wonogiri, Tambaksari, Malangsari, Madusari, Klepu, Kalipucung and Dejarak. The following graph shows the distribution of villages of origin of waste pickers at the Sanggrahan In terms of educational background, most wastepickers either have no formal education or did not complete elementary school (47.76%). Those who completed elementary school account for 40.30%, and only two individuals have finished high school. There is only one wastepicker who considers waste picking their primary occupation.

Figure 5-31 Number of Wastepicker by Education Level

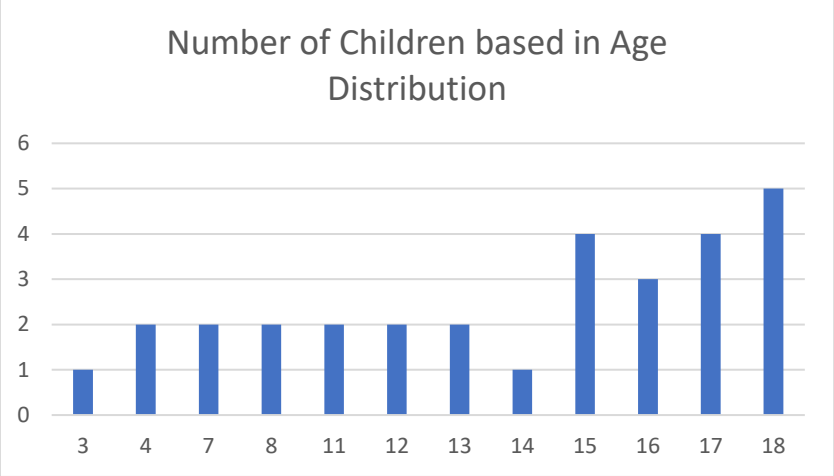


Source : Baseline Survey, August 2024

5.3.19 It was found that there are 16 households (HH) with a total of 30 children, including school-age children (aged 6-18 years) and toddlers (aged 1-5 years). The majority of children fall into the 18-year-old age group, with a total of 5 children, while the 3-year-old and 14-year-old age

groups each consist of only 1 child. Although information indicates that several households have school-age children and toddlers, observations found that only one child was actively involved in activities at the Sanggrahan landfill (TPA). The following chart presents the age distribution of waste picker children in the school-age and toddler categories.

Figure 5-32 Number of Children based in Age Distribution

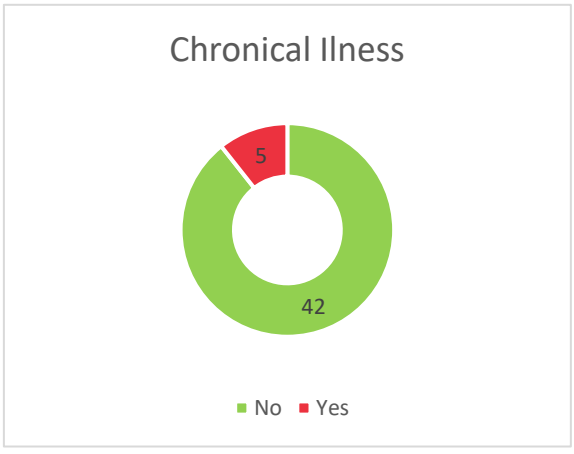


Source: Baseline Survey, August 2024

5.3.20 Based on the interviews conducted, 12 households (HH) indicated that family members also work as wastepickers at the TPA Sanggrahan. These family members include wives and/or children or other relatives within the same household. In addition to family members who scavenge at the landfill, there are households with members who assist with other jobs, such as private sector employees, labourers (including farm laborers, construction workers, and domestic helpers), among others. On average, each household has one additional family member who contributes to the household income.

5.3.21 Several households also reported having family members with chronic illnesses. These conditions include hypertension, tuberculosis (TB), complications, kidney disease, physical disabilities, and mental disabilities. A total of 5 households confirmed having family members with chronic illnesses.

Figure 5-33 Wastepickers with Chronical Ilness



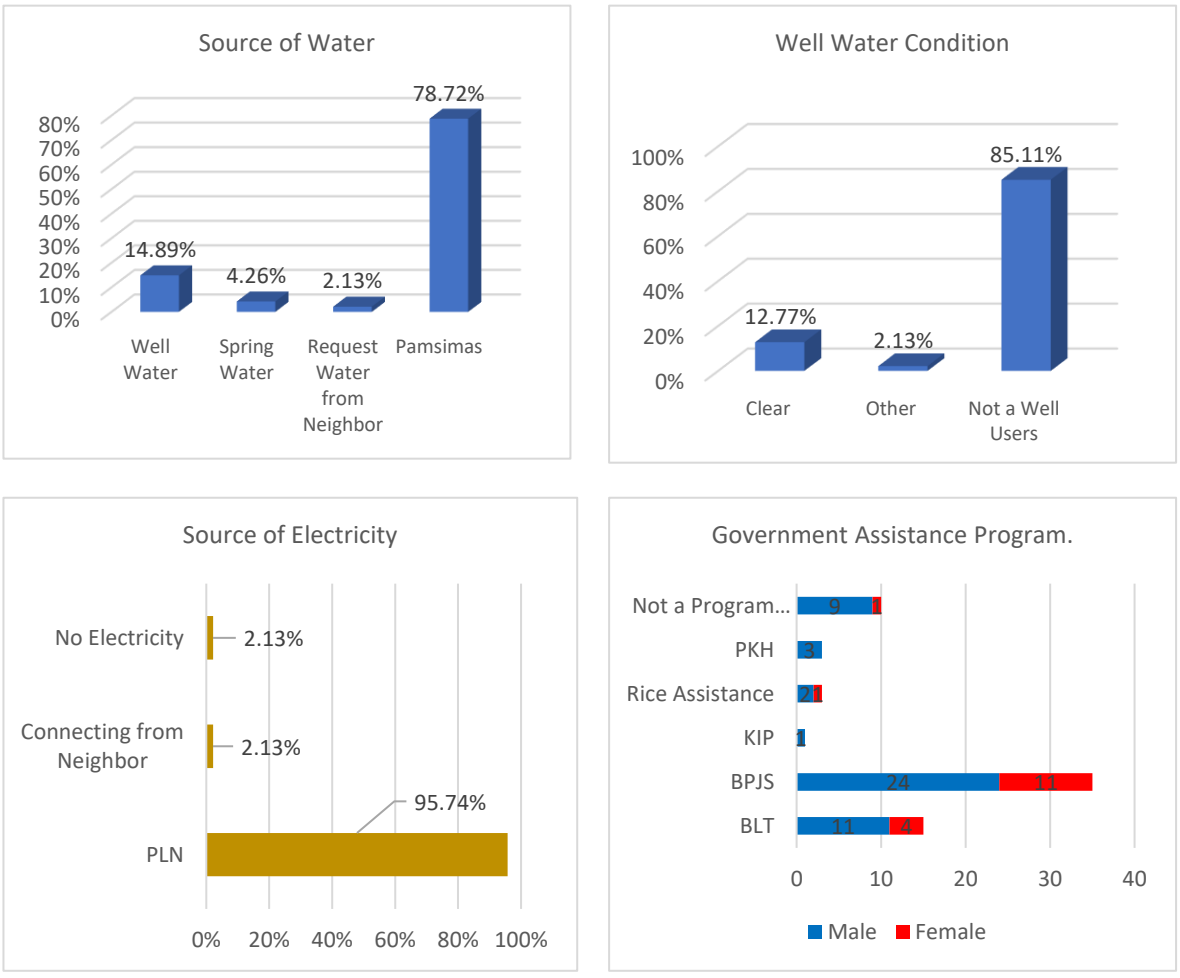
Source : Baseline Survey, August 2024

5.3.22 The wastepickers at the Sanggrahan landfill largely rely on water from PAMSIMAS (Community-Based Drinking Water and Sanitation) for their daily needs, with 78.72% of wastepicker households using PAMSIMAS. In addition to PAMSIMAS, other water sources used by wastepicker households include well water, spring water, and water supplied by neighbours. Among those using well water, most report that the water from their wells is clear.

5.3.23 Electricity is an essential need for the community, including the wastepicker households, with the majority (95.74%) using electricity from the state-owned electricity company (PLN). Some households, however, connect to electricity through their neighbours, and a few still have no access to electricity.

5.3.24 Wastepicker households received some benefit from government support programmes such as BPJS/KIS (health insurance), KIP (education support), rice support, PKH (Family Hope Programme), BLT (direct cash transfer) and others. According to the data, 35 households are beneficiaries of the BPJS programme, of which 11 are female-headed households. However, there are still households that do not receive government assistance, including 9 male-headed households and 1 female-headed household.

Figure 5-34 Water Condition, Electricity Condition, and Assistance Program

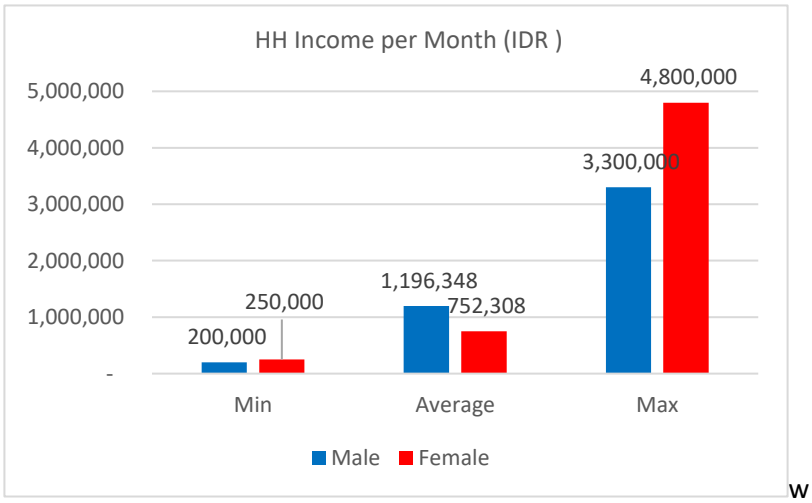


Source : Baseline Survey, August 2024

Economic Condition of Wastepickers

5.3.25 The monthly income of male-headed households ranges from IDR 200,000 to IDR 3,300,000, with an average income of IDR 1,196,348. In contrast, the monthly income of female-headed households ranges from IDR 250,000 to IDR 4,800,000, with an average income of IDR 752,308. Based on this data, it can be observed that although female-headed households have a higher potential maximum income (IDR 4,800,000), their average income is lower compared to male-headed households.

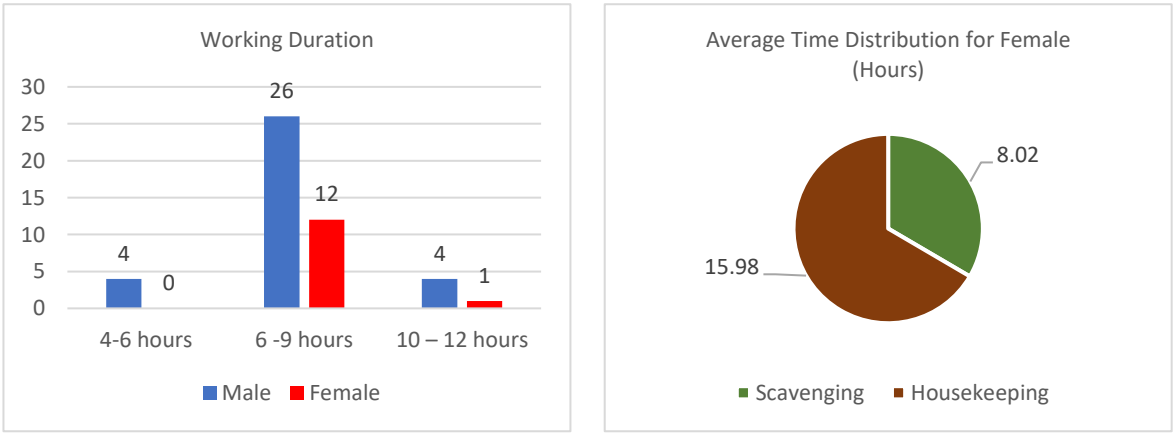
Figure 5-35 Wastepickers Income per Month



Source : Baseline Survey, August 2024

5.3.26 The wastepickers at the TPA Sanggrahan work all year round, typically 6 to 9 hours a day, with 38 households working these hours. A smaller group work between 4 and 6 hours, while some work up to 12 hours. Female wastepickers balance scavenging with household responsibilities, spending an average of 8.02 hours on scavenging and 15.98 hours on household chores such as cooking, cleaning and laundry. This highlights the significant workload, particularly for women, who juggle both demanding wastepicking work and household activities.

Figure 5-36 Duration of Wastepicking and Time Distribution for Female Wastepicker

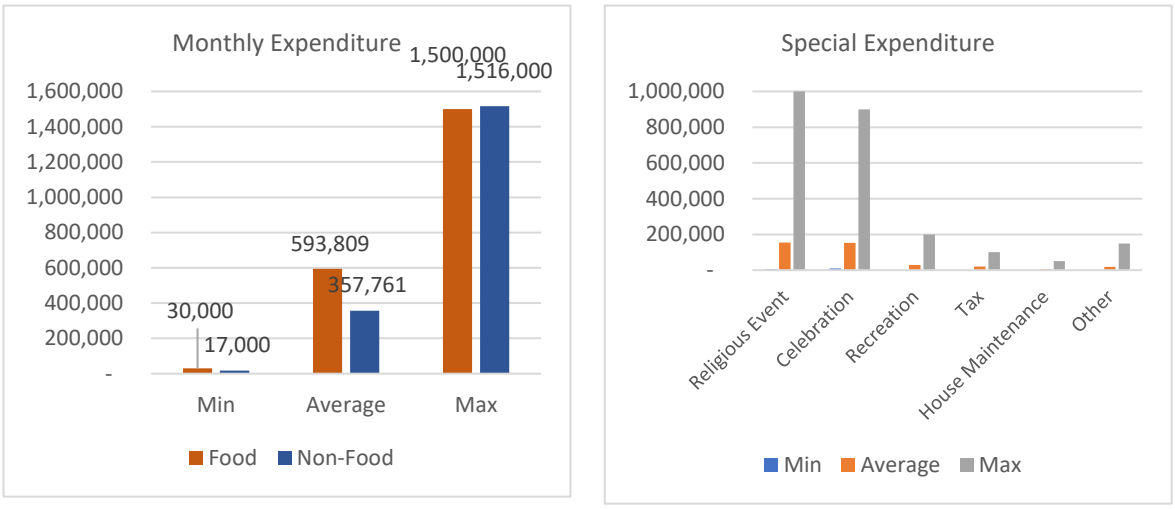


Source : Baseline Survey, August 2024

5.3.27 The monthly expenditure of wastepicker households shows that the majority of their expenditure is on food, ranging from IDR 30,000 to IDR 1,500,000 per month, with an average expenditure of IDR 593,809. Non-food expenditures, such as utilities or other necessities, range from IDR 17,000 to IDR 1,516,000, with an average of IDR 357,761. In addition to these

regular expenses, households also have special monthly expenses. They spend between IDR 5,000 and IDR 1,000,000 on religious activities, with an average of IDR 154,667. Special events such as weddings, funerals, circumcisions and births cost between IDR 10,000 and IDR 900,000, with an average of IDR 152,778. Leisure costs are relatively low, averaging IDR 28,571 per month, with a maximum of IDR 200,000. Payments for property taxes and retributions (PBB) average IDR 20,609 with a maximum of IDR 100,000. Household maintenance costs are minimal, averaging IDR 6,250 per month, while miscellaneous expenditure averages IDR 18,750 with a maximum of IDR 150,000. Overall, food and non-food expenses dominate the monthly budget, while special expenses related to religious activities and events vary widely. Expenditure on household maintenance and recreation remains relatively low, and taxes and levies represent a modest cost for most families.

Figure 5-37 Expenditure of wastepickers household per month

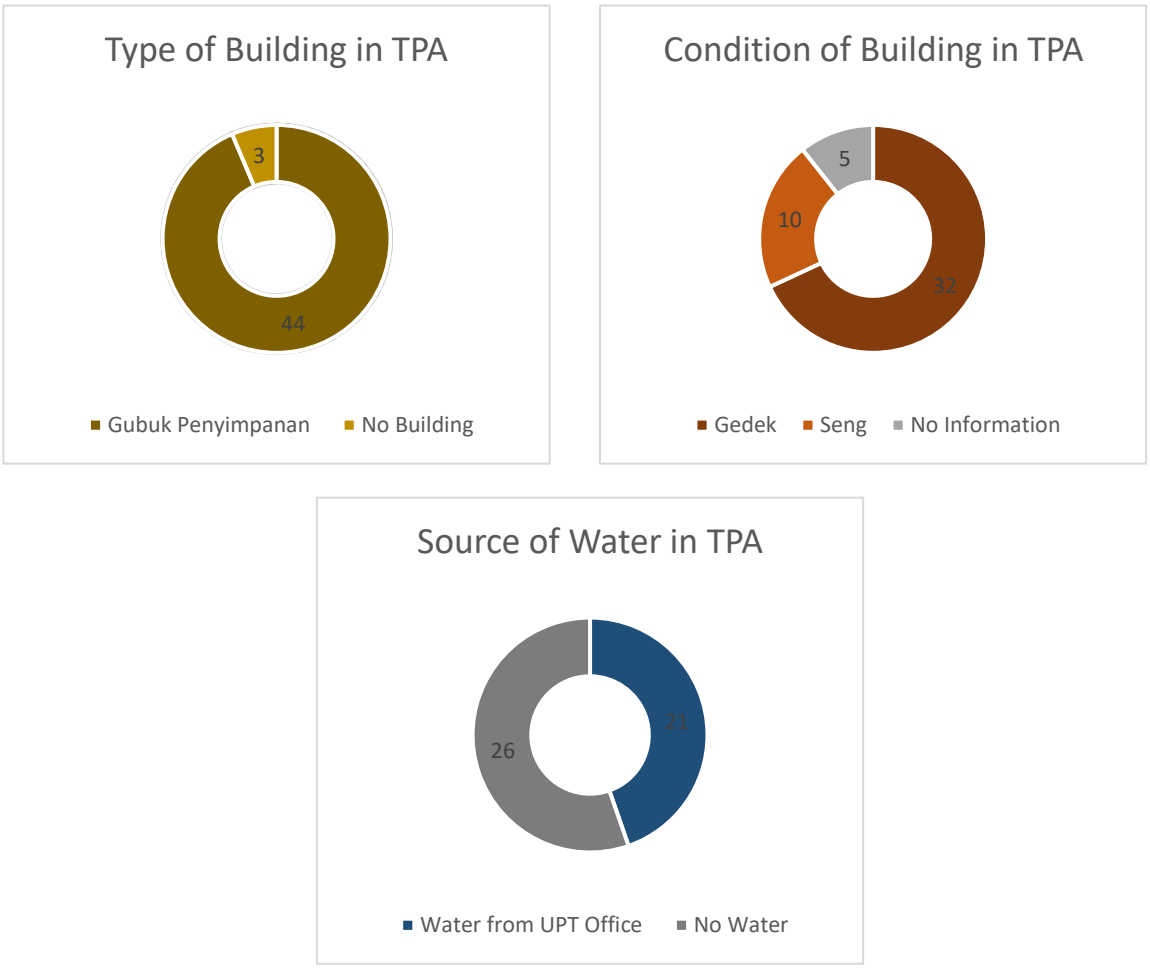


Source : Baseline Survey, August 2024

5.3.28 In the TPA Sanggrahan, the majority of wastepicker households (93.6%) have a simple structure, typically used for storage, called 'gubuk penyimpanan'. However, 6.4% of households do not have any form of shelter. In terms of the condition of these structures, 68.1% are made of traditional materials such as "gedek" or bamboo walls, while 21.3% are made of corrugated iron (seng). Meanwhile, 10.6% of households report having no structure at all. In terms of construction costs for these makeshift structures, the minimum cost is negligible, with an average cost of IDR 113,302 and a maximum cost of IDR 1,650,000. This suggests that most wastepicker households have invested minimal amounts in the construction of their shelters at the dump. Gubuk penyimpanan owned by the wastepickers are used to keep the waste they have collected. This is necessary because most wastepickers cannot take the waste home, as they do not have vehicles to transport it. In addition to storing collected waste, the wastepickers also use these gubuk as sorting areas before the waste is sold to waste collectors who visit the landfill once a week.

5.3.29 Access to basic utilities is quite limited in Gubuk Penyimpanan. For water, 44.7% of wastepicker households rely on water provided by the UPT office, while 55.3% have no access to water. Electricity is completely absent from the gubuk penyimpanan, with 100% of households reporting no access to electricity.

Figure 5-38 Wastepicker building the landfill



Source : Baseline Survey, August 2024

Health and Safety

5.3.30 5.3.28 The health status of wastepicker households in the TPA Sanggrahan shows that common illnesses include influenza, which affects 63.8% of households, while skin diseases such as eczema are reported by 2.1%. A further 2.1% report tingling sensations, while 31.9% of households report no common illnesses. In terms of health coverage, 53.2% of households are covered by BPJS (Indonesia's national health insurance scheme), 17% by KIS (a health insurance scheme for the poor), while 29.8% have no health insurance at all, indicating a significant gap in access to health care. In terms of medical treatment, more than half of households (51.1%) seek help from health professionals, 36.2% buy medicines from local shops, and 6.4% use traditional remedies such as herbal medicine (jamu) or practices such as 'kerokan' (a form of traditional massage involving scraping the skin).

5.3.31 Access to health facilities also varies. Most households (100%) use puskesmas (community health centres) and 95.7% use Posyandu services (maternal and child health services). Other facilities such as clinics (31.9%), midwives (66%) and hospitals (87.2%) are also used, although many wastepicker households have limited access to puskesmas pembantu (subsidiary community health centres), with only 6.4% using this service

Table 5-36 Wastepickers Perception on Health Facilities

Health Facility	Available	Unavailable	Perception	
			Sufficient	Adequate
Midwife	65,96%	34,04%	12,90%	87,10%
Polyclinic	31,91%	68,09%	13,33%	86,67%
Integrated Health Post	95,74%	4,26%	6,67%	93,33%
Community Health Center	100,00%	0,00%	10,64%	89,36%
Subsidiary Health Center	6,38%	93,62%	0,00%	100,00%
Hospital	87,23%	12,77%	4,88%	95,12%
Others	0,00%	100,00%	0,00%	0,00%

Source : Baseline Survey, August 2024

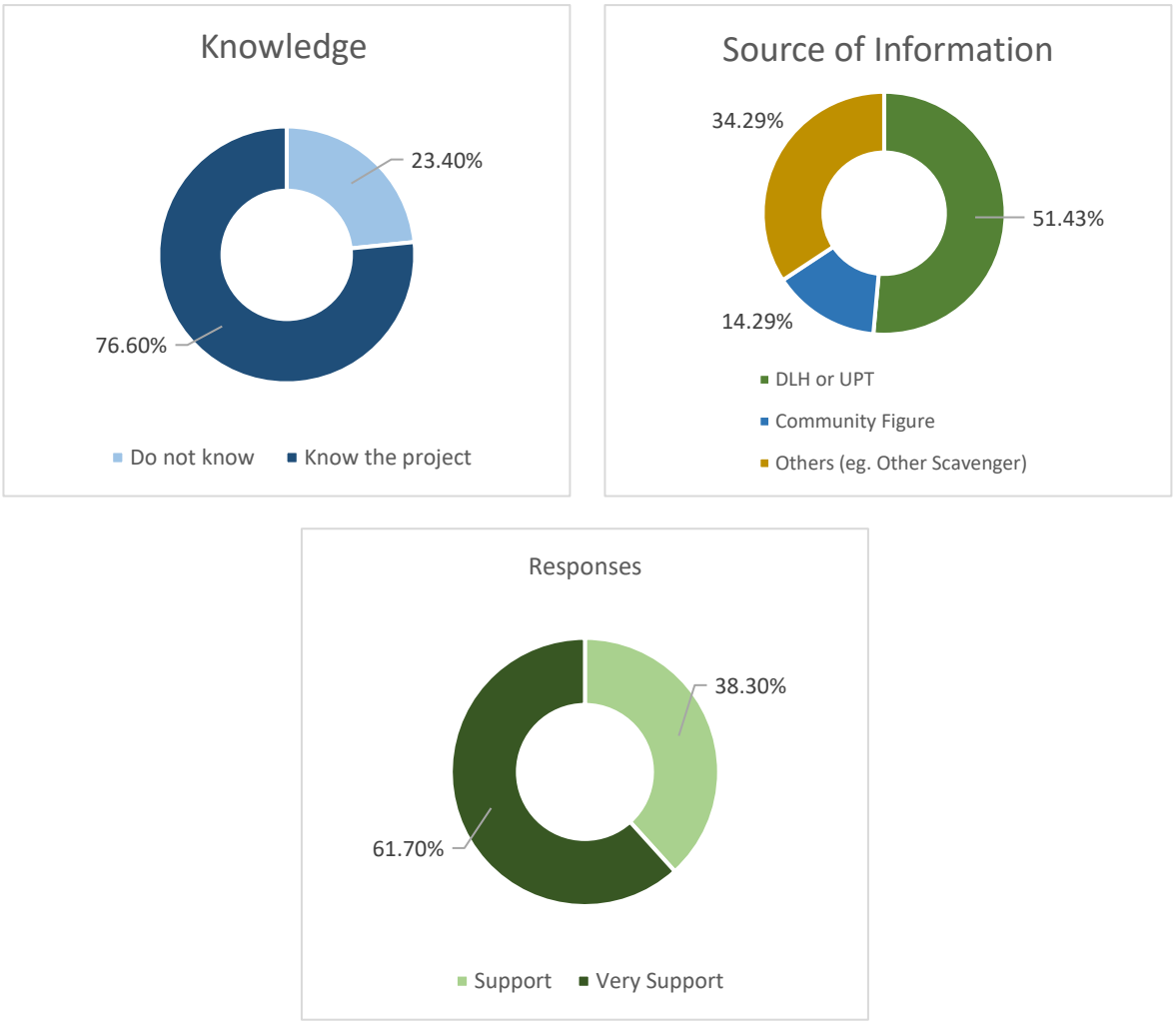
5.3.32 Regarding conflicts at the landfill, almost all households (97.9%) report never having experienced any form of conflict. However, 2.1% report conflict and 4.3% have experienced sexual harassment, while the vast majority (95.7%) have not experienced such problems. While some wastepicker households have access to health services and insurance, there are still significant gaps, particularly in health insurance coverage and reliance on traditional medicine. In addition, while conflicts are rare, reports of sexual harassment indicate the need for improved security measures in the TPA.

Wastepicker Knowledge about the Project

5.3.33 Awareness of the Integrated Waste Processing Site (TPST) among wastepicking households in the TPA Sanggrahan is remarkably high, with 76.6% of respondents reporting familiarity with the TPST, while 23.4% reported ignorance. The main source of information on the TPST is the Environmental agency (DLH) or local UPT offices, accounting for 51.4% of responses. Other notable sources include community leaders (14.3%) and fellow wastepickers (34.3%).

5.3.34 In terms of attitudes towards the TPST, a clear majority of respondents, 61.7%, expressed strong support, while 38.3% indicated general support for the initiative. However, concerns about the potential negative impact on their livelihoods were noted, with 23.4% of respondents expressing concern about the loss of income opportunities associated with the TPST, while 76.6% reported no such concerns.

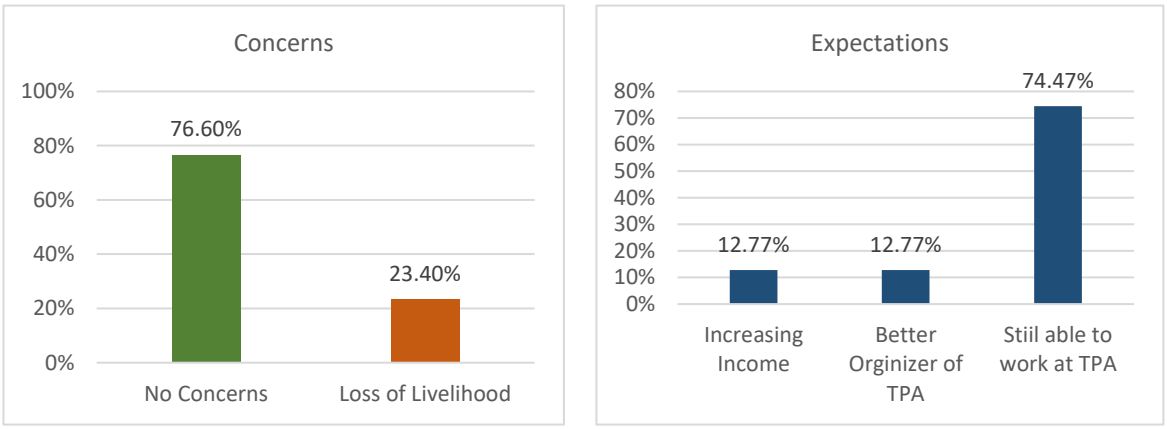
Figure 5-39 Information Regarding TPST Development



Source : Baseline Survey, August 2024

5.3.35 In terms of current working conditions at the landfill, almost all respondents (95.7%) reported feeling comfortable in their role at the TPA, with only a marginal percentage (2.1%) reporting discomfort. In addition, a very small number (2.1%) reported feeling very comfortable. their aspirations for the future, a significant majority (74.5%) expressed a desire to continue working at the TPA. In contrast, a smaller proportion of respondents expressed hopes for improvements in waste management (12.8%) and an increase in their income (12.8%).

Figure 5-40 Wastepickers Concerns and Expectations on TPST Development



Source : Baseline Survey, August 2024

5.3.36 The development of the TPST Sanggrahan is viewed positively by the wastepicker community, which expects improvements in working conditions and waste management practices. However, significant concerns have been raised about the potential challenges associated with this project. Key issues include the possibility of temporary displacement during construction, which could impede wastepickers' access to essential areas and disrupt their daily activities. In addition, the introduction of the new facility could create job insecurity among existing wastepickers due to increased competition for employment opportunities, raising fears of potential job losses. In addition, the expected improvements in waste management may change the composition of waste, affecting the types of materials available for scavenging and potentially reducing income levels for those dependent on certain items. In order to maximise the benefits of the development to the community, it is essential to address these concerns and proactively engage stakeholders throughout the implementation of the project.

5.3.37 Despite these concerns, the development of the TPST has generated optimism among wastepickers, who anticipate several positive outcomes:

- Continued livelihood: The wastepickers expect to maintain their livelihoods, either through continued scavenging activities or through employment opportunities within the new facility.
- Designated waste collection areas: The establishment of designated waste collection zones will promote a more organised working environment for wastepickers.
- Improved waste management practices: The project is likely to improve overall waste management, promoting efficiency and sustainability within the community.
- Improved public facilities: Improvements to prayer facilities and other public amenities at the TPA Sanggrahan are expected to contribute positively to the welfare of the community.
- Training and Skills Development: The project may provide training programmes to equip wastepickers with skills that could lead to better paid jobs.
- Community engagement: The project could promote cooperation between wastepickers, local authorities and other stakeholders, thereby strengthening community ties.

- Increased environmental awareness: With a focus on waste management, there may be opportunities for wastepickers to engage in community-led environmental initiatives.

Land User

Profile and General Information

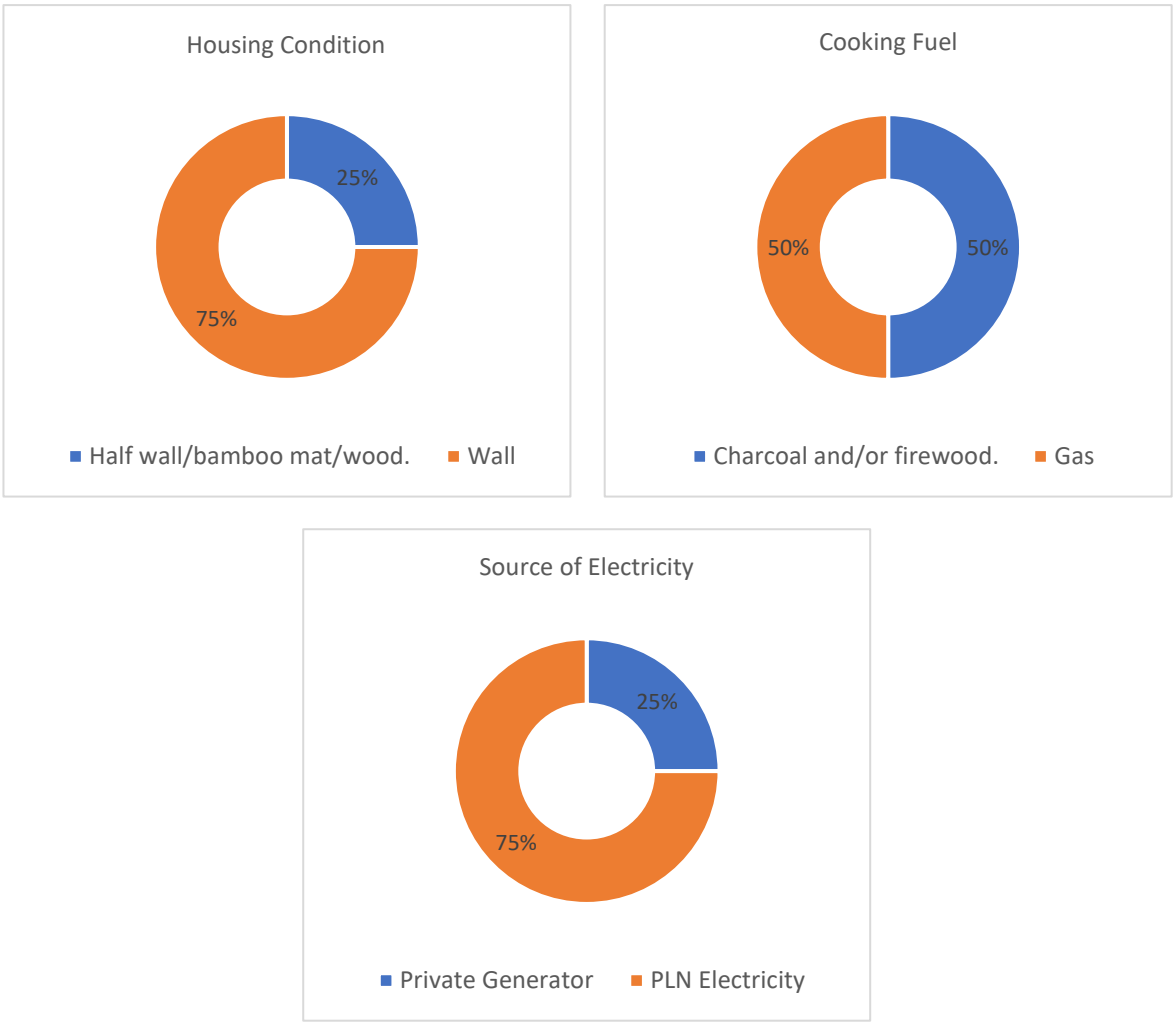
5.3.38 The social survey results indicate that there are four land users who will be using the land for the Integrated Waste Processing Site (TPST), all of whom are heads of families who serve as village officials and who have received "bengkok" land as a result of their positions. All land users are male (100%) and all are married (100%). In terms of age category, three land users (75%) fall into the middle age group, while one land user (25%) is classified as elderly. All land users practice Islam (100%) and belong to the Javanese ethnic group (100%).

5.3.39 Regarding their place of residence, one land user comes from the village of Rowokulon (25%) and three land users come from the village of Sanggrahan (75%). In terms of formal education, one land user completed primary school (25%), one land user completed junior high school (25%), and two land users completed senior high school/vocational school (50%). In terms of non-formal education, three land users (75%) have no non-formal education, while one land user (25%) has non-formal education.

5.3.40 The family composition of the land users near the TPA Sanggrahan shows an average household size of 3 members, with a minimum of 2 members and a maximum of 4 members. In terms of children, there is one school-age child aged 17, but no children in the infant category. In terms of help at work, households typically have between 1 and 3 members helping, with an average of 1.75 members contributing. These assisting family members work in a variety of occupations, including agriculture (landowners), the military and the police. In terms of health, 75% of households report no chronic illnesses, while 25% have a family member with a chronic illness, particularly heart disease.

5.3.41 Land users in the area around the TPA Sanggrahan mainly rely on different sources for their water needs. All respondents (100%) indicated that they use PAMSIMAS for drinking water, while 75% use it for bathing and cooking purposes. In terms of housing conditions, 75% of households are constructed with full walls, while 25% have walls made of half-timber or bamboo. In terms of fuel sources, half of the land users use charcoal or firewood, while the other half use gas. Regarding electricity, 75% of the respondents are connected to PLN, while 25% rely on their own generator sets, indicating a mix of modern and traditional energy sources in the households. Below is detailed information regarding the housing conditions and asset ownership of the land users.

Figure 5-41 Housing Profile of Land User HH



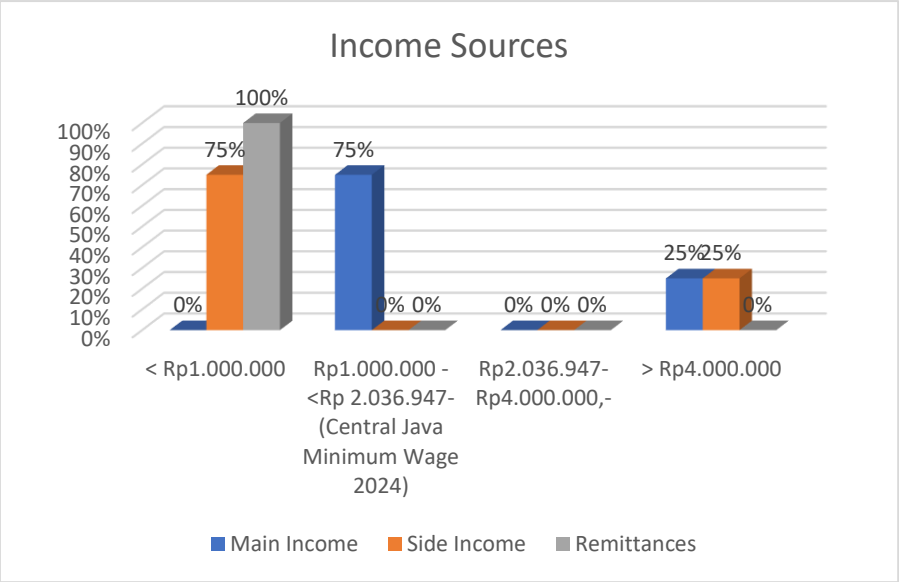
Source : Baseline Survey, August 2024

5.3.42 Land users have access to BPJS health insurance, which ensures full coverage (100%). When seeking medical treatment, the majority prefer to consult health workers, with 75% bringing their health concerns to professionals, while 25% choose to buy medicines from local shops. Traditional remedies are also popular, with 75% of people using treatments such as kunyit asam and STMJ (a traditional herbal drink). Among those who use traditional medicine, 51% consult health workers, 36.17% purchase medications from local stores, and 6.38% rely on traditional remedies like kerokan (scraping therapy), jamu (herbal drinks), and other herbal treatments like kencur and tolak angin. In terms of health facilities, all respondents have access to midwives with 100% coverage, while 50% have access to clinics. Both posyandu (integrated health service posts) and puskesmas (community health centers) are available to 100% of participants, and 75% have access to hospitals. This indicates that while health facilities are accessible, many individuals still rely on traditional methods to manage their health concerns.

Economic Condition

5.3.43 The average monthly income of village officials who are land users near the TPA Sanggrahan is IDR 3,330,500, with a minimum of IDR 2,018,000 and a maximum of IDR 4,268,000. In terms of income sources, three of these officials earn their primary income below IDR 2,036,947, which is in line with the Jawa Tengah UMP for 2024, while one official earns more than IDR 4,000,000. In addition, three of the land users rely on secondary income from working "bengkok" land, with no land user reporting income between IDR 2,036,947 and IDR 4,000,000. In addition, one household receives remittances, representing 100% of this category, highlighting the diversity of income sources among these land users.

Figure 5-42 Land user source of Income



Source : Baseline Survey, August 2024

5.3.44 The monthly expenditures of the land users near the TPA Sanggrahan reveal significant financial patterns. Food expenditure averages IDR 1,200,000, with a minimum of IDR 600,000 and a maximum of IDR 2,000,000. Non-food expenditure averages IDR 848,750 and ranges from IDR 315,000 to IDR 1,185,000. In addition, specific expenditures related to cultural and religious activities show an average of IDR 550,000 for events such as weddings, funerals, circumcisions and births, with a minimum of IDR 500,000 and a maximum of IDR 600,000. Religious activities average IDR 189,750 and range from IDR 167,000 to IDR 225,000. Payments for land taxes and retribution averaged IDR 76,050, with a minimum of IDR 12,500 and a maximum of IDR 150,000. Notably, all land users report that they do not face any economic barriers, indicating a stable financial situation.

Figure 5-43 Expenditure Profile of Land Users



Source : Baseline Survey, August 2024

5.3.45 Based on the information gathered regarding the economic background of the land users, respondents stated that they do not experience any significant economic barriers. In the event of economic difficulties, they typically seek assistance from other family members or borrow from the bank. The amount of loans taken out by the land users varies, ranging from Rp20,000,000 to Rp50,000,000. All four land users are beneficiaries of the government's BPJS Health program.

5.3.46 The land users of the TPA Sanggrahan have various assets that indicate their economic situation. None of them own bagan tancap, tambak or gold. However, they have an average of 3 mobile phones, with numbers ranging from 1 to 7. All households own 1 refrigerator and 1 television. The average number of vehicles is 3 motorcycles and 2 cars. The average size of their houses is 150.75 m², with a range from 112 m² to 200 m². They also own an average of 3,687.5 m² of agricultural land, ranging from 750 m² to 10,000 m². In addition, they have other land averaging 355.5 m², but they do not report any savings, which may indicate financial difficulties.

Table 5-37 Asset Ownership by Land User

Asset Ownership	Unit	Min	Average	Max
HP	Unit	1	3	7
Refrigerator	Unit	1	1	1
Car	Unit	2	2	2
Motorcycle	Unit	2	3	5
House	m2	112	252	200
Farm/Plantation	m2	750	3688	10000
Bicycle	Unit	1	1	1
TV	Unit	1	1	1
Land	m2	272	356	400

Source : Baseline Survey, August 2024

5.3.47 The "bengkok" land utilized by the land users is used for developing agricultural fields with commodities such as rice and chili. The size of the "bengkok" land varies from one land user to another. Two land users received 3,500 m² of land, one received 2,750 m², and one received 3,700 m². According to three land users, the land area provided as compensation in the land exchange process is in line with the previous land area, especially considering that the compensated land has easier access to water and is more fertile. However, one land user expressed that the compensation provided was not adequate. Below is a table detailing the agricultural profiles of each land user.

Table 5-38 Agricultural Profile

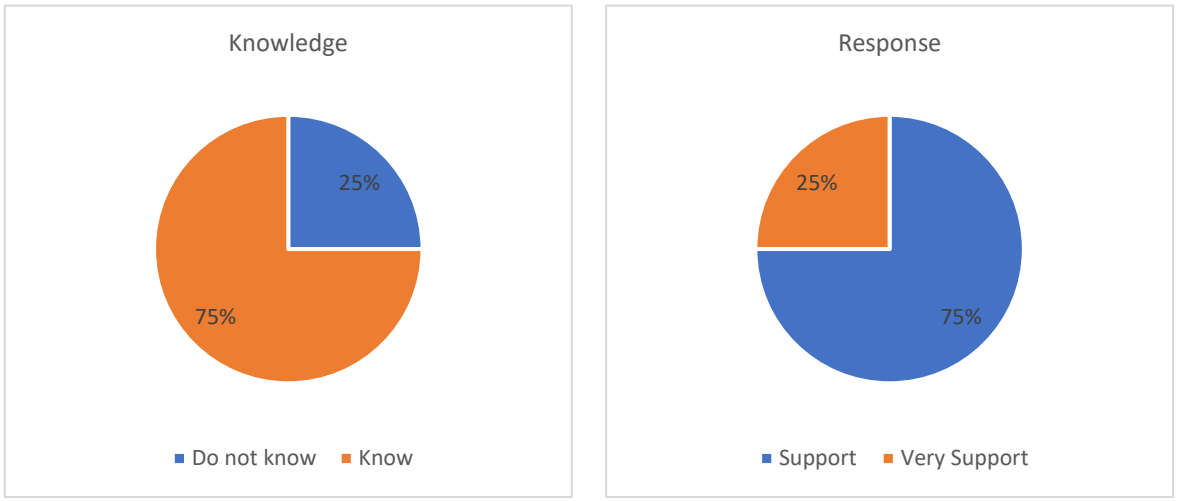
HH	Total Land Area (m²)	Type of Cooperation/ Permit	Duration of Land Use (Year)	Compensation	Total Compensated Area (m²)	Project Notification	Activities conducted on the land
Riyanto	2,750	Bengkok	16	Yes, and appropriate	2,000	Yes	Agriculture (annual crops)
Sunarno	3,500	Bengkok	25	Yes, and appropriate	2,000	Yes	Crops and Chili
Sulistyowati	3,700	Bengkok	0	Yes, and appropriate	2,000	Yes	
Pardi	3,500	Bengkok	20	Yes, but note appropriate	2,000	Yes	Agriculture (perennial crops) or trees.

Source : Baseline Survey, August 2024

Knowledge about the project

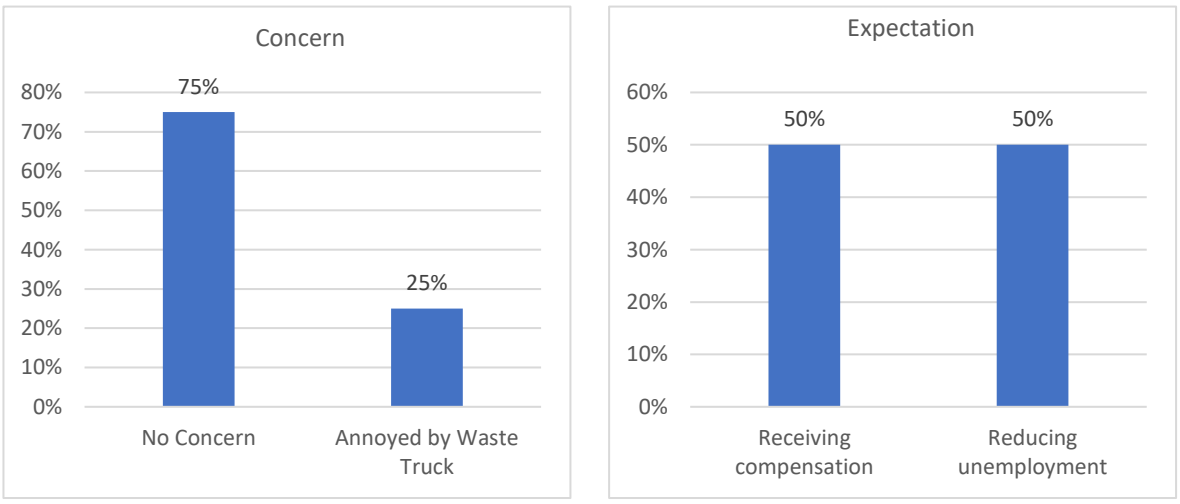
5.3.48 In terms of knowledge about the total solid waste treatment site (TPST), 75% of the respondents were aware of its existence, while 25% were not. All individuals (100%) indicated that they have received information about the TPST from the village head or local officials. The community's response to the TPST is largely supportive, with 75% expressing support and 25% expressing strong support. Despite this overall support, there are concerns, with 25% of respondents worried about garbage trucks causing disruptions, while 75% have no such concerns. Currently, all respondents (100%) feel that their living conditions are comfortable. Looking to the future, 50% of the community would like to see compensation for those affected by the TPST, while another 50% would like to see a reduction in unemployment.

Figure 5-44 Information Regarding TPST Development



Source : Baseline Survey, August 2024

Figure 5-45 Land Users Concerns and Expectation



Source : Baseline Survey, August 2024

Waste Collector

Profile and General Information

5.3.49 At the landfill, there are three collectors who take turns to collect waste. The results of the baseline data analysis of the collectors in TPA Sanggrahan show that all respondents (100%) are male, sometimes one of the collectors' wives comes to the landfill to help with the recording. In terms of marital status, all respondents (100%) are married. In terms of age, 33.33% of the respondents are classified as adults, while 66.67% are in the middle age group.

5.3.50 The waste collectors at the TPA Sanggrahan consist of individuals from Desa Sanggrahan (2) and Desa Rowokulon (1). In terms of religion, all respondents (100%) are Muslims.In terms of ethnicity, 66.67% are from the Javanese ethnic group, while 33.33% are from the Temanggung ethnic group. In terms of village of origin, 66.67% of the respondents are from the village of Losari, while 33.33% are from the village of Rowokulon.

5.3.51 Waste Collectors in TPA Sanggrahan consist of an average of three to four family members, with three school-age children between the ages of 13 and 16. Each collector has one family member who helps with the work, with various occupations, including laborers (such as agricultural workers and masons) and traders. None of the respondents had chronic diseases, so all the collectors were in good health. Their work experience as collectors varied, ranging from 7 to 29 years, and they worked an average of 6 to 7 days per week.

5.3.52 According to the census, the collectors have been working in this field for an average of 15 years. Some work every day, while others work six days a week. Two collectors stated that they receive waste not only from the TPA Sanggrahan but also from other locations, such as Wonosobo, and directly from individuals. The collected waste is sold in several areas, including Solo, Magelang, and Temanggung itself. Waste sales occur four to eight times per month and are transported using their own vehicles.

Economic Condition

5.3.53 One of the three waste collectors only takes waste from the TPA Sanggrahan, while two collectors also take waste from other sources. There are no wastepickers working alongside them. On average, sales take place 5 to 8 times per month, and all collectors use their own vehicles for sales.

5.3.54 In terms of expenditures, collectors spend about Rp 70,000 on transportation and Rp 150,000 on driver wages. On average, they spend Rp565,000 on labor to sort the items. Each collector employs between 1 and 8 workers.

5.3.55 Monthly income for collectors ranges from Rp4,000,000 to Rp5,500,000, with an average primary income of Rp3,916,667, secondary income of Rp736,111, and remittance income of Rp1,000,000.

Knowledge about the project

5.3.56 The survey shows that 66.67% of the respondents have knowledge about the waste management system (TPST), while 33.33% have no knowledge. Regarding sources of information, 50% of respondents mentioned the Environment agency (DLH) or UPT, while the other 50% mentioned wastepickers as their source of information.

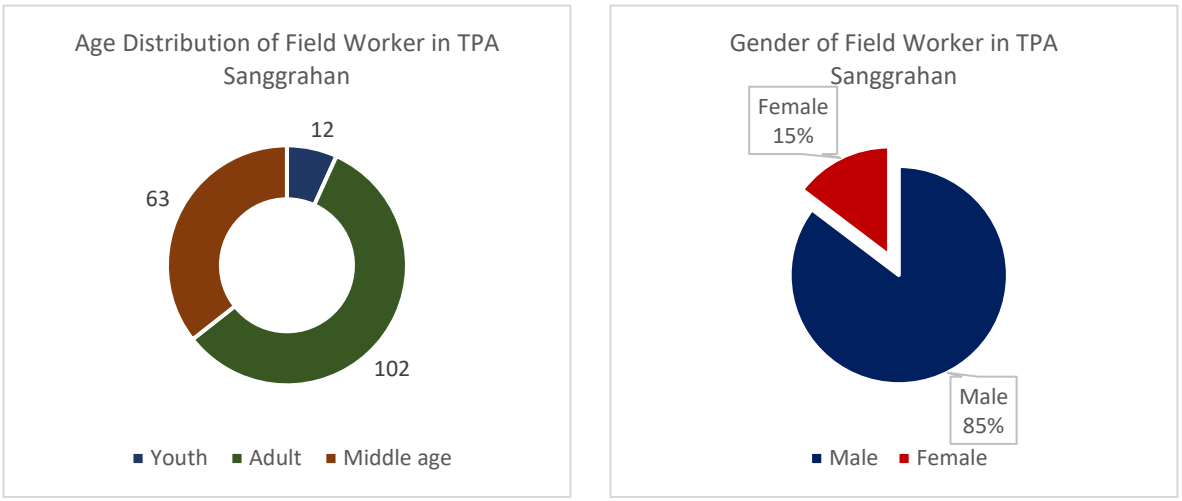
5.3.57 Regarding attitudes towards the TPST, 66.67% of respondents expressed support for the TPST, while 33.33% did not. When asked about their concerns, 66.67% reported no concerns, while 33.33% were worried about the obstacles faced by wastepickers.

5.3.58 The current situation was perceived as comfortable by all respondents (100%). Regarding future expectations, opinions varied: 33.33% hope that the dump will not be processed, another 33.33% seek compensation, and 33.33% have no particular expectations.

Field Workers in TPA Sanggrahan

5.3.59 The field workers at the TPA Sanggrahan number 177, consisting of 85% men and 15% women. Based on age groups, the field workers are predominantly from the youth group (15–24 years old), with a total of 102 individuals. The other groups include 63 adults and 12 middle-aged workers.

Figure 5-46 Age and Gender Distribution of Field Worker in TPA Sanggrahan



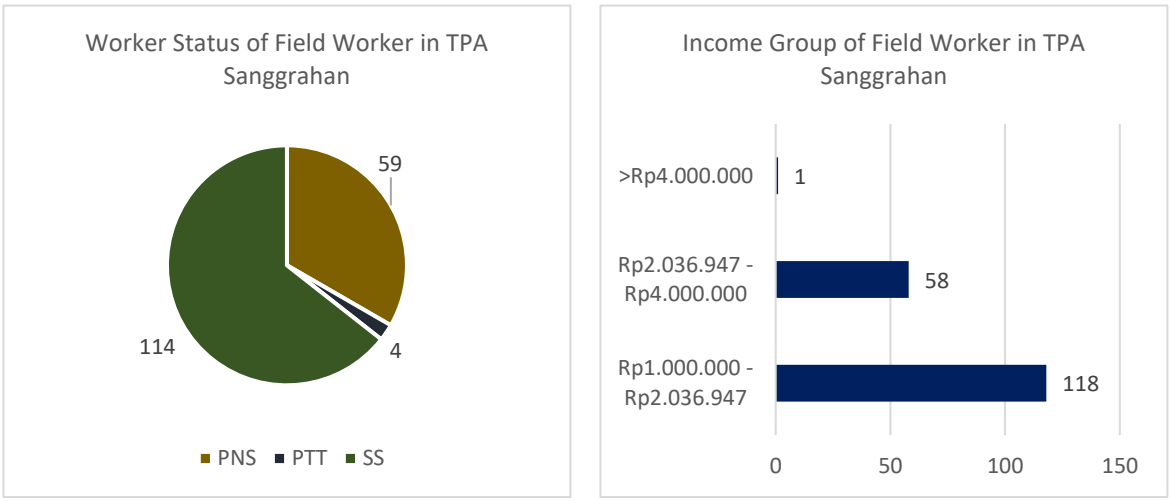
Source: DPRKPLH Temanggung, 2024

5.3.60 Field workers at the TPA Sanggrahan include drivers and waste loaders. The transportation they use for waste collection consists of trucks, pick-up trucks, and amrol (roll-off container trucks). Each vehicle is staffed by several personnel: trucks have 5 personnel, pick-up trucks have 3 personnel, and amrols have 1 personnel. These vehicles are owned by the DPRKPLH (Department of Public Works, Spatial Planning, Housing, and Environment) of Temanggung.

5.3.61 The workers typically begin their day by collecting their vehicles from the DPRKPLH parking lot at 5 a.m. and then proceed to collect waste from the community. Waste collection is usually completed in one trip, finishing around 10:00 a.m. However, amrol vehicle operators can make up to six trips per day due to the smaller size of the vehicle.

5.3.62 Based on interviews conducted with worker representatives, some workers are civil servants (PNS), while others are contracted workers (honorary). Civil servants receive salaries according to their respective job categories, while contracted workers are paid around Rp 1,800,000 per month. According to data from DPRKPLH Temanggung, there are three types of employment statuses for waste management and sanitation workers in Temanggung: PNS (Civil Servants), PTT (Contract Workers under the Regent's Decree), and SS (Contract Workers under the Decree of the Head of the Environmental Service). In terms of the number of employees, there are 114 workers with SS status, 4 with PTT status, and 59 with PNS status. Regarding salaries, employees receive varying wages. PNS workers are paid according to their job level, while PTT and SS workers receive a salary of IDR 1,800,000. The following image shows the distribution of employee statuses and their respective salary ranges.

Figure 5-47 Worker Status and Income of Field Workers in TPA Sanggrahan



Source: DPRKPLH Temanggung, 2024

5.3.63 In addition, contracted workers are provided with health insurance (BPJS Kesehatan) and employment insurance (BPJS Ketenagakerjaan) by DPRKPLH. The workers' schedule is from Monday to Sunday, although they can earn overtime if called to work at an event. Workers who work overtime receive an additional wage of Rp 25,000 per hour and a meal allowance of Rp 50,000 if they work for more than four hours. These workers also receive equipment from DPRKPLH, such as boots, shirts, gloves, and raincoats. In addition to the extra income earned from overtime work, field workers can also increase their earnings by sorting through some of the waste they collect while transporting them. Each vehicle can sort the waste before the collection truck reach the landfill.

5.3.64 Based on key informant interviews conducted with field workers, no concerns were identified related to the Sub-project implementation. This is because the activities they carry out will continue to operate regardless of the Sub-project. Hence, it is considered that the sub-project activities will not have impacts to the field workers.

Figure 5-48 Field Worker in TPA Sanggrahan



Source : Baseline Survey, August 2024

Public Perception of TPA Sanggrahan

5.3.65 The community, especially project affected people, has expressed several concerns. These concerns are related to TPA Sanggrahan activities. Based on the interviews conducted during the scoping visit and baseline study in May and August 2024, there are several hopes and concerns, namely:

Table 5-39 Summary of Concerns and Perceptions of TPA Sanggrahan

No	Stakeholders	Concerns and Perceptions
1	Wastepicker	• There are worship facilities available; however, accessing clean water is somewhat challenging as it requires going to the UPT office first. • The monthly income of wastepicker's ranges from Rp200,000 to Rp4,800,000 per household. • The majority of wastepickers consider scavenging to be their primary occupation. • Working in the landfill environment has a noticeable impact on the health of wastepickers, with common illnesses reported including influenza, itching/eczema, and numbness/tingling. • Most wastepickers are aware of the plans for the development of the TPST Sanggrahan through information shared among fellow wastepickers. • There are concerns about potential difficulties in accessing employment or even losing their jobs. • Wastepickers hope to continue earning a livelihood at the landfill, either as wastepickers or factory workers, and they seek the creation of a designated area for wastepickers to collect waste, improved waste management and organization, as well as enhancements to prayer facilities and other public amenities at the TPA Sanggrahan.
2	Land User	• The land users granted rights to utilize land near the TPA Sanggrahan are all married individuals. • The land users feel that the area of land compensated is appropriate. • The land users have expressed concerns about litter scattered on the roads during waste collection by garbage trucks.
3	Waste Collector	• The TPST development has sparked various opinions among the collectors; one collector does not support the sub-project, fearing it will hinder wastepickers' and collectors' access to income. • The collectors hope that the existence of the TPST will provide them with compensation and that not all waste will be processed, allowing them to continue utilizing waste as an economic resource.

No	Stakeholders	Concerns and Perceptions
4	FGD	• The potential closure of the landfill, with community members fearing the loss of their livelihoods • Community expects that the development of the TPST (Integrated Waste Management Site) will create new job opportunities, reduce unpleasant odors, and improve the overall organization of the landfill, ultimately benefiting the community and ensuring its sustainability for the future. • The community hopes for the establishment of child-friendly facilities at the landfill and that wastepickers affected by the construction will receive compensation. • There is a desire for women to be permitted to sell goods during the construction phase, and for the TPST (Integrated Waste Management Site) to serve as an educational waste tourism site that benefits the community. • Community express general support for the project, provided it positively impacts their lives and does not disrupt their daily activities, indicating a collective desire for sustainable development that aligns with their needs and values

Source : Baseline Survey, August 2024

5.3.66 Based on interviews with the village heads of the affected villages, several community complaints have been identified regarding the presence of TPA Sanggrahan. The main issues are the unpleasant odor that arises at certain times and waste that spills onto the roads during waste transportation to the TPA. These waste spills have occasionally caused traffic accidents, as noted by the village head of Gentan. Despite the negative impacts in the affected villages, the community also experiences positive effects, such as the creation of job opportunities as wastepickers at TPA Sanggrahan.

Social and Cultural Within the Area of Influence

5.3.67 **Demography:** This section looks at demographic key indicators to understand project-affected communities, existing population dynamics, and how they may be influenced by the sub-project as well as availability in numbers and quality of human resources.

5.3.68 Temanggung Regency had a population of 808,446 in 2023. The population has been steadily increasing over the past three years, with an average annual growth rate of 0.88%. In the past three years, the sex ratio in Temanggung Regency has been above 100, indicating that the number of male residents exceeds the number of female residents. However, the growth rate of the female population has been higher than that of the male population. For comparison, over the past three years, the average growth rate of the female population has reached 0.94%, while the average growth rate of the male population has been around 0.82%.

5.3.69 Kranggan Sub-District had a population density of 881 people per square kilometre in 2023. This density has consistently increased over the years, with an average growth rate of 2.34%

over the past three years. The sex ratio in Kranggan was 98.00 in 2023, indicating that number of females are higher than number of males.

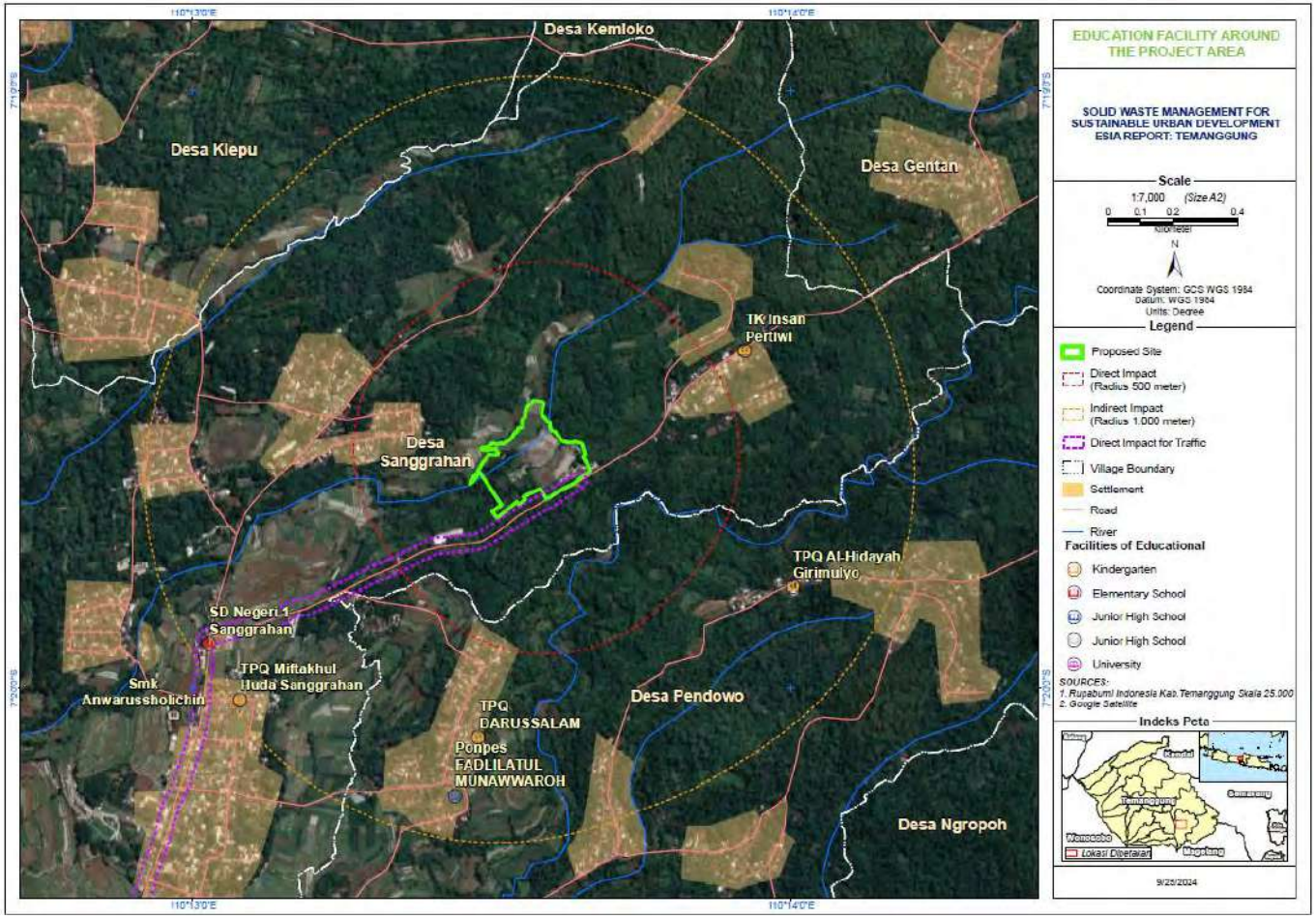
5.3.70 Klepu Village was the only village with a sex ratio of more than 100 in 2022, recording a ratio of 100.52. In terms of population density, Sanggrahan Village had the highest density with 945 people per square kilometer in 2022, while Gentan Village had the lowest density at 665 people per square kilometer.

5.3.71 Kranggan Sub-District is predominantly composed of working-age population (15-64 years old). In 2022, 69.46% of the population fell within this age group, with 50.66% being male and 49.34% female. The dependency ratio in Kranggan Sub-District stood at 43.96%, meaning that every 100 working-age individuals supported 43 to 44 non-working-age individuals.

5.3.72 **Education and Skill Base:** Temanggung Regency is equipped with a variety of educational facilities, ranging from elementary schools to high schools. The most abundant educational facilities are SD (*sekolah dasar*/elementary schools), with 434 SDs present in Temanggung as of 2022, supported by 3,830 teachers. In contrast, SMA (*sekolah menengah atas*/high schools) are the least numerous, with only 17 SMAs and 401 teachers in 2023. It is identified that 73.45% of the educational facilities in Temanggung Regency fall under the Kemdikbud (*Kementerian Pendidikan, kebudayaan, Riset, dan Teknologi*/Ministry of Education, Culture, Research and Technology), including SD, SMP (*sekolah menengah pertama*/junior high school), SMA (sekolah menengah atas/high school) and SMK (*sekolah menengah kejuruan*/vocational High School). The remaining 26.54% are under the Ministry of Religious Affairs (*Kementerian Agama*), covering institutions like MI (*madrasah ibtidaiyah*/islamic elementary school), MTs (*madrasah Tsanawiyah*/Islamic junior high school), and MA (*madrasah Aliyah*/Islamic high school).

5.3.73 Educational facilities in the impacted sub-districts are also predominantly SD. In Kranggan Sub-District, there are 29 SDs in 2022, even though no SMA was found there. The highest teacher-to-student ratio in Kranggan Sub-District is at the MI level, with one teacher responsible for 17 to 18 students.

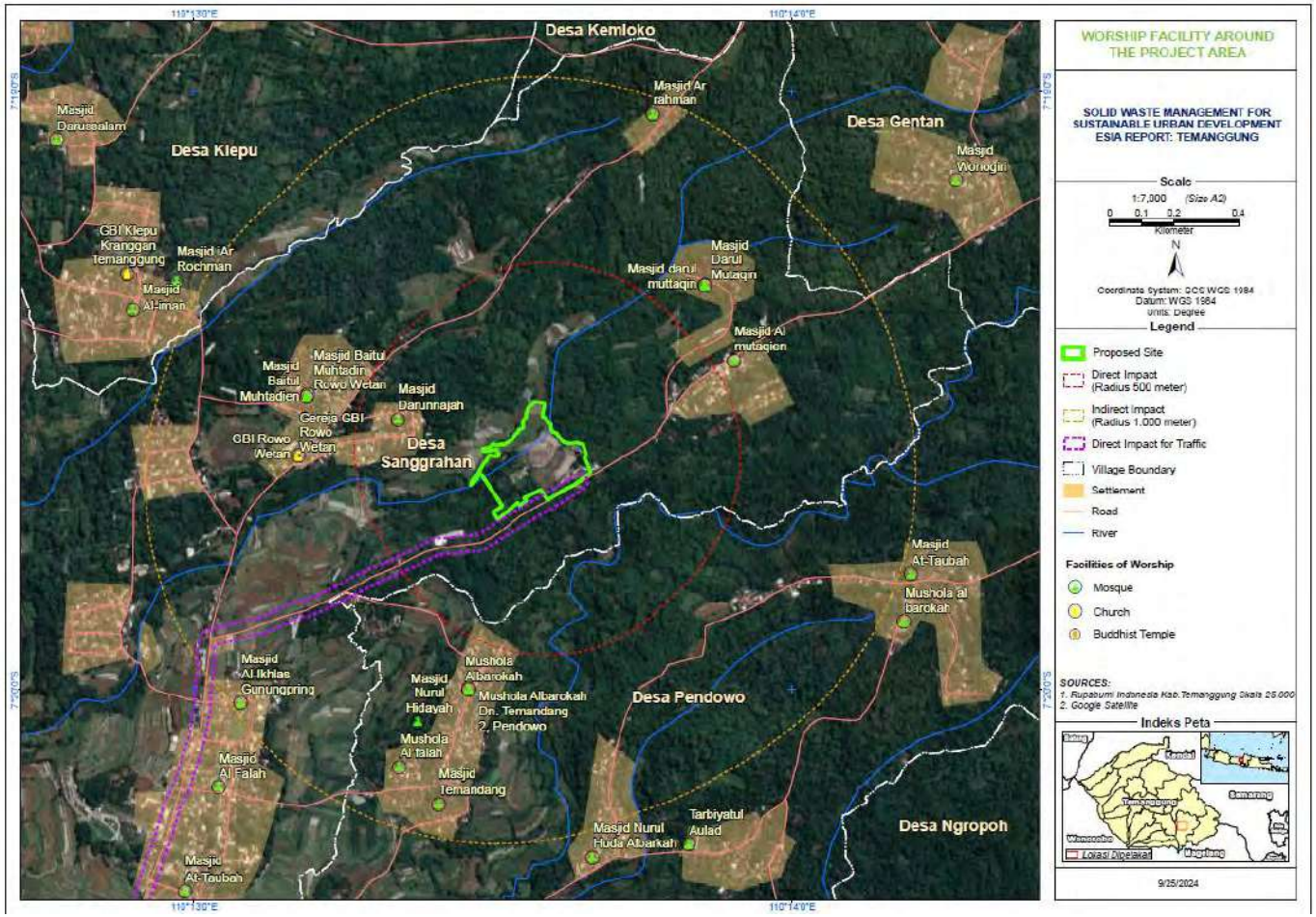
Figure 5-49 Education Facility around the Sub-project Area



Source : Baseline Survey, August 2024

5.3.74 **Religion and Customs :** Based on the religion data base obtained, the population in Temanggung Regency, Kranggan Sub-District is 96.64% muslim. The rest of population are Protestant, Catholic, Hinduism, Buddhist and others. Looking at the worship facilities, there are various religious facilities in Temanggung Regency, including mosques, Protestant churches, Catholic churches, temples and monasteries. At the Village level, Sanggrahan and Klepu Villages, which are impacted by the project, have worship facilities beyond just mosques and mushola, with each of these Villages also having one Protestant church. The other two affected Villages, however, only have mosques and mushola.

Figure 5-50 Worship Facility around the Sub-project Area



Source : Baseline Survey, August 2024

5.3.75 The majority of the population in Temanggung Regency is of Javanese ethnicity. Its history as part of the Mataram Sultanate has led to most residents practicing Islam. This influence not only shapes their religious practices but also impacts the culture of the region. Moreover, Temanggung was once under the control of the Medang Kingdom, also known as the Ancient Mataram Kingdom, a heritage reflected in the historical relics like temples and inscriptions scattered throughout the Regency. Some of the historical relics found in Temanggung Regency include the Liyangan Site, Pringapus Temple, Gondosuli Temple, Gondosuli Inscription, Wanua Tnah II Inscriptions, the former Sub-District Office of Parakan, the official residence of the Sub-District Head of Parakan, and the Darussalam Mosque. Recently, the communities in the affected villages discovered the Tanggulsari Inscription, which represents the village's cultural history.

5.3.76 Based on information from the heads of the affected Villages and FGD results, also supported by data from the Regency of Temanggung's Tourism and Cultural Office, a tradition known as *Sadranan* or *Nyadran* is still practiced in the Villages of Sanggrahan and Gentan. The *Sadranan* tradition comes from the word "Sraddha", which in Sanskrit means belief or faith. This tradition involves honoring deceased ancestors through activities such as cleaning graves, reciting prayers (*tahlilan*), and holding cultural performances. Additionally, the communities in the affected villages also celebrate Indonesia's Independence Day with the *Sadranan* ceremony.

5.3.77 There are various forms of *Sadranan* in Sanggrahan and Gentan Villages, influenced by the many ancestors commemorated through this practice. The tradition is typically observed in the Islamic month of *Sha'ban* (Ruwah), the seventh month in the Islamic/Javanese calendar. Additionally, *Sadranan* is also observed in other months, such as *Safar* (second month), *Maulid* (third month), and *Rajab* (eighth month).

5.3.78 Near the TPA Sanggrahan, two sites are regarded as sacred by the local community, located about 500 meters away. These sites are the Tomb of Mbah Selo Werso (Kramatan Bulu) and the Petilasan of Nyi Putri/Nyi Gandik.

- **Tomb of Mbah Selo Werso**: Mbah Selo Werso was the first to settle in Sanggrahan Village. According to legend, he used his wooden staff to create a water channel flowing to the village. The burial site at Kramatan Bulu holds not only his tomb but also those of his two wives, Nyi Saroh and Nyi Gadung Mlati. Each year, the local community conducts the sadranan ritual at his tomb on Friday Wage in the month of Ruwah (Rajab).
- **Petilasan of Nyi Putri/Nyi Gandik**: Nyi Putri (Diah Ayu Permatasari), also known as Nyi Gandik, was the granddaughter of Ki Ageng Selo, a famous spiritual figure from the Demak Kingdom. The site is frequently visited by the community for pilgrimage. On special occasions, a goat is sacrificed here, followed by prayer and communal feasting.

5.3.79 **Societal Organisation :** Based on interviews with community leaders in the affected villages, several active groups within the community were identified, highlighting the vibrant social structure. Women's groups, such as the PKK (Pemberdayaan Kesejahteraan Keluarga/Family Welfare Empowerment) and Muslimat NU (Nahdlatul Ulama), play significant roles in community activities. Youth women's organizations, including Fatayat NU and IPPNU (NU Young Women's Association), contribute to this dynamic, while Karang Taruna (Youth Organization) serves as a key platform for youth engagement. Additionally, the establishment

of a Village-Owned Enterprise (BUMDes) in Gentan Village strengthens local economic initiatives.

5.3.80 FGD findings indicate that gender roles are equitable, with both men and women actively participating in various community endeavors. Women's leadership is particularly notable, exemplified by the presence of two female hamlet heads from Dusun Gunungpring and Dusun Tegalombo, who actively engage in governance and decision-making processes.

5.3.81 The community promotes an inclusive environment, with no reported incidents of bullying against people with disabilities or violence, ensuring a safe space for all. Intergenerational connections are evident, as some wastepickers bring their children to the landfill while they work in factories. Women are actively involved in various groups, such as the PKK, Yasinan (religious prayer groups), Darusan (Qur'an recitation groups), and KWT (Women Farmers Group), fostering social cohesion and mutual support.

Economic Condition Within the Area of Influence

5.3.82 **Land Requirement :** The development of the Sanggrahan Waste Management Facility (TPST) requires the expansion of the landfill area from 47,581 m² to 60,278 m². This expansion is carried out through a land swap system, where the land intended for expansion is exchanged for other land deemed to have equivalent value as compensation for the land users. In the case of the TPA Sanggrahan, the land to be swapped consists of *bengkok* land owned by four village officials. All four land users are officials from Sanggrahan Village, comprising three men and one woman. Although the replacement land is smaller than the original land near the landfill, its value has been appropriately assessed according to the land appraisal conducted between 2020 and 2023.

5.3.83 Some of the land users stated that the land swap does not affect their family's economy. However, one land users mentioned that the swap has slightly impacted their family income due to the new land being further from their home. The land is typically used by the owners for planting vegetables or *palawija* (secondary crops).

5.3.84 **Gross Regional Domestic Product :** The per capita Gross Regional Domestic Product (GRDP) in Temanggung Regency has steadily increased over the past three years (2021-2023), with an average growth rate of 4.51%. The manufacturing sector is the most significant sector in the Regency, contributing the largest share to the GRDP, followed by wholesale and retail trade, repair of motor vehicle and motorcycle sector and agriculture, forestry and fisheries sector. In 2023, this sector accounted for approximately 24.98% of the GRDP, amounting to IDR 4,245.85 billion (at 2010 constant prices). The second-largest sector was wholesale and retail trade, repair of motor vehicle and motorcycle, contributing IDR 3,928.94 billion or about 23.11% of the 2023 GRDP. The third-largest sector was agriculture, forestry and fisheries which made up 20.60% of the GRDP in 2023.

5.3.85 **Labor Force and Employment Levels :** The working-age population (aged 15 and above) in Temanggung Regency is divided into two groups: economically active and not economically active. The economically active group includes individuals who are employed and those actively seeking employment. According to BPS data from 2024, 97.68% of the economically active population in Temanggung Regency are employed, with the rest are actively seeking work. The not economically active group comprises individuals who are still studying, managing households, or engaged in other activities. This group is predominantly made up of those managing households, accounting for 56.25% of the total. The economically active

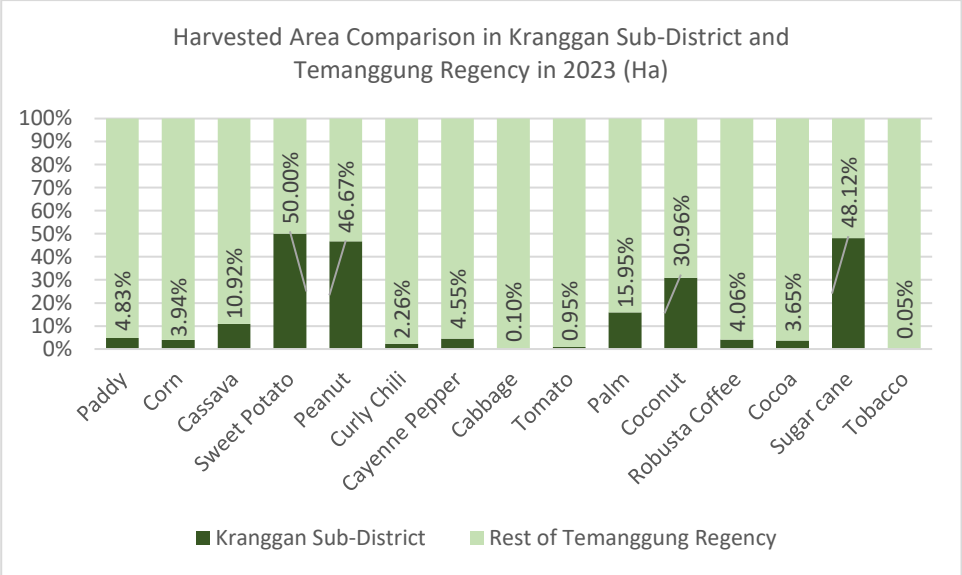
population in Temanggung Regency totals 482,651 people, while the not economically active population numbers 154,050 people. The unemployment rate in the regency has decreased over the past three years.

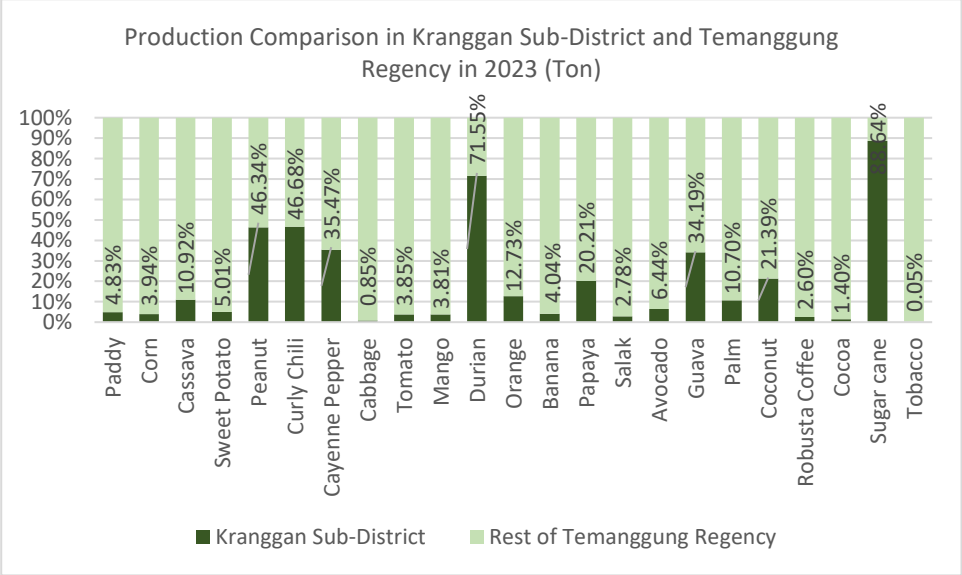
5.3.86 According to 2024 BPS data, the largest proportion of the working population in Temanggung, based on main employment status, consists of family workers/unpaid workers, accounting for 23.79% of the total working population in Temanggung. The term "family worker/unpaid worker" here refers to individuals who works to help a business to obtain income/profit carried out by a household member or nonmember of the household without receiving wages/salary in the form of money or goods. The number of people with their primary employment status as own account workers has increased over the past three years, with an average growth rate of 12.49% during this period. The employment status with the lowest percentage is "employer assisted by permanent worker/paid worker", accounting for 2.16% in 2023. "Employer assisted by permanent worker/paid worker" refers to individuals who operate their own business at their own risk and employ at least one permanent paid worker.

5.3.87 **Economic Livelihood in Surveyed Area :** Community leaders from the affected villages stated that most of the population works in the agricultural and manufacture sector. Based on the Gross Regional Domestic Product (GRDP) of Temanggung Regency, the manufacture sector is the largest contributor to the 2023 GRDP of Temanggung Regency (24.98%), while agricultural sector in broad (agriculture, forestry and fisheries) is the third largest (20.60%). The results of the FGD also indicate that the manufacturing sector is a significant source of employment in the affected villages, particularly for youth, as many young individuals work in nearby factories. This reflects the community's commitment to creating economic opportunities. Furthermore, numerous women are employed in local garment, wood, and shoe factories, which not only enhances their financial independence but also contributes to overall household income.

5.3.88 In 2022, Kranggan Sub-District recorded 1,425 hectares of paddy fields and 4,335.93 hectares of non-paddy land, including residential areas, dry fields, and plantations. The livestock sector in Kranggan features a variety of commodities, with livestock populations remaining relatively stable over the past three years, except for beef cattle, which saw a significant decrease of around 50% in 2023 compared to 2022.

Figure 5-51 Harvested Area and Production Comparison in Kranggan Sub-District and Temanggung Regency in 2023





Source: BPS Temanggung Regency, 2024

5.3.89 In addition to livestock, some community members in Kranggan cultivate aquatic commodities in fishponds, rice fields, rivers, and fish puddles. Capture fisheries production has shown consistent growth over the past three years, with an average annual increase of 7.37%. This growth is driven by increased production from fishponds and rice-field aquaculture, though there has been a decline in production from rivers and fish puddles.

5.3.90 According to FGD results, the local community has experienced improved agricultural productivity, especially for farmers with land near the TPA Sanggrahan. These farmers rely primarily on spring water for irrigation and have expressed satisfaction with the leachate from the landfill, which enriches the soil and reduces their dependency on chemical fertilizers. Additionally, most of the rice fields are classified as "bengkok" land, a type of land reserved for local leaders, reflecting a unique land allocation system in the area.

5.3.91 **Poverty Conditions :** The minimum wage in Temanggung Regency for 2024 is set at IDR 2,109,690 per month, which increase about 4.05% from the previous year's minimum wage. This amount is higher than the provincial minimum wage in Central Java, which stands at IDR 2,036,947 per month for 2024.

5.3.92 The number of people living in poverty in Temanggung Regency reached 72,960 individuals in 2023, representing approximately 9.26% of the total population. This figure has decreased compared to the previous year. According to BPS data from 2024, the poverty line in Aceh Besar Regency is currently set at IDR 388,369 per capita per month.

5.3.93 The Poverty Gap Index reflects the average shortfall of the poor's expenditure from the poverty line, with higher values indicating a greater distance between the average expenditure of the poor and the poverty line. In 2023, the Poverty Gap Index in Temanggung Regency stood at 0.99, which is lower than the Poverty Gap Index for Central Java Province (1.75) but higher than the national average (1.46).

5.3.94 The Poverty Severity Index measures the distribution of expenditure among the poor, with higher values indicating greater inequality in expenditure within the poor population. The Poverty Severity Index in Temanggung Regency in 2023 was 0.17, which is also lower than the Poverty Severity Index for Central Java Province (0.41) and national (0.38). Both the Poverty Gap Index and the Poverty Severity Index in Temanggung Regency have been steadily declining over the past two years.

Transportation Within The Area Of Influence

5.3.95 The project site is situated in the southern part of Temanggung Regency and is accessible via a well-maintained road network. Based on direct observation, the road access to the location is considered excellent as the road is fully paved. The distance between the center of Temanggung Regency and the project site is approximately 8.6 km, which translates to a travel time of about 15 to 30 minutes, depending on traffic conditions.

5.3.96 The route to the TPA Sanggrahan is fully paved with asphalt. The narrowest section of this route is the access road from Kranggan-Kaloran Street leading to the TPA, which is 6 m wide and stretches for about 1.3 km. Despite its narrower width, this access road is well-maintained and adequate for the required traffic flow to the project site.

5.3.97 Traffic conditions along the route to the TPA Sanggrahan are typically only congested on Kranggan Highway, which is the main thoroughfare leading to the central area of Temanggung Regency. Traffic density on this highway increases during peak hours. In contrast, as vehicles turn from Kranggan Highway onto Kranggan-Kaloran Street, the traffic significantly decreases. This road traverses a series of sub-districts and villages and is primarily used for local access rather than through traffic. The project site is located 1.3 km off Kranggan-Kaloran Street, on a lesser-used local road, resulting in a generally low traffic volume in the immediate vicinity of the site. The area surrounding the TPA Sanggrahan site has access to public transportation in the form of motorcycle taxis (ojek) and public minibuses (angkot) operating along the Kranggan-Kaloran road, facilitating the mobility of the local community.

Public Health Information Within The Area Of Influence

5.3.98 **Health Facilities :** The 2023 Profile Data of the Kranggan Community Health Center (Puskesmas) indicates that various public facilities are available across several villages in the UPT Kranggan Community Health Center's operational area. These facilities include 1 non-

inpatient community health center, 7 mobile community health centers, 1 auxiliary community health center, 1 primary clinic, 2 independent general practitioner practices, 1 independent specialist doctor practice, 7 independent midwife practices, and 3 pharmacies. Data collected by the Kranggan Community Health Center shows a diverse range of prevalent diseases in Kranggan Subdistrict. In 2023 and 2021, hypertension was the most frequently reported disease, while acute respiratory infections (ISPA) topped the reports in 2022. The FGD results show that monthly posyandu conducted for the elderly.

5.3.99 **Prevalent Diseases in Surveyed Area :** One of the significant health issues at the Kranggan Community Health Center is stunting. According to data from the Kranggan Community Health Center in 2024, it was identified that the number of children diagnosed with stunting is 185, with 117 of them coming from the villages affected by the sub-project. This figure shows a decrease compared to the previous year, when there were 192 children identified as stunted, with 118 of them from the affected villages.

5.3.100 **Housing and Sanitation :** The ownership of buildings in Temanggung Regency is predominantly private, with 93.77% of buildings being privately owned as of 2023. Based on the highest level of education, the percentage of building ownership among residents with a maximum education level of elementary school is greater than the percentage of building ownership among residents with a minimum education level of junior high school. The ownership of sanitation facilities (MCK) in Temanggung Regency is mostly private. Factors such as residents' expenditure and highest level of education are identified as influencing the ownership of sanitation facilities. Specifically, 20% of the population with the highest expenditures and those with a minimum education level of junior high school have the highest percentages of ownership of sanitation facilities, at 94.40% and 94.23%, respectively. The types of sanitation commonly used in Temanggung Regency include gooseneck toilet and other septic sludge disposal methods such as ponds, rivers, and soil.

5.3.101 **Clean Water :** According to interviews with local leaders from the affected villages, the communities in these villages primarily use water from PAMSIMAS as their source of water. This differs from the average in Temanggung Regency, where according to BPS 2024, 47.57% of the population relies on Protected Spring/Unprotected Spring as their main water source.

6 IMPACT ASSESSMENT METHODOLOGY

6.1 Overview

6.1.1 For each specialist discipline, the assessment will identify the likely significant environmental or social impacts. The criteria for determining significance are specific for each environmental and social aspect and will be defined in the relevant specialist chapters. In broad terms, it can be characterized as the product of the degree of predicted change from a baseline condition (the magnitude of impact) and the value of the receptor/resource that is subjected to that change (receptor sensitivity). For each impact, the likely magnitude and sensitivity of the receptor is defined quantitatively to the extent possible depending on the nature of the discipline. Generic criteria for the definition of magnitude and sensitivity are summarized below. Where specific assessments deviate from the methodology presented, this will be defined within the respective subsections. The methodology for assessing the significance of impacts has been developed by ESC.

6.2 Impact Predictions and Evaluation Approach

6.2.1 The impact predictions and evaluation approach discussed in this section will be adopted not only in the ESIA preparation but also to determine which sub-projects to be excluded from the Project and to provide information to the diagram in **Figure 6-1** for decision making.

6.2.2 The evaluation of impact significance involves multiple considerations. This process includes analysing the project components and their effects relative to the existing environmental baseline and any sensitive receptors that might be affected. Each impact is then assessed based on its potential severity and scale. The methodology for determining the significance of impacts is depicted in the figure below. A more detailed explanation of each step in this evaluation process is provided in the following sections.

Figure 6-1 Evaluating Impact Significance



6.2.3 **Define Potential Impacts**: All activities associated with the proposed project should be identified and potential impacts resulting from these activities listed. The indicative list of potential impacts is provided in the next section.

6.2.4 **Define Receptors Sensitivity**: Sensitivity is specific to each aspect affected by the activity project, with criteria developed from established baseline information. Generic criteria for determining the sensitivity of receptors are outlined in the table below. The detailed technical assessments should define sensitivity in relation to the environmental or social aspect.

Table 6-1 Criteria for Determining Receptor Sensitivity

Sensitivity	Definition
High	Receptor (human, physical or biological) with little or no capacity to absorb proposed changes and/or minimal opportunities for mitigation.
Medium	Receptor with little capacity to absorb proposed changes and/or limited opportunities for mitigation.
Low	Receptor with some capacity to absorb proposed changes and/or reasonable opportunities for mitigation.
Negligible	Receptor with good capacity to absorb proposed changes or and good opportunities for mitigation.

6.2.5 **Evaluate Existing Environmental Values**: Evaluation of existing environmental values should be carried out by analysing the data from environmental and social baseline study process, as explained in the previous section.

6.2.6 **Define Impact Magnitude**: The assessment of impact magnitude is generally undertaken across two steps. First, the identified impact should be categorized as either beneficial or adverse. Second, impacts should be categorized as major, moderate, minor, or negligible based on the consideration of parameters such as:

- **Impact duration:** this ranges from "beyond decommissioning" to "temporary with no detectable impact"
- **Spatial extent of the impact:** for instance, within the site boundary, to within village, Regency, Province, National or Trans-boundary
- **Frequency:** a measure of the constancy or periodicity of the impact

6.2.7 The table below presents generic criteria utilized in determining impact magnitude. Each detailed technical assessment should define impact magnitude in relation to its environmental or social aspects. For example, employment will increase during the construction phase of the project. Local contractors will be employed to assist in construction activities, thus supporting the local economy. The impact on the economic environment during construction is assessed to be positive. The duration of the activity is considered to be medium and the impact magnitude to the socioeconomic structure of the area in scope is medium.

Table 6-2 Criteria for Determining Impact Magnitude

Magnitude (beneficial or adverse)	Definition (considers duration of the impact, spatial extent, reversibility and ability to comply with legislation)
High	Fundamental change to the specific conditions assessed resulting in long term or permanent change, typically widespread in nature and requiring significant intervention to return to baseline; would violate national standards, AIIB ESS or Good International Industry Practice (GIIP) without mitigation.
Medium	Detectable change to the specific conditions assessed resulting in non-fundamental temporary or permanent change.

Magnitude (beneficial or adverse)	Definition (considers duration of the impact, spatial extent, reversibility and ability to comply with legislation)
Low	Detectable but small change to the specific conditions assessed.
Negligible	No perceptible change to the specific conditions assessed.

6.2.8 Define Impact Significance: In general, impact significance is determined through a combination of receptor sensitivity and magnitude of change to that receptor. Impacts within the ESIA should be identified, and significance assessed, in a structure manner which accounts for this sensitivity and magnitude interaction as presented within the table below.

Table 6-3 Determining Impact Significance

		Impact Magnitude			
		Negligible	Low	Medium	High
Sensitivity of Impact Receptor	Negligible	Negligible	Negligible	Negligible	Minor
	Low	Negligible	Negligible	Minor	Moderate
	Medium	Negligible	Minor	Moderate	Major
	High	Minor	Moderate	Major	Critical

6.2.9 The resulting impact significance is generally as described below; however, this may vary between various technical specialties, particularly where numerical standards (rather than qualitative evaluation) is utilized in determining impact severity. The descriptions below, while drawing upon international best practice, have been adopted for the purposes of Indonesia and utilize similar language to that presented within the impact evaluation within the AMDAL.

Table 6-4 Description of Impact Significance

Impact Importance	Definition
Negligible	Insignificant impact: • Magnitude of the change is still within the limits of its natural variation • Impact is quite low and localized • Low probability of impact occurrence • Impact is reversible in a short period
Minor	Insignificant impact: • Magnitude of the impact is relatively small and the probability of impact occurrence is low • Impacts on physical and chemical environmental components are within the applicable environmental quality standard • Impact is reversible
Moderate	Significant impact: • Moderate impacts occurring over short period • Environment has enough time to recover its condition (homeostasis)

Impact Importance	Definition
	• Benefits of project existence are limited to few number of communities (people) • Project activity has an irreversible impact, but impact is moderate • There is a conflict of interest in the use of various natural resources (agriculture, forestry, recreation, water resources, etc.) and other established uses in the project area • Impacts need to be managed effectively and efficiently so that the magnitude of the impact is reduced to a level of 'as low as reasonably practical' (ALARP)
Major	Significant impact: • Impact is classified as major when affecting a large proportion of the community (people) • Impact exceeds the applicable environmental quality threshold • Disturb and/or have a negative impact on property of cultural significance to a community or ethnic or social group • Projects cause significant population growth or population concentration • Project converts productive (prime) agricultural land to non-agricultural use • Impacts need to be managed effectively and efficiently so that project activities do not cause large residual impacts over a long period of time and over a large area
Critical	Intolerable; not amenable to mitigation; alternatives must be identified – Project Stopper

6.2.10 Define Likelihood of Impact: For unplanned events or extreme situations, the likelihood that the particular event, impact or outcome will occurs should be ascribed a qualitative probability, as per the categories defined in the table below.

Table 6-5 Likelihood Category

Likelihood	Definition
Extremely Unlikely	• The event is very unlikely to occur under normal operating conditions but may occur in exceptional circumstances (i.e., the event is generally never heard of in industry).
Unlikely	• The event is unlikely but may occur at some time during normal operating conditions (i.e., the event is heard of in industry).
Low Likelihood	• The event is likely to occur at some time during normal operating conditions (i.e., incident has occurred in the company before).
Medium Likelihood	• The event is very likely to occur during normal operating conditions, (i.e., the event occurs several times per year in the company).
High Likelihood/ Inevitable	• The event will occur during normal operating conditions (is inevitable), (i.e., the event happens several times per year at a location).

6.2.11 Risk Assessment: is calculated by combining the significance of an impact with its likelihood of occurrence. This methodology helps in identifying the potential risks associated with project activities by evaluating how severe an impact could be and the probability of that impact occurring.

Table 6-6 Risk Assessment

Likelihood	Impact Significance				
	Negligible	Minor	Moderate	Major	Critical
High Likelihood	Low	High	Severe	Severe	Severe
Medium Likelihood	Low	High	High	Severe	Severe
Low Likelihood	Low	Moderate	High	Severe	Severe
Unlikely	Low	Low	Moderate	High	Severe
Extremely unlikely	Low	Low	Moderate	High	High

6.2.12 Mitigation and Enhancement Measures : Where feasible, the following hierarchy of mitigation measures will be applied to ensure that all residual impact levels can be reduced to minor or negligible:

- Changes in technology choice
- Avoidance and reduction of impacts through design (embedded mitigation)
- Abate impacts at source or at receptor
- Repair, restore or reinstate to address temporary effects
- Compensation and offsetting for loss or damage

6.2.13 **Residual Impacts**: Residual impacts are those that remain after the application of mitigation and enhancement measures. The ESIA will present all residual impacts regardless of the significance. The intention is to ensure that all major and moderate impacts are able to be reduced to at least minor with the application of appropriate management and mitigation measures.

6.2.14 **Uncertainties**: Any uncertainties associated with impact prediction or the sensitivity of receptors due to the absence of data or other limitations will be explicitly stated. Where applicable, the ESIA will make recommendations concerning measures that should be put in place with monitoring or environmental or social management plans to deal with uncertainty so that they may be addressed.

6.2.15 **Summary of Environmental and Social Impact Evaluation:** The following table provides an explanation of each Environmental and Social (E&S) impact assessment, detailing the determination of magnitude, significance, and, where applicable, likelihood, as well as the residual impacts after mitigation measures are implemented. The table will be provided to evaluate each impact in the Section Impact Assessment.

Table 6-7 Summary of Impact Criteria

Impact	**Impact to E&S aspect Environmental: air quality, noise, vibration, surface water and marine water, soil contamination, biodiversity, visual impact Social: economic, social and cultural**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Spatial Extent	Local	Regional	Global		
Impact Frequency					
Impact Magnitude	Negligible	Low	Medium	High	
Receptor Sensitivity	Negligible	Low	Medium	High	
Impact Significance	Negligible	Minor	Moderate	Major	Critical
Impact Likelihood	Extremely Unlikely	Unlikely Medium	Low	Medium	High / Inevitable
Residual Impact	Negligible	Minor	Moderate	Major	Critical

7 IMPACT ASSESSMENT

7.1 Scoping and Summary of Anticipated Impacts

7.1.1 ESIA scoping identified the following activities and receptors to be carried forward to be further assessed in the ESIA

Table 7-1 ESIA report structure

No	Project Activity	Receptor	Potential Impact
Pre-construction			
1	Stakeholder socialization	Social Cultural	Community Concern
2	Land Acquisition	Social Economic	Land User income changes
Construction			
3	Recruitment Activities	Social Economic	Workforce opportunity
		Social Cultural	Community Concern
4	Construction of access road (Associated Facilities)	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO2, SO2, H2S, and HC)
		Noise	Noise Pollution
		Hydrology	Run-Off Flow Rate Increase
		Soil	Increased Soil Erosion
		Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)
		Terrestrial Flora and Fauna	• Habitat loss • Species decrese due the traffict
		Social Cultural	Community concern
		HSE	• Increase in work accidents • Increase in community accidents
5	Land Preparation	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO2, SO2, H2S, and HC)
		Noise	Noise Pollution
		Hydrology	Run-Off Flow Rate Increase
		Soil	Increased Soil Erosion
		Physiography	Landscape Change
		Waste Management	Increased Construction Waste
		Climate Change/GHG Emission	Increased GHG emission
		Terrestrial Flora and Fauna	• Habitat loss • Species decrease due the traffic
		Social Economic	Wastepicker Relocation
		Social Cultural	Community Concern
		HSE	• Increase in work accidents • Increase in community accidents
6	Construction of Base Camp and Workshop	Air Quality	Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) Increased of Gas Concentration (NO2, SO2, H2S, and HC)

No	Project Activity	Receptor	Potential Impact
		Noise	Noise Pollution
		Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)
		Waste Management	• Increased Construction Waste • Increased Domestic Waste (include Hazardous Waste)
		Wastewater Management	Increased Domestic Wastewater
		Climate Change/GHG Emission	Increased GHG emission
		Terrestrial Flora and Fauna	• Habitat loss • Species decrease due the traffic
		Social Economic	Changes in Business Opportunity
		Social Cultural	Community Concern
		HSE	• Increase in work accidents • Increase in community accidents
7	Mobilization of Equipment and Materials	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO2, SO2, H2S, and HC)
		Noise	Noise Pollution
		Terrestrial Flora and Fauna	Species decrease due the traffic
		Social Cultural	• Community concern • Sacred site disturbance
		Transportation	Disruption of Land Traffic
		Community Health	Increased of Traffic Accidents
		HSE	• Increase in work accidents • Increase in community accidents
8	Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO2, SO2, H2S, and HC)
		Noise	Noise Pollution
		Vibration	Increased Vibration
		Hydrology	Run-Off Flow Rate Increase
		Soil	Increased Soil Erosion
		Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)
		Waste Management	Increased Construction Waste
		Climate Change/GHG Emission	Increased GHG emission
		Social Cultural	Community concern
		HSE	Increase in work accidents
9	Construction of TPA Rehabilitation	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO2, SO2, H2S, and HC)

No	Project Activity	Receptor	Potential Impact
		Noise	Noise Pollution
		Vibration	Increased Vibration
		Hydrology	Run-Off Flow Rate Increase
		Soil	Increased Soil Erosion
		Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)
		Waste Management	Increased Construction Waste
		Climate Change/GHG Emission	Increased GHG emission
		Terrestrial Flora and Fauna	• Habitat loss • Species decrease due the traffic
		Aquatic Biota	Disturbance to Aquatic Biota Habitat
		Social economic	Disruption of wastepicker livelihoods
		HSE	Increase in work accidents
10	Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO2, SO2, H2S, and HC)
		Noise	Noise Pollution
		Vibration	Increased Vibration
		Hydrology	Run-Off Flow Rate Increase
		Soil	Soil contamination
		Water Quality	• Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD) • Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)
		Waste management	Increased Construction Waste
		Climate Change/GHG Emission	Increased GHG emission
		Terrestrial Flora and Fauna	• Habitat loss • Species decrease due the traffic
		Aquatic Biota	Disturbance to Aquatic Biota Habitat
		Social Economic	Disruption of Wastepickers & waste collector Livelihoods
		Social Cultural	Community concern
		HSE	Increase in community accidents
11	Workforce release	Social Economic	Workforce opportunity
		Social Cultural	Community concern
12	Commissioning	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO2, SO2, H2S, and HC)
		Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)
Operation			
13	TPST/TPA Staff Recruitment	Social Economic	Workforce opportunity
		Social Cultural	Community concern
14	Operation of TPST	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and bioaerosols

No	Project Activity	Receptor	Potential Impact
			• Increased of Gas Concentration (NO_2, SO_2, H_2S, VOC, NH_3, and HC)
		Hydrology	Run-Off Flow Rate Increase
		Water quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)
		Waste management	Increased Domectic Waste (include Hazardous Waste)
		Wastewater management	Increased Domestic Wastewater
		Climate change/GHG emission	Increased GHG emission
		Aquatic Biota	Disturbance to Aquatic Biota Habitat
		Social Economic	• Workforce opportunity • Disruption of wastepickers livelihood
		Social Cultural	Community concern
		HSE	Increase in work accidents
15	Operation of TPA	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO_2, SO_2, H_2S, and HC)
		Soil	Soil contamination
		Water quality	• Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD) • Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)
		Waste management	Increased Domestic Waste (include Hazardous Waste)
		Wastewater management	Increased Domestic Wastewater
		Climate change/GHG emission	Increased GHG emission
		Aquatic Biota	Disturbance to Aquatic Biota Habitat
		Social Economic	Disruption of wastepickers livelihood
		HSE	Increase in work accidents
16	RDF combustion by offtaker	Air Quality	• Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) • Increased of Gas Concentration (NO_2, SO_2, H_2S, and HC)

7.2 Environmental and Social Impact Assessment During Pre-Construction Stage

Impact on Livelihood of Land user

7.2.1 Potential Impact : The development of the Sanggrahan Waste Management Facility (TPST) requires the expansion of the landfill area from 47,581 m² to 60,278 m². There is a land acquisition of 12,697 m2 for the project development plan. The land is owned by the Sanggrahan village government and is known as Bengkok Land. The land acquisition is done

through a land swap mechanism where the village owned Bengkok Land is exchanged for land owned by the Temanggung Sub-district Government. The land swap process was completed in 2023 (before construction). On the village government land, there are four land users who are Sanggrapan village officials. Based on information from the village head, the cultivators have received replecement land according to what was given by the Temanggung district government.

7.2.2 Baseline information :The land acquired for the project development is productive agricultural land. The crops grown on the land are vegetables, rice and secondary crops. The land is used for farming throughout the year. Based on the results of a social survey, the land does not affect the income of the land users, as they are village officials who receive a monthly income from the government. Agricultural activities on the land are a secondary source of income for the land users. In addition, the land users have received replacement land from the government and have started planting. The land users consider the replacement land they have received to be more productive than the previous land and more easily accessible by vehicles. However, it is further away from their homes than the previous land. However, the land users do not mind this because it is still easily accessible.

7.2.3 Existing Controls/Mitigation : In order to mitigate the impact of land acquisition by the local government, a third party has been engaged to appraise the land in question, ascertain its value and productivity, and identify suitable replacement land. The selection of replacement land also takes into account requests from the village head, with a view to obtaining more productive and easily accessible land.

7.2.4 Proposed Additional Mitigation, Management and Monitoring :

- Monitor replacement land use: Hold regular discussions with land users to ensure that they are using the replacement land effectively and that its productivity is at or above previous levels. This will help to address any probl
- ms that arise quickly.
- Establish a grievance redress mechanism (GRM): Ensure that land users are aware of and have easy access to the GRM to raise concerns about land acquisition or replacement land. Handle their complaints transparently and promptly to avoid dissatisfaction.

According to the consideration above, the impact rating for economic displacement of landowners is summarized as follows.

Table 7-2 Impact Assessment of Income Disruption to Land users

Impact	Impact to E&S aspect Income disruption to land users				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The land swap has provided more productive land, and the land users are still receiving a primary income as village officials. Therefore, the impact on their livelihood is neutral				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The land acquisition directly affects the land users, but it does not affect their main income source as they have other means of income				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	The impact on land use will continue long-term since the new land will be permanently used for agriculture. However, this is seen as neutral given the productivity of the replacement land.				
Impact Spatial Extent	Local	Regional	Global		
	The impact is confined to the Sanggrahan village area, where the land swap took place				
Impact Frequency	The impact is ongoing, as the new land is continuously used for agricultural activities				
Impact Magnitude	Negligible	Low	Medium	High	
	The magnitude is low since the replacement land is more productive and accessible, and there has been no significant disruption in livelihood				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The land users have a low sensitivity because they are government officials with a stable income. Their agricultural activities are secondary, and the new land is considered an improvement				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the low magnitude of impact and the low sensitivity of the land users, the overall impact significance is assessed as minor				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Given the successful land swap and improved land conditions, significant negative impacts are unlikely				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
Conclusion	The land acquisition's potential for income disruption is minimal, and mitigation measures ensure that the livelihood impact is negligible				

Impact on Community Concerns

7.2.5 Potential Impact : Socialisation activities for the development of the TPA Sanggrahan may raise community concerns, particularly among groups such as wastepickers who depend on the area for their livelihoods. Issues such as potential economic impacts and traffic disruption during the project phase are likely to be key concerns. At the same time, the community may have expectations of improvements in waste management and living conditions as a result of the project. Socialisation activities also provide an opportunity to strengthen relationships with the community through pre-construction consultation and to address concerns about environmental impacts such as air and water quality. Clear communication of project benefits can help ease the transition for residents. However, there is a risk of negative public perception or backlash if concerns are not adequately addressed.

7.2.6 Baseline Information : There are community concerns about the existing activities of the TPA Sanggrahan. Based on interviews with village leaders, several community complaints were identified regarding the presence of TPA Sanggrahan. The main issues are the unpleasant odour that occurs at certain times and the spillage of waste on the roads during the transport of waste to the TPA. These waste spills have occasionally caused traffic accidents, as noted by

the village head of Gentan. Despite the negative impacts in the affected villages, the community also experiences positive effects, such as the creation of job opportunities as wastepickers at TPA Sanggrahan.

7.2.7 Existing Control and Mitigation : The Public Housing, Residential Areas and Environment Department of Temanggung Regency has provided a channel for complaints via WhatsApp, telephone and email. However, it is rare for the public to submit complaints regarding waste management activities. Complaints are mostly submitted directly through the UPTD TPA Sanggrahan.

7.2.8 Proposed additional Mitigation, Management and Monitoring measures are as follows :

- Conduct public consultation at every stage of the sub-project. Engage local communities and stakeholders early through regular meetings to address issues and provide updates on the sub-project.
- Develop a grievance redress mechanism. Establish and implement an easily accessible system for recording and handling complaints, with multiple submission options.
- Establish a dedicated complaints team so that the public can easily access and provide feedback.
- Prepare traffic management prior to construction.
- Develop a plan to manage waste transport, minimise disruption and prevent spills.
- Conduct regular air quality and odour monitoring

7.2.9 Based on the considerations above, the impact rating for community concerns is summarized as follows. In accordance with the above considerations, the determination of the significant nature of the impact on community concerns is summarised as bellow:

Table 7-3 Impact Assessment of The Increase in Community Concerns

Impact	**Impact to E&S Aspect Socio-Cultural: Increase of Community Concerns**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Increase of Community Concern due to existing activities of TPA Sanggrahan and socialization of sub-project plans considered as negative impacts				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Community concern being raises is due to the indirect impact of current activities and possible future activities.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Even though the impact occurs during the pre-construction period, the impact regarding community concerns can continue into the construction period if it is not properly mitigated.				
Impact Spatial Extent	Local	Regional	Global		
	This impact is assumed to be felt by the community in the affected area, so the spatial reach of the impact is classified as local.				
Impact Frequency	These impacts will occur if the contractor / local government does not implement the commitments in the mitigation and monitoring plan as explained during the public consultation.				
Impact Magnitude	Negligible	Low	Medium	High	
	The spatial extent of the impact is local, the frequency of the impact is moderate and the duration of the impact is long term. The magnitude of the impact is moderate.				

Impact	Impact to E&S Aspect Socio-Cultural: Increase of Community Concerns				
Receptor Sensitivity	Negligible	Low	Medium	High	
	If community concerns, particularly about changes in access to livelihoods, odour and traffic disruption, can be properly addressed, then concerns will be reduced. In addition, the community that has concerns is the community that will be affected by the project activities. Therefore, receptor sensitivity is medium.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely Medium	Low	Medium	High / Inevitable
	Without mitigation measures, the impact will occur with medium likelihood				
Residual Impact Conclusion	Negligible	Minor	Moderate	Major	Critical
	The sub-project's potential impact on the local community, while initially moderate, can be effectively mitigated through comprehensive communication, consultation, and grievance redress mechanisms. By addressing key issues such as economic impacts, traffic disruption, and environmental concerns, the project can reduce the potential for negative social outcomes. With consistent implementation of mitigation and monitoring measures, the residual impact is expected to be minor, and the project can proceed with manageable social risks.				

7.3 Environmental and Social Impact Assessment During Construction Stage

7.3.1 The construction stage comprises provision of platform level, construction of the RDF facility, rehabilitation of waste cell, and temporary landfill construction and operation. Potential sensitive receptors impacted during this stage within 1 km radius include human conducting activities in small shops, road users, chicken farm, secondary forest vegetations, plantation, and identified flora and fauna as described in the Biodiversity Impact Section. The impact assessment of the related scope is as follows.

Air Quality Impact

7.3.2 At this stage, sensitive receptors may experience temporary exposure to air pollutants emitted from work areas during authorized working hours. Emissions from construction vehicles and equipment such as excavators, bulldozers, cranes, generators, and trucks, used for platform levelling and excavation, may affect the air quality both within and around the project site. These activities are likely to raise dust levels and airborne particulate matter, leading to reduced visibility, and may also release pollutants like NO_x, SO_2, and CO. These conditions could pose respiratory and visibility issues for sensitive receptors in the area, especially in downwind locations.

7.3.3 The number of vehicles and machinery on-site, as well as their movement, will be restricted to what is necessary for the project to limit the overall impact. The dust and pollutants generated by the earthworks are expected to be minimal and localized, as the excavation work is limited to tasks such as levelling, access road preparation, and drainage and foundation excavations. The landfill rehabilitation will be focused on waste cell management and closure, while other construction activities, such as foundation work, wall installation, drainage, and roofing, are anticipated to produce negligible air pollution.

7.3.4 Given the use of properly maintained equipment and an appropriate work schedule, air pollution from the construction activities is expected to be insignificant. Dust dispersion could be noticeable but can be managed through measures like ground watering and natural forest absorption.

7.3.5 Environmental Management Plan (EMP) for construction activities includes associated risks and impacts is required to be developed by the contractor.

7.3.6 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-4 Impact Assessment of Air Quality

Impact	**Impact to E&S Aspect Air Quality Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The air pollution from the construction activities of TPA Sanggrahan is considered as negative impacts.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The air pollution is considered to have a direct impact to the receptors.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction period, the impact is expected to be short-term.				
Impact Spatial Extent	Local	Regional	Global		
	The potential pollution is likely to be restricted to the region within the TPA Sanggrahan boundary and adjacent to the access road.				
Impact Frequency	Impacts will occur solely during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The detected sensitive receptors within the region of influence are considered low sensitivity since they are limited to human activities in plantations and settlements within the specified limits. The areas of influence have also been classified as having low sensitivity since they comprise of secondary forest vegetation with a native vulnerable flora species. Several kinds of fauna were discovered in the sub-project area, although none are classified as endangered, vulnerable, or near threatened. The overall sensitivity of the receptor was rated as low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely Medium	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor				

Noise Pollution and Vibration Impact

7.3.7 Noise emission from vehicles and equipment including excavators, bulldozers, cranes, generators, trucks, jack hammer, generator and other equipment used during construction and platform levelling, and excavations works will affect the ambient noise quality within and surrounding the sub-project Site. These construction activities will increase the noise level significantly to the roadside at the south of the sub-project as the space between the RDF facility construction site and the road will be without dense vegetation as a sound barrier hence sound barrier fences/blanket installed at the sub-project perimeter. High level of noise may lead to discomfort and hearing loss to construction workers, landfill workers, staff, surrounding human activities and fauna habitats, especially in downwind directions.

7.3.8 However, the quantity of on-site construction equipment/machinery and movement of construction vehicles will be limited to as required by sub-project to ensure limited impact. The noise polution and vibration within the sub-project site generated by transport, heavy machinery activities, work tools, and generators are also expected to be low and localised, since only workable and well-maintained equipment or vehicles will be involved for levelling, access road, drainage and foundation openings, concrete work, wall installation, drainage work, roofing waste, cell rehabilitation.

7.3.9 The identified sensitive receptors are likely to have temporary exposure to noise from the construction area during the permitted working hours. To ensure this limitation, work schedule and its progress are to be monitored hence overtime working hours can be avoided hence no noise beyond normal working hours will be emitted. Based on the applicable mitigation i.e., usage of workable and well-maintained machinery and tools, sound barrier, and proper work schedule, insignificant noise emission is expected to the chicken farm or residential areas. Noise and vibration emission may be significant within sub-project site and to nearby activities/roadside but can be reduced by proper earplug or earmuffs (depending on noise level) and sound barrier fences respectively.

7.3.10 EMP for construction activities includes associated risks and impact is required to be developed by the contractor.

7.3.11 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-5 Impact Assessment of Noise and Vibration

Impact	**Impact on E&S aspect Noise and Vibration Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is anticipated to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	The potential pollution would generally be confined to the area within the TPA Regional Blang Bintang boundary and along the access road.				
Impact Frequency	Impacts will arise only during the construction activities of the TPST.				

Impact	Impact on E&S aspect Noise and Vibration Impact				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have low sensitivity, as they are limited to human activities in plantations and settlements within the specified limits The affected area is also considered to have low sensitivity to biodiversity because it is a modified habitat, although six species of woody flora with high conservation value were found in the study site. As for terrestrial fauna, a total of 29 species were identified consisting of 18 birds, 9 herpetofauna, and 2 species of mammals, from the list only 1 bird species is protected by the Minister of Environment and Forestry Regulation No. P.106 (2018) (P.106) and listed in CITES, namely Oriental Honey Buzzard (*Pernis ptilorhynchus).*				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor				

7.3.12 Construction activities in the existing landfill area may cause soil contamination. Construction activities, such as excavation, earthmoving, and use of heavy equipment, may result in leakage of hazardous materials (oil, grease, chemicals, etc.) that infiltrate into the soil. This can contaminate the surrounding subsoil and groundwater. In addition, if construction involves disturbance of the existing landfill cover layer, it may increase the risk of leakage of leachate which usually contains hazardous substances.

7.3.13 The subproject area in 2023 has a high rainfall in January - March and November - December rain intensities of 390 - 450 mm/day. The results of soil quality measurements show that the metal parameters Copper (Cu), Zinc (Zn), Lead (Pb), Cadmium (Cd) are still below the quality standards according to the Minister of Health Regulation No. 2 Year 2023 in detail can be seen in Chapter 5. The permeability rate at the study site ranges from 0.57 - 0.58, categorized as slow with clay dominant fraction. Based on this explanation, it can be predicted that the impact on soil contamination can be categorized as low, however, the risk of soil contamination must be further limited by effective control as follows:

- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only.
- Exposed site areas should be kept to a minimum during the construction of the new facilities and completed areas should be hard surfaced/re-vegetated as soon as practicable;
- Provision of effective construction site run-off controls such as controlled discharge and temporary drains;

- Proper management of refuelling activities, waste storage and disposal;
- Hard surfaced with perimeter drain at re-fuelling areas;
- Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident;
- In-place spill response and clean-up procedures; and
- Temporary fuel storage tanks constructed with adequate secondary containment/bunded.

7.3.14 EMP for construction activities includes associated risks and impact is required to be developed by the contractor.

7.3.15 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-6 Impact Assessment of Soil

Impact	**Impact on E&S aspect Soil contamination**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Short term as impacts will only occur during the construction phase				
Impact Spatial Extent	Local	Regional	Global		
	The potential pollution would generally be confined to the area within the TPA Sanggrahan.				
Impact Frequency	Impacts will arise only during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered High.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The sensitive receptors identified within the area of influence are considered to have low sensitivity, as they are limited to the activities of construction workers who should already have SOP in effect for construction workers and other activities around the landfill. The affected area is also considered to have low sensitivity to biodiversity because it is a modified habitat, although six species of woody flora with high conservation value were found in the study site. As for terrestrial fauna, a total of 29 species were identified consisting of 18 birds, 9 herpetofauna, and 2 species of mammals, from the list only 1 bird species is protected by the Minister of Environment and Forestry Regulation No. P.106 (2018) (P.106) and listed in CITES, namely Oriental Honey Buzzard (*Pernis ptilorhynchus).*				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering the high magnitude and low sensitivity, the significant impact is considered minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				

Impact	Impact on E&S aspect Soil contamination				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor.				

Run off and Soil Erosion

7.3.16 Land preparation activities and infrastructure development at the landfill and TPST are projected to increase surface runoff at the study site, which has a positive correlation with increased erosion. Erosion due to high surface runoff has the potential to have a negative impact on slope stability, increase sedimentation, and pollute water resources around the landfill, especially in the Progo River. Based on the results of surface runoff analysis at the study site, it is determined that the runoff discharge is 0.324 m^3/s. With this discharge, the drainage channel needs to be designed with dimensions of 0.7 x 0.9 meters to prevent surface runoff from being managed properly. The drainage channel plan of the area can be seen in **Figure 2-6.**

7.3.17 Based on this explanation, it can be predicted that the impact on increased surface runoff and soil erosion can be categorised as moderate because it is accumulative with the surrounding environment, however, the risk of increased surface runoff and erosion must be further limited by effective control as follows:

- Removing all construction waste from construction sites and surrounding water bodies in a systematic manner.
- Minimise the duration of stockpiling
- Protect water bodies from sediment load by using sediment traps or other barriers.
- It is recommended to conduct construction activities during the dry season
- Construct and rehabilitate adequate drainage channels to accommodate surface runoff.
- Maintain water conservation by making biopore infiltration holes in green open spaces or parks.
- Not dumping rubbish in drainage channels
- Maintain drainage channels from rubbish and mud

7.3.18 EMP for construction activities includes associated risks and impact is required to be developed by the contractor.

7.3.19 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-7 Impact Assessment of Run Off and Soil Erosion

Impact	Impact on E&S aspect Run off and Soil Erosion				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	An increase in runoff water will occur during land cover change from vegetated cover to building and pavement cover, which will continue as long as there is no land cover change.				

Impact	Impact on E&S aspect Run off and Soil Erosion				
Impact Spatial Extent	Local	Regional	Global		
	The impact of increased runoff water is cumulative because this impact, if it occurs along with increased runoff from other activities, has the potential to cause flooding in downstream areas.				
Impact Frequency	Impacts will arise only during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered High.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The distance between the sanggarahan landfill and the nearest settlement is about 0.5 km, in addition to the presence of the Progo river can minimise the impact of flooding in the study area because from the drainage channel the water can flow directly into the river.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering the high magnitude and low sensitivity, the significant impact is considered minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor.				

Water Quality

7.3.20 Uncontrolled surface runoff, particularly when contaminated with landfill effluent, from the project site to surrounding water bodies could degrade water quality in Kali Sari, which flows into Kali Progo. Observations made during the dry season in August 2024 revealed that chlorine (Cl_2) levels did not meet Class 2 river standards. Unfortunately, there is no data from the wet season during the operation of the TPA Sanggrahan to compare and confirm the river's water quality, as the information is based on community reports. It should be noted that aeration at the Leachate Treatment Plant (LTP) is currently suboptimal due to an insufficient number of functional aerators.

7.3.21 Construction activities like clearing, earthworks, and other operations may lead to undesirable surface runoff if appropriate measures are not taken. Compliance with Indonesia's erosion and sediment control standards is essential to prevent water contamination. In addition to surface runoff, slurry presents a risk to nearby water bodies if not properly managed. However, the expected volume of runoff and slurry is manageable and will likely be adequately contained and treated, thus minimizing potential risks to nearby water catchments.

7.3.22 Key mitigation measures to restore leachate quality as per design include providing a sufficient number of operational aerators, limiting waste volume within the designated waste cell according to the plan, preventing leachate runoff into the perimeter drains or main road, ensuring the functionality of the LTP's anaerobic pond and reed beds, and establishing an adequate drainage system to collect stormwater within the project site.

7.3.23 EMP for construction activities includes associated risks and impact is required to be developed by the contractor.

7.3.24 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-8 Impact Assessment of Water Quality

Impact	**Impact on E&S aspect Water Quality Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is anticipated to be short-term.				
Impact Spatial Extent	Local	Regional	Global		
	The potential pollution would generally be confined to the area within the TPA Sanggrahan and Kali Sari and Kali Progo.				
Impact Frequency	Impacts will arise only during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have medium sensitivity as the baseline condition in the Kali River did not meet the class 2 river quality standard.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as major.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor.				

Groundwater Quality

7.3.25 Construction activities within the existing landfill area have the potential to result in ground water contamination. Operations such as excavation, earthworks, and the deployment of heavy machinery may lead to the leakage of hazardous substances (including oil, grease, and chemicals), which can permeate the soil. This poses a risk of contaminating the surrounding subsoil and groundwater. Moreover, if construction disrupts the existing landfill's cover layer, the likelihood of leachate leakage, often containing harmful substances, may be significantly increased.

7.3.26 The subproject area in 2023 has a high rainfall in January - March and November - December rain intensities of 390 - 450 mm/day. The results of groundwater quality measurements show that it is still below the standards according to applicable regulations. Details can be seen in Chapter 5. The permeability rate at the study site ranges from 0.57 - 0.58, categorized as slow with clay dominant fraction. Based on this explanation, it can be predicted that the impact on ground water quality can be categorized as low, however, the risk of soil contamination must be further limited by effective control as follows:

- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only.
- Exposed site areas should be kept to a minimum during the construction of the new facilities and completed areas should be hard surfaced/re-vegetated as soon as practicable;
- Provision of effective construction site run-off controls such as controlled discharge and temporary drains;
- Proper management of refuelling activities, waste storage and disposal;
- Hard surfaced with perimeter drain at re-fuelling areas;
- Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident;
- In-place spill response and clean-up procedures; and
- Temporary fuel storage tanks constructed with adequate secondary containment/bunded.

7.3.27 EMP for construction activities includes associated risks and impact is required to be developed by the PIU.

7.3.28 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-9 Impact Assessment of Groundwater

Impact	**Impact on E&S aspect Groundwater Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Potential groundwater contamination will occur during the construction phase.				
Impact Spatial Extent	Local	Regional	Global		
	Shallow groundwater pollution can cause pollution in aquifers and groundwater basins.				
Impact Frequency	Impacts will arise only during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	

Impact	Impact on E&S aspect Groundwater Impact				
	Groundwater flow direction towards the northwest where the community still uses shallow groundwater.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering the medium magnitude and medium sensitivity, the significant impact is considered moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor.				

Waste Management Impacts

7.3.29 Construction wastes and general wastes will comprise unwanted materials generated during construction works including rejected structures and materials, surplus materials and materials that have been used and discarded, and domestic waste from workers' basecamp respectively. The wastes from construction activities are generally inert while mixed waste may be produced from domestic activities. Wastes generated by the construction activities are likely to generate various non-hazardous wastes such as the following:

- Construction materials such as concrete and broken rocks;
- Excavated materials such as soil; and
- General waste such as food, paper and other packaging materials.

7.3.30 The storage, handling, transport and disposal of these wastes have the potential to result in visual, water, dust and noise impacts in the event of inappropriate management methods. Potential impacts include:

- Contamination of soil and groundwater resources as a result of inappropriate waste storage, handling and disposal procedures;
- Fouling of drainage channels and surface water resources as a result of waste washed off-site in stormwater run-off or as a result of inappropriate waste disposal procedures; and
- General fouling of the environment by windblown waste.

7.3.31 General wastes include food waste, paper wastes, packaging (plastic bags, plastic sheeting etc.), and plastic/ tin cans and containers. Based on a projection of 0.7 kg/person/day, general wastes generated and to be disposed of at existing waste cell in TPA Sanggrahan is 35 to 56 kg/day.

7.3.32 The disposal of construction wastes is unlikely to raise any long-term concerns due to the inert nature of these types of materials. However, it is a good practice to segregate different categories of construction waste at source to facilitate recycling/ disposal. Inert materials (e.g. broken concrete, waste concrete etc.) should be used as structural fill wherever possible. The generation of construction wastes should be minimised through careful control of materials ordering procedures to avoid the purchase of surplus materials. Scrap metals should be sent

for recycling. Note that TPA Regional Blang Bintang is not an inert landfill hence appropriate contractor for a proper disposal of inert wastes should be appointed.

7.3.33 Waste Management Plan (part of or separated from EMP) for construction activities is required to be developed by the contractor.

7.3.34 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-10 Impact Assessment of Waste Management

Impact	**Impact on E&S aspect Waste Management Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is anticipated to be short-term				
Impact Spatial Extent	Local	Regional	Global		
	The potential pollution would generally be confined to the area within the TPA Sanggrahan boundary except for inert waste.				
Impact Frequency	Impacts will arise only during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have low sensitivity, as they are limited only human activities in plantation area within the stipulated limits. The affected area is also considered to have low sensitivity to biodiversity because it is a modified habitat, although six species of woody flora with high conservation value were found in the study site. As for terrestrial fauna, a total of 29 species were identified consisting of 18 birds, 9 herpetofauna, and 2 species of mammals, from the list only 1 bird species is protected by the Minister of Environment and Forestry Regulation No. P.106 (2018) (P.106) and listed in CITES, namely Oriental Honey Buzzard (*Pernis ptilorhynchus).*				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor.				

Wastewater Management Impacts

7.3.35 Domestic wastewater will come from the operation of the construction workers' basecamp. If not properly managed, this increase can contaminate surface water. A communal septic

tank for 50 – 80 PE is estimated to require 3.59m (L) x 2.40m (Dia.) x 2.65m (H) of space to hold and treat the sludge before release to the French drainage or relief well/seepage pit. Wastewater monitoring and septic tank cleaning is to be scheduled periodically to safeguard environmental components.

7.3.36 Potential impacts e.g., nitrate (NO_3) and ammonium (NH_4), as well as some heavy metals (Ni and Cd) – originating from the sewage sludge – can reach deeper than 0.8 m and cause the contamination of potential shallow aquifers; potential *E. coli* pollution to in the soil and groundwater/water body; etc., if not mitigated by the provision of proper septic tank.

7.3.37 EMP for construction activities includes associated risks and impact is required to be developed by the contractor.

7.3.38 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-11 Impact Assessment of Wastewater

Impact	**Impact on E&S aspect Wastewater Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is anticipated to be long-term.				
Impact Spatial Extent	Local	Regional	Global		
	The potential pollution would generally be confined to the area within the TPA Sanggrahan boundary.				
Impact Frequency	Impacts will arise only during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have low sensitivity, as they are limited to human activities in plantations and settlements within the specified limits The affected area is also considered to have low sensitivity to biodiversity because it is a modified habitat, although six species of woody flora with high conservation value were found in the study site. As for terrestrial fauna, a total of 29 species were identified consisting of 18 birds, 9 herpetofauna, and 2 species of mammals, from the list only 1 bird species is protected by the Minister of Environment and Forestry Regulation No. P.106 (2018) (P.106) and listed in CITES, namely Oriental Honey Buzzard (*Pernis ptilorhynchus).*				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				

Impact	Impact on E&S aspect Wastewater Impact				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor				

Loss of habitat and species

7.3.39 The proposed construction activities for the sub-project will involve clearance of approximatley 2,5- to 3-ha of agriculture and plantation for the new RDF facility. This clearing would inadvertently result in a reduction of habitat for both flora and fauna species found in the area. The sub-project site is not located in any Key Biodiversity Area (KBA) and Protected Area.

7.3.40 Even though the vegetation at the sub-project area is largely agriculture and plantation, many of the plant species classified in IUCN redlist like Teak (*Tectona grandis*,EN), Arabian coffee (*Coffea arabica,* EN), and True Cinnamon (*Cinnamomum verum*, VU), those vegetation also provide habitat and food for the fauna that live in the area. The notable protected fauna that may affect by the habitat loss is oriental honey-buzzard (*Pernis ptilorhynchus,* protected).

7.3.41 Oriental honey-buzzard have different varied home range between 13,5 to 25,8 km^2 (Ziesemer & Meyburg,2015). While the sub-project area is likely part of the home range of the oriental honey-buzzard found during the baseline surveys, there are suitable habitats surrounding the sub-project area that can serve as replacement habitat.

7.3.42 Considering the fairly large area of construction and the endangered fauna species found in the vicinity of the sub-project area, it is assessed that the loss of habitats potentially impacted by the proposed development are of medium magnitude. However, given that wildlife is able to move away from the sub-project site, and there are no key biodiversity areas in the vicinity of the sub-project area, the Sensitivity is assessed to be low. Thus, the impact significance of loss of habitat and species was assessed to be minor.

Table 7-12 Impact Assessment of Habitat and Species

Impact	Impact on E&S aspect Loss of Habitat and Species				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The plan is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The plan is considered to have a direct impact.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	While increases in human-wildlife conflict during construction phase is expected to be short-term, habitat loss is a long-term impact, and the overall impact was scored as long-term.				
Impact Spatial Extent	Local	Regional	Global		
	The impacts will be localized at the construction site.				
Impact Frequency	Habitat loss impacts will be constant and will carry over into the operation phase.				
Impact Magnitude	Negligible	Low	Medium	High	
	The habitat area to be cleared (2,5-3 ha) is relatively small, and there are sufficient remaining habitats around the sub-project area.				

Impact	Impact on E&S aspect Loss of Habitat and Species				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have low sensitivity, as they are some secondary forest vegetation with few endangered flora species. several species of fauna with conservation status were found around the sub-project area, but since these fauna species are mobile and are able to move away from the impact, the overall sensitivity of the receptor was scored as low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	The likelihood of habitat loss will be inevitable, the impact likelihood was scored as low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Given that habitat loss will not be mitigated or offset, the residual impact was scored as minor.				

Human-Wildlife Conflict and Roadkill

7.3.43 Increase in vehicular movement in and out of the work area during construction may increase chances of potential injury and mortality of fauna. Herpetofauna such as southern Indonesian spitting cobra (*Naja sputatrix*) and Common Water Monitor (*Varanus salvator*) are especially susceptible to roadkill.

7.3.44 Human-wildlife conflict may also occur if wildlife is attracted to the work area during the night when the worksite is inactive or attracted by food waste. The record of southern indonesian spitting cobra at the sub-project area, which have potential for human-wildlife conflict.

7.3.45 Roadkill impacts from construction works are temporary and will last the duration of the construction phase only. Human-wildlife conflict may increase during the construction phase, but this effect is also expected to be temporary and localized. The Magnitude and Sensitivity were assessed to be small and low respectively, and the impact significance assessed to be negligible.

7.3.46 If possible, worksite barriers or hoarding should be set up to prevent wildlife from entering the site. Workers on site are advised to watch for dangerous/venomous animals at the work site, and especially if a spitting cobra is encountered, to stop works, move away from the animal, and allow the animal to move away from the site before resuming work.

Table 7-13 Impact Assessment of Human-Wildlife Conflict

Impact	Impact on E&S aspect Human-Wildlife Conflict: Roadkill				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The plan is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The plan is considered to have a direct impact.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	While increases in human-wildlife conflict during construction phase is expected to be short-term.				

Impact	Impact on E&S aspect Human-Wildlife Conflict: Roadkill				
Impact Spatial Extent	Local	Regional	Global		
	The impacts will be localized at the construction site.				
Impact Frequency	Human-wildlife conflicts may increase only during the construction activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	The species may have potential affected by roadkill are few, the impact magnitude was low.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Some species of fauna were found around the sub-project area have conservation status, but since these fauna species are mobile and are able to move away from the impact, the overall sensitivity of the receptor was scored as low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	The likelihood of human-wildlife impact will be unlikely, and the overall impact likelihood was scored as low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	There is still a chance of human-wildlife conflict even after mitigation actions, the residual impact was scored as minor.				

Impact on Workforce Opportunity

7.3.47 Potential Impact: The recruitment of workers during the construction phase of the TPST Sanggrahan development offers a key opportunity to generate employment for local residents. The process will address critical aspects such as fair wages, safe working conditions, labor rights, and equitable treatment. As outlined in UKL-UPL document for the TPST Sanggrahan, it is estimated that up to 62 workers will be employed during construction. A significant focus will be placed on hiring locally, with over 50% of the workforce expected to be sourced from the surrounding communities, depending on the skills required.

7.3.48 Prioritizing local residents in the recruitment process is essential to meeting the community's expectations and ensuring that the development provides tangible economic benefits. Offering employment opportunities to local populations not only promotes inclusivity but also builds goodwill and fosters positive perceptions of the project. This engagement can strengthen community relations and reflect the project’s commitment to improving the livelihoods of those living in nearby areas.

7.3.49 Recruitment will be carefully aligned with the workforce requirements of the construction phase, particularly for the landfill rehabilitation and TPST development. The hiring process will be based on the number of workers required and the qualifications necessary for each role, ensuring the efficient execution of construction activities. Meeting the target of 50% local workforce absorption will support the broader goal of socio-economic development and community empowerment.

7.3.50 While the focus will initially be on recruiting workers from Desa Sanggrahan, it is equally important to involve residents from other areas impacted by the project, both directly and

indirectly. These areas include Desa Pendowo, Desa Klepu, and Desa Gentan. Broadening the scope of recruitment will help ensure that the project's benefits are equitably shared and mitigate any potential concerns about unequal access to employment opportunities. This inclusive approach aims to foster a sense of collective ownership and strengthen community support for the project.

7.3.51 Baseline Condition: The impact of workforce recruitment for the construction phase extends beyond the local study area, affecting not only residents in the vicinity but also communities across Temanggung Regency and Central Java Province. The projected labour force numbers covering both employed residents and those unemployed within Central Java Province and Temanggung Regency for the 2021–2025 period are presented in **Table 7-14**.

Table 7-14 Projected Labour Force Number in Temanggung Regency and Central Java Province 2021 – 2025

Location	2021		2022		2023		2024*		2025*	
	Working	Unemployed	Working	Unemployed	Working	Unemployed	Working	Unemployed	Working	Unemployed
Temanggung Regency	443.009	11.918	460.765	12.024	471.459	11.192	486.617	10.854	502.262	10.516
Central Java Province	17.835.770	1.128.223	18.390.459	1.084.475	19.988.875	1.080.260	21.203.866	1.057.461	22.492.708	1.035.142

Source: BPS Central Java and Temanggung Regency 2022 – 2024, processed data

7.3.52 Table above presents the projected labour force in Temanggung Regency and Central Java Province under normal conditions (without the construction project). The construction phase will begin in 2025, with workforce recruitment carried out gradually based on project needs. The peak labour demand for construction is estimated at 62 workers.

7.3.53 Local workforce participation is targeted at 50% of the total workforce required, creating an opportunity for 31 local workers. If the local workforce meets the qualifications and is successfully employed in the construction project, it could reduce the unemployment rate in Central Java Province by 0.006% and in Temanggung Regency by 0.59%.

7.3.54 Existing Control and Mitigation: To maximize local participation, the project implementer will collaborate closely with the Sanggrahan Village administration to facilitate a smooth and inclusive recruitment process. According to the UKL-UPL document for the TPST Sanggrahan, particular attention will be given to hiring workers from Dusun Losari, located within Desa Sanggrahan, Kecamatan Sanggrahan

7.3.55 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct a desktop review about the gender-disaggregated number and human resources required by the project compared to the gendered availability of local Manpower
- Prepare workforce release plan

7.3.56 According to the consideration above, the impact rating for workforce opportunity is summarized as follows.

Table 7-15 Impact Assessment of Workforce Opportunity

Impact	Impact to E&S Aspect Workforce Opportunity				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	**Positive**		
	Increase work opportunity due to construction activities of TPA Sanggrahan considered as positive impacts. However, it is important to note that the completion of the construction phase will also result in the release of the recruited workforce.				
Impact Type	Indirect	Secondary	**Direct**	Cumulative	Residual
	Increase work opportunity is considered as direct impact				
Impact Duration	**Temporary**	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be temporary				
Impact Spatial Extent	Local	**Regional**	Global		
	The potential impact of construction workforce recruitment will be felt at the regional level, because it not only recruits local people but also from all over Temanggung or Central Java or even for experts.				
Impact Frequency	Impacts will only arise during the construction period depending on the sub-project stage and labour requirements.				
Impact Magnitude	Negligible	**Low**	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered low.				
Receptor Sensitivity	Negligible	**Low**	Medium	High	
	Sensitive receptors identified in the area of influence are considered to have low sensitivity. Although the recruitment of workers is a point of concern for the community, the number of workers needed is not much.				
Impact Significance	Negligible	Minor	**Moderate**	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	**Medium**	High / Inevitable
	Without mitigation measures (recruitment plans), unplanned or extreme impacts will occur with medium likelihood.				
Residual Impact	Negligible	Minor	**Moderate**	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Moderate				

Impact on Business Opportunity

7.3.57 Potential Impact: The construction work, which employs approximately 62 individuals, has the potential to create new economic activities, including business opportunities. The construction of a workers' base camp during the project's construction phase is expected to further expand business opportunities for the local community. These may include services such as catering, laundry, and other essential needs for workers living at the camp. Additionally, the presence of construction workers in the TPA Sanggrahan area could encourage the growth of local businesses like food stalls and convenience stores, further benefiting the surrounding community economically.

7.3.58 Baseline Condition: At several points around the TPA Sanggrahan, there are already shops selling daily necessities. Within the TPA area, near the wastepickers' sorting zone, small food

stalls provide meals and snacks, and mobile vegetable vendors visit daily, highlighting existing business opportunities that thrive as long as activities continue in the area.

7.3.59 Existing Control and Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.60 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct a desktop review about the number of businesses near the project area

7.3.61 According to the consideration above, the impact rating for business opportunities aspect is summarized as follows.

Table 7-16 Impact Assessment of Business Opportunity

Impact	**Impact to E&S Aspect Business Opportunity**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Business opportunity due to construction activities of TPA Sanggrahan considered as positive impacts				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Increase of business opportunity is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase and likely to continue into the operational period, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	The potential impact of business opportunities will be felt at the regional level, because business opportunities to fulfill the need for goods and services to meet sub-project needs and workers are felt by local residents.				
Impact Frequency	Impacts will arise during the construction period and likely to continue into the operational period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered Low.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Sensitive receptors identified in the area of influence are considered to have low sensitivity. Because there are not many business opportunities that emerge and suit the local community.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Negligible.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Reasonably expected that new business opportunities will emerge as a result of the construction of the sub-project.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Minor				

Impact on Wastepicker Relocation

7.3.62 Potential Impact: The construction of the TPST Sanggrahan and the reorganisation of the existing landfill will alter waste accumulation routes during the construction phase. According to the DPRKPLH (Environmental Management and Spatial Planning Agency) of Temanggung Regency, Zone 5 will serve as a temporary dumping site throughout the construction period.

7.3.63 The relocation of the waste loading site during construction will affect the wastepickers' access to their livelihood sources. As a result, wastepickers may need new collection areas near the temporary site, and the overall number of wastepickers could decline due to the reduced space available for scavenging.

7.3.64 Baseline Condition: Data from the UPTD TPA Sanggrahan reveals the presence of 69 wastepickers actively working in the landfill, including 49 women and 24 elderly individuals. This group represents a vulnerable population that may be disproportionately impacted by the proposed development project. These wastepickers rely heavily on waste collection from areas close to zones 1, 2, and 3 within the landfill, where their proximity allows for convenient access to materials for recycling and income generation.

7.3.65 The project development plan indicates that the area currently designated for wastepicker stalls within the landfill will be repurposed for construction activities. As a result, all 69 wastepickers working in and around the TPA Sanggrahan will be directly affected by the project. The relocation of wastepicker operations and restricted access to waste collection areas are expected to reduce their income opportunities, with significant implications for household earnings. Given the reliance of many wastepicker households on income from these activities, the disruption could present severe socioeconomic challenges.

7.3.66 According to data from the TPA Sanggrahan, 87.23% of wastepicker households earn monthly incomes of ≤ IDR 1,000,000, placing them in a highly vulnerable income bracket. The remaining 12.77% of households earn between IDR 1,000,000 and ≤ IDR 2,109,690 per month. Given the anticipated disruptions during the construction phase, it is likely that wastepickers will experience a loss of income within this range. Reduced access to waste collection sites will directly impact their livelihoods, further exacerbating financial instability for these households.

7.3.67 Existing Control and Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.68 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct socialization
- Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans
- Develop livelihood restoration plans specifically targeting women and elderly wastepickers, ensuring gender sensitive and inclusive approaches.
- Ensure compensation mechanisms consider the vulnerability of these groups.

7.3.69 According to the consideration above, the impact rating for wastepicker relocation aspect is summarized as follows.

Table 7-17 Impact Assessment of Wastepicker Relocation

Impact	Impact to E&S Aspect Wastepickers Relocation				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Economic displacement of wastepickers due to construction activities of TPA Sanggrahan considered as negative impacts				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Economic displacement of wastepickers is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase and likely to continue into the operational period, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	The potential impact of economic displacement for wastepickers will be felt at the local level, as the wastepickers at the TPA Sanggrahan are residents from the surrounding area.				
Impact Frequency	Impacts will arise during the construction period and likely to continue into the operational period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Sensitive receptors identified in the area of influence are considered to have high sensitivity.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Critical.				
Impact Likelihood	Extremely Unlikely	Medium	Low	Medium	High / Inevitable
	Without mitigation measures, the impact will occur with high likelihood				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Moderate, reflects that despite mitigation efforts, there may still be significant impacts experienced by the wastepickers as a result of their relocation.				

Impact on Waste Collector Activities

7.3.70 Potential Impact: The construction of TPST Sanggrahan and the reorganization of the existing landfill will change waste accumulation routes during the construction phase. According to the DPRKPLH of Temanggung Regency, Zone 5 will function as a temporary dumping site throughout this period.

7.3.71 The relocation of the waste loading site during construction will impact waste pickers' access to their sources of livelihood. As a result, they may need to identify new collection areas near the temporary site, and the overall number of waste pickers may decline due to reduced scavenging space. This decrease could, in turn, affect the volume of waste and the income received by waste collectors from the Sanggrahan landfill, although the impact is expected to be minimal.

7.3.72 Baseline Condition: Based on the household survey conducted with waste collectors, it was found that there are three groups of collectors operating at the Sanggrahan landfill, each taking turns collecting waste from waste pickers' sorting areas according to a set schedule. Each collector employs workers to help transport and sort waste. On average, the collectors earn a net monthly income of approximately Rp3,916,667. Two out of the three groups do not solely collect waste from the Sanggrahan landfill but also source waste from other locations, such as Wonosobo.

7.3.73 Existing Control and Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.74 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct socialization
- Conduct socio-economic impact assessments
- Develop livelihood restoration plans
- Ensure compensation mechanisms consider the vulnerability of these groups.

7.3.75 According to the consideration above, the impact rating for waste collector acitivites aspect is summarized as follows.

Table 7-18 Impact Assessment of Waste Collector Activities

Impact	**Impact to E&S Aspect Waste Collector Activities**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Economic displacement of waste collectors due to construction activities of TPA Sanggrahan considered as negative impacts although the impact is expected to be minimal				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Economic displacement of waste collectors is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase and likely to continue into the operational period, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	The potential impact of economic displacement for waste collector will be felt at the local level, as the waste collectors at the TPA Sanggrahan are residents from the surrounding area.				
Impact Frequency	Impacts will arise during the construction period and likely to continue into the operational period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Sensitive receptors identified in the area of influence are considered to have medium sensitivity.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				

Impact	Impact to E&S Aspect Waste Collector Activities				
Impact Likelihood	Extremely Unlikely	Low	Medium	High / Inevitable	
	Without mitigation measures, the impact will occur with medium likelihood				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Minor, reflects that despite mitigation efforts, there may still be significant impacts experienced by the waste collectors as a result of their relocation.				

Impact on Workforce Release

7.3.76 Potential impact: Workforce release post-construction may lead to potential social issues related to unemployment or loss of income.

7.3.77 Baseline Information: The construction phase is expected to conclude by mid-2026, with a total of 62 workers being released. Of this number, approximately 50% or 31 workers will be from the local community. During the construction period, the workers' lifestyle and behaviour are anticipated to change. Additionally, a shift in income will occur, particularly for local workers who previously earned a living as farmers or wastepickers, where earnings were often uncertain. Upon becoming construction workers, they will benefit from a more stable income, both in amount and timing (monthly)

7.3.78 The release of construction workers will not only affect those within the project area but also workers from Temanggung Regency and Central Java Province who have participated in the construction work at the TPA Sanggrahan. A projection of the labour force, including both employed and unemployed individuals, in Central Java Province and Temanggung Regency for 2023–2026 is presented in **Table 7-19**.

Table 7-19 Projection of Labour Force in Temanggung Regency and Central Java Province 2023 – 2026

Location	2023		2024*		2025*		2026*	
	Working	Unemployed	Working	Unemployed	Working	Unemployed	Working	Unemployed
Temanggung Regency	471.459	11.192	486.617	10.854	502.262	10.516	518.410	10.178
Central Java Province	19.988.875	1.080.260	21.203.866	1.057.461	22.492.708	1.035.142	23.859.891	1.013.295

*Projection
Source: BPS Central Java Province and Temanggung Regency 2024, processed data

7.3.79 Based on the above table, the release of construction workers in 2026 may contribute to an increase in unemployment in both Temanggung Regency and Central Java Province. The release of 62 workers is projected to raise the unemployment rate in Temanggung Regency by 0.61% and in Central Java Province by 0.006% in 2026.

7.3.80 The unemployment caused by the release of these workers is largely structural in nature, meaning that sooner or later, the workers are expected to find new employment or return to their previous occupations, such as farming or scavenging.

7.3.81 Existing Controls/Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.82 Proposed Additional Mitigation, Management and Monitoring:

- Prepare workforce release plan

Table 7-20 Impact Assessment of Workforce Release

Impact	**Impact to E&S Aspect Workforce Release**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Workforce construction release of TPA Sanggrahan considered as negative impacts.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Increase work opportunity is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be temporary				
Impact Spatial Extent	Local	Regional	Global		
	The potential impact of construction workforce release will be felt at the regional level, because workers are not only local people but also from all over Temanggung or Central Java or even for experts.				
Impact Frequency	Impacts will only arise during the construction period depending on the sub-project stage and labour requirements.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered low.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Sensitive receptors identified in the area of influence are considered to have low sensitivity.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Negligible.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures (workforce release plans), unplanned or extreme impacts will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Moderate				

Impact on Community Concerns

7.3.83 Potential Impact: Construction activities, such as the mobilization of heavy equipment and other materials, may lead to complaints from the community, including disruptions to daily activities and health issues due to dust. Additionally, the recruitment of labour for the construction of the TPST Sanggrahan may also raise concerns and complaints from local residents. Meeting the expectations of the community should be considered as a mitigation measure to address any potential concerns and complaints that may arise during the construction phase. However, there is a risk of negative public perception or backlash if concerns are not adequately addressed.

7.3.84 Baseline Condition: The operations of the TPA Sanggrahan have elicited mixed reactions from the surrounding communities. Interviews with individuals living near the landfill highlight

several recurring concerns. Unpleasant odors, particularly pronounced during the rainy season, and litter scattered along the roads (caused by trucks transporting waste to the landfill) are among the primary issues raised by communities.

7.3.85 Data from the UKL-UPL TPST Sanggrahan show that 11.54% of the community disapproves of the project. However, the results of surveys conducted with Project-Affected Persons (PAPs) reflect a largely positive response toward the initiative. A significant 55.56% of respondents expressed strong support for the project, while 42.59% reported general support. Only 1.85% indicated opposition to the project.

7.3.86 Existing Control and Mitigation: The Public Housing, Residential Areas, and Environment Department of Temanggung Regency has established channels for complaints through WhatsApp, telephone, and email. However, the public rarely submits complaints concerning waste management activities. Most complaints are directed to the UPTD TPA Sanggrahan in person.

7.3.87 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct a baseline survey to identify community expectation and concern to the project.
- Review of community grievances about the project activity.
- Prepare Grievance redress mechanism

7.3.88 Construction activities, such as the mobilization of heavy equipment and other materials, may lead to complaints from the community, including disruptions to daily activities and health issues due to dust. Additionally, the recruitment of labour for the construction of the TPST Sanggrahan may also raise concerns and complaints from local residents. Meeting the expectations of the community should be considered as a mitigation measure to address any potential concerns and complaints that may arise during the construction phase.

7.3.89 According to the consideration above, the impact rating for community concerns is summarized as follows.

Table 7-21 Impact Assessment of Community Concern

Impact	**Impact to E&S Aspect Community Concern**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Community Concern is considered to have a negative impact. Construction activities may trigger concerns and grievances from the surrounding community. These complaints may include leachate, odor, noise or dust generated by the construction. In addition, the potential mobilization of heavy equipment and the recruitment of workers could also lead to complaints from the community. These concerns may arise due to increased traffic congestion, noise, and dust pollution caused by construction activities, which could disrupt daily life and impact the well-being of local residents.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Community concern is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the community in the affected area				

Impact	Impact to E&S Aspect Community Concern				
Impact Frequency	Impacts will arise during the construction period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium. There are many community activities carried out around the TPA Sanggrahan.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as moderate.				
Impact Likelihood	Extremely Unlikely	Medium	Low	Medium	High / Inevitable
	Concerns from the community can arise at any time. Even small changes in community comfort can lead to concerns and grievances				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	If the community's concerns only involve minor issues, such as temporary disturbances (noise, dust, traffic), and the impacts are neither significant nor long-lasting, then the residual impacts can be considered minor.				

Impact on Road Traffic

7.3.90 Potential Impact: The mobilization of heavy vehicles and construction materials may increase traffic volume around the TPA Sanggrahan. The passage of heavy vehicles can disrupt community activities and potentially cause other issues, such as road damage. Construction mobilization may disrupt traffic, especially on the Kranggan-Kaloran road.

7.3.91 Baseline Condition: Access to the TPA Sanggrahan passes through the Kranggan–Kaloran village road. This road has a width of approximately 6 meters, sufficient for two four-wheeled vehicles traveling in opposite directions. According to the *Andalalin* document for the TPA Sanggrahan, the Sanggrahan-Kramat road section has a VC Ratio of 0.11 (level A). This VC Ratio indicates that the traffic flow is uncongested, with high speeds and low traffic volume. While the operation of the TPST Sanggrahan may potentially increase saturation levels (VC Ratio), the *Andalalin* document states that the resulting impact is not significant.

7.3.92 Existing Control and Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.93 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct a traffic impact assessment
- Implement a traffic management plan

7.3.94 According to the consideration above, the impact rating for community concerns is summarized as follows.

Table 7-22 Impact Assessment of Land Traffic

Impact	Impact to E&S Aspect Transportation: Disruption to Land Traffic				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Transportation is considered to have a negative impact. Because it will cause disruption to land traffic and increased volume of vehicles.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Transportation is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be temporary				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the community in the affected area				
Impact Frequency	Impacts will arise during the construction period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered Low.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium. There are many community activities and mobilizations taking place on the road around the landfill (Kranggan–Kaloran rute).				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as minor.				
Impact Likelihood	Extremely Unlikely	Medium	Low	Medium	High / Inevitable
	Transportation disruptions may occur during the construction phase and considered as medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Negligible				

Impact on Traffic Accidents

7.3.95 Potential Impact: The mobilization of heavy vehicles and construction materials may cause road damage and an increase in vehicle traffic, which could potentially lead to traffic accidents. This increased traffic volume, combined with the weight and size of the construction vehicles, might also result in road deterioration, further elevating the risk of accidents and posing a danger to both the community and construction workers. Additionally, the mobilization of heavy vehicles and materials may also increase dust accumulation on the road and in the surrounding community, which could negatively impact the respiratory health of both the local population and the construction workers themselves.

7.3.96 Baseline Condition: Based on interviews with the surrounding community, one of the issues frequently raised is the litter scattered along the road when waste is transported to the TPA Sanggrahan. This occurs because the garbage trucks lack proper coverings, leading to some waste falling onto the road. The scattered waste has reportedly obstructed traffic flow and even caused accidents on the road leading to Gentan Village.

7.3.97 Existing Control and Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.98 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Assess the road safety risks
- Implement traffic control measures

7.3.99 According to the consideration above, the impact rating for community concerns is summarized as follows.

Table 7-23 Impact Assessment of Traffic Accidents

Impact	**Impact to E&S Aspect Transportation: Increase in Traffic Accidents**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Transportation is considered to have a negative impact. Because it will cause potential increased of accidents.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Transportation is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be temporary				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the community in the affected area				
Impact Frequency	Impacts will arise during the construction period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered low.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium. There are many community activities and mobilizations taking place on the road around the landfill (Kranggan–Kaloran rute).				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Transportation disruptions may occur during the construction phase and considered as likely Low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Negligible				

Impact on Community Disease

7.3.100 Potential Impact: The rehabilitation activities at the TPA Sanggrahan may lead to new impacts related to the prevalence of diseases in the community. There may be short-term increases in respiratory issues, vector-borne diseases, and waterborne illnesses due to the construction activities.

7.3.101 Baseline Information: Based on data from the ten most common diseases recorded at the Kranggan Community Health Centre (Puskesmas Kranggan) between 2021 and 2023, respiratory tract infections (ISPA) were identified as a disease linked to waste-related issues. In fact, ISPA was the most reported illness within the service area of Puskesmas Kranggan in 2022.

7.3.102 Existing Controls/Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.103 Proposed Additional Mitigation, Management and Monitoring:

- Conduct a baseline survey to identify disease prevalence for community around the project
- Collecting secondary data about community health status

Table 7-24 Impact Assessment of Community Disease

Impact	**Impact to E&S Aspect Community Disease**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Community disease is considered to have a negative impact. The construction phase of the landfill rehabilitation (TPA) may lead to an increased prevalence of diseases in the community.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Community health is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be temporary				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the community in the affected area				
Impact Frequency	Impacts will arise during the construction period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered Medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Increased community disease may occur during the construction phase and considered as likely Low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Negligible				

Impact on Environmental Sanitation

7.3.104 Potential Impact: During the construction phase of TPA rehabilitation, significant changes to environmental sanitation can occur, particularly affecting water sources, toilets, and septic disposal systems. Disturbed waste can release leachate, contaminating groundwater or surface water used for drinking and washing, reducing water quality. Construction activities may also damage existing sanitation infrastructure, such as toilets or septic tanks, leading to leaks or improper disposal of sewage. Soil erosion and sediment runoff can block drainage systems, creating unsanitary conditions and increasing the risk of waterborne diseases. Additionally, temporary sanitation facilities for workers may be insufficient if not properly managed, further degrading local hygiene and sanitation standards.

7.3.105 Baseline Information: Interviews with local leaders from the affected villages revealed that the communities primarily rely on water from the PAMSIMAS program as their main water source. This contrasts with the broader trend in Temanggung Regency, where, according to BPS 2024, 47.57% of the population depends on protected or unprotected springs as their primary water source. The majority of the Temanggung community already has access to individual sanitation facilities. The most commonly used sanitation facility in Temanggung Regency is the goose-neck toilet.

7.3.106 One of the significant health issues related to environmental sanitation is stunting. According to the Ministry of Health (Kemenkes) in 2018, stunting is closely linked to poor environmental health. The prevalence of stunting can be reduced through improved environmental conditions. Enhancing access to sanitation and clean water supply can reduce stunting in toddlers by 20.58% and by 27.55% among children aged 5-18 years. Data from the Kranggan Community Health Center in 2024 indicates that 185 children have been diagnosed with stunting, of which 117 are from villages affected by the sub-project. This reflects a slight improvement compared to the previous year, when 192 children were identified as stunted, including 118 from the affected villages.

7.3.107 Existing Controls/Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.3.108 Proposed Additional Mitigation, Management and Monitoring:

- Conduct a baseline survey to identify disease prevalence for community around the project
- Collecting secondary data about community health status

Table 7-25 Impact Assessment of Environmental Sanitation

Impact	**Impact to E&S Aspect Environmental Sanitation**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Environmental sanitation is considered to have a negative impact. The construction phase of the landfill rehabilitation (TPA) may lead to a water source disturbance.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Environmental sanitation is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	The contamination of community water sources can lead to long-term disruptions within the community.				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the community in the affected area				

Impact	Impact to E&S Aspect Environmental Sanitation				
Impact Frequency	Impacts will arise during the construction period				
Impact Magnitude	Negligible	Low	**Medium**	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	**Low**	Medium	High	
	Considering the contamination already experienced by the community, particularly on agricultural land, the receptor sensitivity is categorized as low.				
Impact Significance	Negligible	**Minor**	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	**Low**	Medium	High / Inevitable
	Increased community disease may occur during the construction phase and considered as likely Low.				
Residual Impact	**Negligible**	Minor	Moderate	Major	Critical
	The residual impact is assessed as Negligible				

Impact on Occupational Health and Safety : worker accidents

7.3.109 The construction of the TPST building significantly heightens workplace accident risks due to several factors, including intensive physical activities, the use of heavy machinery, and work at elevated heights. Workers are frequently exposed to various hazards such as hazardous materials, moving equipment, electrical risks, and potentially dangerous gases like methane. Additionally, contributing factors like worker fatigue, inadequate training, and insufficient supervision further exacerbate the likelihood of accidents, necessitating stringent safety measures and protocols.

7.3.110 According to the consideration above, the impact rating for work accident concerns is summarized as follows.

Table 7-26 Impact Assessment of Work Accidents

Impact	Impact to E&S Aspect H&S: Increase in work accidents				
Criteria	Evaluation and Description				
Impact Nature	**Negative**	Neutral	Positive		
	Work accident during the construction phase is considered to have a negative impact.				
Impact Type	Indirect	Secondary	**Direct**	Cumulative	Residual
	Work accident during the construction phase is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	**Permanent**	
	Given the nature of work accidents can result in disability and fatality, the impact duration is to be a permanent.				
Impact Spatial Extent	**Local**	Regional	Global		
	This impact is considered to be felt by the individual worker.				
Impact Frequency	Impacts will arise during the construction period				
Impact Magnitude	Negligible	Low	**Medium**	High	

Impact	Impact to E&S Aspect H&S: Increase in work accidents				
Receptor Sensitivity	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
	Negligible	Low	**Medium**	High	
Impact Significance	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium. This can still be mitigated by implementing the procedures and supervision.				
	Negligible	Minor	**Moderate**	Major	Critical
Impact Likelihood	Considering both the magnitude and sensitivity, the impact significant is assessed as moderate.				
	Extremely Unlikely	Unlikely Medium	Low	**Medium**	High / Inevitable
Residual Impact	Work accident may occur during the construction phase and considered as likely medium.				
	Negligible	**Minor**	Moderate	Major	Critical
	The residual impact is assessed as Minor.				

7.3.111 Impact on Occupational Health and Safety : Community Accidents

7.3.112 Landfills located near residential areas present serious risks to the surrounding communities. Residents may be exposed to hazardous gases, such as methane, and face potential contamination from waste leaks that can affect soil and water quality. The movement of heavy vehicles entering and exiting the landfill increases the likelihood of traffic-related accidents, particularly for children or unaware individuals who may venture too close to these dangerous zones. Additionally, unstable waste piles pose a risk of entrapment or injury to those who unknowingly enter restricted areas.

7.3.113 According to the consideration above, the impact rating for community accident concerns is summarized as follows.

Table 7-27 Impact Assessment of Community Accidents

Impact	Impact to E&S Aspect H&S: Increase in community accidents				
Criteria	Evaluation and Description				
Impact Nature	**Negative**	Neutral	Positive		
	Community accident during the construction phase is considered to have a negative impact.				
Impact Type	Indirect	Secondary	**Direct**	Cumulative	Residual
	Work accident during the construction phase is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	**Permanent**	
	Given the nature of community accidents can result in disability and fatality, the impact duration is to be a permanent.				
Impact Spatial Extent	**Local**	Regional	Global		
	This impact is considered to be felt by the individual.				
Impact Frequency	Impacts will arise during the construction period				
Impact Magnitude	Negligible	**Low**	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered low.				

Impact	Impact to E&S Aspect H&S: Increase in community accidents				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the receptor sensitivity is considered high. This can still be mitigated by implementing the procedures, engineering controls, and supervision.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely Medium	Low	Medium	High / Inevitable
	Community accident may occur during the construction phase and considered as likely low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Minor.				

7.4 Environmental and Social Impact Assessment During Operation Stage

Air Quality Impact

7.4.1 Generally, solid waste will emit dust, bio-aerosols, and odours. It will impact the nearby communities particularly who lives around the TPA Sanggrahan and the workers. Bioaerosols are particular concern to workers health and have been identified as source of reduced pulmonary function and increased respiratory disease.

7.4.2 During operations, solid waste is dumped into the landfill, and it will be subjected to series of reactions. Initially the waste is in aerobic condition and the main reaction products are carbon dioxide gas and water. This stage takes several days to week. With the progress of degradation, the oxygen is depleted and the degradation converted into anaerobic. As waste decompose in the landfill, landfill gases will be generated due to the anaerobic degradation of the organic fraction of the waste. Gas will start to be given off within few weeks of the waste deposition and will continue to be emitted even after the site closure. Furthermore, some of the gases that can be produced as a result of anaerobic degradation are hydrogen sulfide and ammonia.

7.4.3 During composting process, aerobic decomposition of waste occurs wherein organic matter in solid waste is mineralized by microorganisms and organic nitrogen is transformed into ammonium nitrogen, which mainly escapes in the form of NH_3; organic carbon is decomposed to provide energy for microbial activities which produces carbon dioxide (CO_2); and sulfur-containing organics decompose and disperse in the form of Volatile sulfide compounds (VSCs) such as H_2S, Methyl mercaptan (MeSH), Ethyl mercaptan (EtSH), Dimethyl sulfide (Me2S), and Dimethyl disulfide (Me2SS). Air emissions of bioaerosols and microbial volatile organic compounds (VOCs) are also produced, particularly when agitation activities are used to break up clumps of compost material.

7.4.4 Emissions from vehicles and equipment in the Sub-project areas and mobilization of operational waste trucks will affect the ambient air quality within and surrounding the sub-project site which located 250 m away from residential development, and along the access road from Temanggung Regency service areas. These operation activities will increase the concentration of dust particles, and airborne particulate matters which in turn reduce visibility, and pollutants such as NO_x, SO_2, CO. These conditions will potentially cause

respiratory and visibility problems to nearby sensitive receptors. The impacted area will be surrounding the Sub-project site and the vicinity, especially in downwind directions.

RDF Combustion by PT Solusi Bangun Indonesia

7.4.5 The combustion of Refuse-Derived Fuel by PT Solusi Bangun Indonesia Temanggung may impact air quality due to the potential release of pollutants such as particulate matter (PM), nitrogen oxides (NOx), sulfur oxides (SOx), volatile organic compounds (VOCs), and dioxins and furans. Although specific details about the Air Pollution Control (APC) system implemented by PT Solusi Bangun Indonesia Temanggung are not available, as a company holding proper certification, it is expected that they have implemented adequate APC measures to manage emissions effectively. The company is also anticipated to conduct regular emissions monitoring, to ensure compliance with environmental standards

7.4.6 EMP for operations activities includes associated risks and impact is required to be developed by the PIU.

7.4.7 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-28 Impact Assessment of Air Quality

Impact	**Impact to E&S Aspect Air Quality Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Any increase in air pollution parameter on the air ambient quality has a negative influence.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Air quality impact type from the operation activities is direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the operation period, the impact duration is anticipated to be long-term.				
Impact Spatial Extent	Local	Regional	Global		
	Any rise in certain air pollution metrics would generally be limited to the region within the Sub-project border and along the access route.				
Impact Frequency	The TPST's operating and maintenance activities will have a permanent impact, especially during the dry season.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified adjacent air-sensitive receptors are evaluated to have low sensitivity, since the baseline ambient air data reveal that the parameters are still within the allowed limits of local and international regulations. The overall sensitivity of the receptor was rated as low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely Medium	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				

Impact	Impact to E&S Aspect Air Quality Impact				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact from air quality impact is assessed as Minor.				

Soil Contamination

7.4.8 Potential impacts on soil contamination during the operation phase may be caused by poorly managed leachate, accidental waste spillage, fuel and oil spillage, lubricating oil replacement, improper waste disposal practices, etc. As the sub-project area has a high rainfall in January - March and November - December, it is important to ensure that only storm water enters the drainage system. Exposed soil or stockpiled material will also dry out which will make it more susceptible to wind erosion.

7.4.9 Nevertheless, the risk of soil contamination should be limited further by effective controls as follows:

- Proper drainage, WWTP, and LTP system are to be maintained.
- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only.
- Exposed site areas should be kept to a minimum during operations of the sub-project and ensure open areas in hard surfaced/re-vegetated as soon as practicable;
- Proper management of refuelling activities, waste storage and disposal;
- Hard surfaced with perimeter drain at re-fuelling areas;
- Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident;
- In-place spill response and clean-up procedures; and
- Temporary fuel storage tanks or hazardous substances storage is constructed with adequate secondary containment/bunded.

7.4.10 EMP for operation activities including the associated risks and impact is required to be developed by the PIU.

7.4.11 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-29 Impact Assessment of Soil Contamination

Impact	Impact on E&S aspect Soil Contamination Impact				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Potential soil contamination will occur during the operation phase.				
Impact Spatial Extent	Local	Regional	Global		

Impact	Impact on E&S aspect Soil Contamination Impact				
	The potential for pollution is generally limited to the Sanggrahan residual landfill area and its surroundings based on the distribution of leachate.				
Impact Frequency	Impacts will arise only during the operation activities of the landfill and TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Sensitive receptors identified within the area of influence are considered to have low sensitivity, as they are limited to human activities related to land use for agriculture and plantations at the study boundary. Also, the results of soil quality measurements in the dry land agriculture area and the river around the landfill show metal parameters are still below the quality standards. The area of influence is also considered to have low sensitivity to biodiversity as it is a modified habitat.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering the high magnitude and low sensitivity, the significant impact is considered minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor				

Surface Water Quality

7.4.12 The surface water quality is likely to be decreased due to contamination from leachate. Landfill leachate contains dissolved constituents derived from the interstitial water of the disposed waste as well as its degradation products. It also may contain some suspended solids, including pathogens. If not collected and treated, leachate can migrate from the landfill and causes surface water contamination through water flows to the water body.

7.4.13 Result measurement from the environmental baseline sampling in dry season (August 2024) at Kali Sari as the sensitive receptors of the surface water pollution impact shows the surface water quality of Kali Sari did not meet the class 2 river quality standard, specifically in Cl_2 parameter. Additional contamination of leachate in the surface water will degrade the surface water quality. Degradation of surface water will impact the aquatic biota in the river also the communities utilize the surface water for irrigation purposes. However, this is the current issue as leachate is not handled properly at the existing LTP. When the leachate treatment plant is developed for the landfill, leachate will be collected and treated properly that will create insignificant long-term impacts on water quality.

7.4.14 EMP for operations activities includes associated risks and impact is required to be developed by the PIU.

7.4.15 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-30 Impact Assessment of Surface Water Quality

Impact	**Impact on E&S aspect Surface Water Quality Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the operation phase, the impact duration is anticipated to be long-term.				
Impact Spatial Extent	Local	Regional	Global		
	The potential pollution would generally be confined to the area within the Sanggrahan residual landfill boundary and Kali Sari.				
Impact Frequency	Impact will arise during the operation activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have medium sensitivity as the baseline condition in the Kali Sari River did not meet the class 2 river quality standard for irrigation purposes.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Major.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor.				

Water Quality : Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)

7.4.16 Potential impacts to groundwater during the operation phase may be caused by poorly managed leachate, accidental waste spills, fuel and oil spills, lubricating oil changes, improper waste disposal practices, etc.

7.4.17 The sub-project area has high rainfall in January - March and November - December, it is important to ensure that only storm water enters the drainage system. The results of groundwater quality measurements at the study site show that it is still below the quality standards according to applicable regulations, the low permeability values at the study area range from 0.57 - 0.58 with a dominant clay fraction, indicating that surface water flow will be difficult to seep into the soil. Based on this explanation, it can be predicted that the impact on groundwater quality degradation can be categorised as low, however, the risk of groundwater pollution must be further limited by effective control as follows:

7.4.18 Nevertheless, the risk of and groundwater contamination should be limited further by effective controls as follows:

- Proper drainage, WWTP, and LTP system are to be maintained.
- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only.
- Exposed site areas should be kept to a minimum during operations of the sub-project and ensure open areas in hard surfaced/re-vegetated as soon as practicable;
- Proper management of refuelling activities, waste storage and disposal;
- Hard surfaced with perimeter drain at re-fuelling areas;
- Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident;
- In-place spill response and clean-up procedures; and
- Temporary fuel storage tanks or hazardous substances storage is constructed with adequate secondary containment/bunded.
- Build monitoring wells at the study site

7.4.19 EMP for construction activities includes associated risks and impact is required to be developed by the PIU.

7.4.20 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-31 Impact Assessment of Groundwater

Impact	**Impact on E&S aspect Groundwater Impact**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Potential groundwater impact will occur during the operation phase.				
Impact Spatial Extent	Local	Regional	Global		
	Shallow groundwater pollution can cause pollution in aquifers and groundwater basins				
Impact Frequency	Impacts will arise only during the operation activities of the landfill and TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Groundwater flow direction towards the northwest where the community still uses shallow groundwater.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering the medium magnitude and medium sensitivity, the significant impact is considered moderate.				

Impact	Impact on E&S aspect Groundwater Impact				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor				

Waste Management Impacts

7.4.21 Wastes and general wastes during operations will comprise unwanted materials generated during production process including rejected waste and recyclable materials, surplus materials and materials that have been used and discarded, and domestic waste from RDF facility. The wastes from operations and domestic activities are generally mixed waste and may be combined with hazardous wastes. All hazardous waste will be collected during sorting in material recovery activities as described in waste balance diagram.

7.4.22 The storage, handling, transport and disposal of wastes during operations have the potential to result in negative impacts if inappropriately managed. Identified potential impacts are the same as mentioned in construction stage such as contamination of soil and groundwater resources, fouling of drainage channels and surface water resources, and general fouling of the environment by windblown waste.

7.4.23 General wastes include food waste, paper wastes, packaging (plastic bags, plastic sheeting etc.), and plastic/ tin cans and containers. Based on a projection of 0.7 kg/person/day, general wastes generated and to be disposed to existing waste cell in TPA Sanggrahan is 28 to 42 kg/day.

7.4.24 It is mandatory to segregate wastes based on their categories to facilitate recycling/disposal during the operational period of an RDF facility. Inert and hazardous wastes should be collected and only disposed of in designated landfills by certified contractors. The generation of waste during operations should be minimised through careful ordering and the use of reusable materials.

7.4.25 Waste Management Plan (part of or separated from EMP) for operations activities is required to be developed by the PIU.

7.4.26 According to the considerations above, the anticipated impact is concluded as follows.

Table 7-32 Impact Assessment of Waste Management

Impact	Impact on E&S aspect Waste Management Impact				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The pollution is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The pollution is considered to have a direct impact.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is anticipated to be short-term.				
Impact Spatial Extent	Local	Regional	Global		

Impact	Impact on E&S aspect Waste Management Impact				
	The potential pollution would generally be confined to the area within the Sanggrahan residual landfill boundary except for inert waste.				
Impact Frequency	Impacts will arise during the operation activities of the TPST.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have low sensitivity, as they are limited to human activities in plantations and settlements within the specified limits. The affected area is also considered to have low sensitivity to biodiversity because it is a modified habitat, although six species of woody flora with high conservation value were found in the study site. As for terrestrial fauna, a total of 29 species were identified consisting of 18 birds, 9 herpetofauna, and 2 species of mammals, from the list only 1 bird species is protected by the Minister of Environment and Forestry Regulation No. P.106 (2018) (P.106) and listed in CITES, namely Oriental Honey Buzzard (*Pernis ptilorhynchus).*				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impact will occur with medium likelihood				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor.				

Habitat Degradation from sub-project during operation

7.4.27 The operation phase of the sub-project has potential impact on biodiversity through leachate leakage to the environment. Toxic substances may dissolve in rainwater and spill into the environment if not managed properly. These toxins have been shown to be detrimental to fish and other aquatic life, and there may be indirect impacts to humans via bioaccumulation if this aquatic wildlife are consumed (Vaverková, 2019). Several fish species and the which are very dependent on freshwater bodies, were found within the sub-project area during the baseline survey, and it will be important to ensure that leachate from the landfill does not spill into the environment and the stream that runs through the site.

7.4.28 Uncontrolled landfill fires may also be a source of pollution (Vaverková, 2019), and its impact would be greater than leachate if toxins are vaporized and spread to a larger area outside the sub-project site. This can have negative impacts on soil and water around the site, which would have impacts on the entire ecosystem, including flora and fauna.

7.4.29 Sensitivity of biodiversity towards landfill pollutants is high because most of the fauna have little capacity to absorb the impacts. However, given that the area of forest clearance will be relatively small, and the likelihood of leachate spillage and landfill fire will be low, the Magnitude was assessed to be Negligible. Thus, the impact significance of habitat degradation from the sub-project operations was assessed to be negligible/minor.

Table 7-33 Impact Assessment of Habitat Degradation

Impact	**Impact on E&S aspect Habitat Degradation from sub-project**				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	The plan is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	The plan is considered to have a direct impact.				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Habitat degradation as a consequence of toxic substance during operation phase is expected to be long-term.				
Impact Spatial Extent	Local	Regional	Global		
	The impacts will be localized at the construction site and surrounding.				
Impact Frequency	Habitat degradation will be constant during the operation phase.				
Impact Magnitude	Negligible	Low	Medium	High	
	The habitat area may be affected by the toxic substance is relatively small, and there are no species of concern especially aquatic fauna around the sub-project area.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	The identified sensitive receptors within the area of influence are assessed to have low sensitivity, as they are largely secondary forest vegetation with few endangered flora species. One protected species of fauna were found around the sub-project area, but since these fauna species are mobile and are able to move away from the impact, the overall sensitivity of the receptor was scored as low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	The likelihood of habitat degradation will be inevitable, and the overall impact likelihood was scored as low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Given that habitat degradation can be mitigated, the residual impact was scored as minor.				

Impact on Workforce Opportunities

7.4.30 Potential Impact: The worker recruitment for construction phase of TPST development will be fairly conducted to ensure that both the qualified and the unemployed persons are employed. It is for this reason that this approach is designed in such a way that a rich pool of candidates can come forward and contribute to the efficient running of the facility in question. As such, the project's major goal of promoting transparency and openness when recruiting people for the project has the likelihood of generating employment for the local people; hence, supporting their livelihood. From the Environmental and Social Management document for the SWMSUD TPST Sanggrahan, the project is estimated to employ up to 20 workers. This employment figure signifies a form of affirmative action to market for local talent and takes its part in reducing unemployment or underemployment in the community. Not only does the recruitment strategy answer the operational requirements, but the project is also striving for the goal of social responsibility in the economics concept as it provides employment benefits to the area.

7.4.31 Baseline Condition: During the operational phase of landfill management and TPST Sanggrahan development, workforce recruitment will be carried out in alignment with the required number and qualifications for each role. It is estimated that 20 workers will be employed, with a goal of achieving 30% local workforce participation.

7.4.32 To promote community involvement, the project implementers will collaborate with officials from Desa Sanggrahan throughout the recruitment process. As outlined in the UKL-UPL document for TPST Sanggrahan, priority will be given to candidates from Dusun Losari, Desa Sanggrahan, Kecamatan Sanggrahan. However, residents from both directly and indirectly affected areas—including Desa Sanggrahan, Desa Pendowo, Desa Klepu, and Desa Gentan—will also be prioritized.

7.4.33 The recruitment process is expected to have a broad impact, benefiting not only the communities within the study area but also extending opportunities to residents across Kabupaten Temanggung and the wider Provinsi Jawa Tengah. **Table 7-34** provides projected figures for the labour force, including both employed and unemployed individuals in these regions between 2023 and 2026.

Table 7-34 Labour Force Projection in Temanggung Regency and Central Java Province 2023 – 2026

Location	2023		2024		2025		2026	
	Working	Unemployed	Working	Unemployed	Working	Unemployed	Working	Unemployed
Temanggung Regency	471.459	11.192	486.617	10.854	502.262	10.516	518.410	10.178
Central Java Province	19.988.875	1.080.260	21.203.866	1.057.461	22.492.708	1.035.142	23.859.891	1.013.295

7.4.34 Table above presents the projected labour force in Kabupaten Temanggung and Provinsi Jawa Tengah under normal conditions (without the operation phase of the project). The operational phase will commence in 2026, and workforce recruitment will be carried out gradually according to the manpower needs. The total requirement for operational workers is 20 people, with local workforce participation expected to reach 30% of the total number of workers needed. This means that approximately 7 job opportunities will be available for the local workforce. If local residents meet the qualifications and are hired for operational roles, it could reduce the unemployment rate in Provinsi Jawa Tengah by 0.002% and in Kabupaten Temanggung by 0.20%.

7.4.35 Existing Control and Mitigation: Monitoring and inventory will be conducted throughout the operational phase to assess the level of community involvement in Desa Sanggrahan. This process will help determine the percentage of local participation and ensure that priority has been given to residents of Dusun Losari.

7.4.36 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Prioritise local recruitment. Ensure that the majority of workers hired during the operational phase are from the surrounding villages.
- Establish a transparent recruitment process. Publicly advertise job opportunities and ensure fair selection.
- Provide training to local workers. Provide skills training, including health and safety protocols, to improve skills.

- Prioritise employment for vulnerable groups, such as local wastepickers.
- Establish a grievance mechanism. Provide easy access for local people to raise concerns about recruitment and employment.

7.4.37 According to the consideration above, the impact rating for workforce opportunities is summarized as follows.

Table 7-35 Impact Assessment of Workforce Opportunity

Impact	**Impact to E&S Aspect** **Workforce Opportunity**				
Impact Nature	Negative	Neutral	Positive		
	Increase work opportunity due to operation activities of Sub-project considered as positive impacts				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Increase work opportunity is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the operation phase, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	The potential impact of operation workforce recruitment will be felt at the regional level, because it not only recruits local people but also from all over Temanggung or Central Java or even for experts.				
Impact Frequency	Impacts will only arise during the operation period depending on the sub-project stage and labour requirements.				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Sensitive receptors identified in the area of influence are considered to have medium sensitivity. Although the recruitment of workers is a point of concern for the community, the number of workers needed is not much.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures (recruitment plans), unplanned or extreme impacts will occur with low likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	Considering the mitigation to be provided, the residual impact is assessed as Minor				

Impact on Livelihoods of Wastepicker

7.4.38 Potential Impact: The operational activities of the TPST Sanggrahan are projected to reduce the incoming waste to the Sanggrahan residual landfill by up to 50%. According to the material flow described by DPRKPLH Temanggung, approximately 92.05% of the total waste received consists of non-market waste. This type of waste will first pass through the picking bay, where wastepickers will have the opportunity to collect reusable materials before the waste is transferred to the unloading area. It is estimated that wastepickers can reduce non-market waste by around 5.40%, equivalent to 8.50 tonnes.

7.4.39 However, the waste flow moving from the picking bay to the unloading area may limit the amount of time available for wastepickers to collect materials. Additionally, the number of

wastepickers permitted to collect waste within the TPA Sanggrahan area may also be subject to restrictions.

7.4.40 Baseline Condition: The operational activities of the TPST Sanggrahan will impact 67 wastepickers, who come from various areas surrounding the TPA Sanggrahan. Among them, 16 are married couples working as wastepickers. On average, household incomes of wastepickers at the landfill reveal that 87.23% earn ≤ IDR 1,000,000 per month, while the remaining 12.77% earn between >IDR 1,000,000 and ≤ IDR 2,109,690.

7.4.41 Restrictions on the number of wastepickers allowed to collect waste, along with limited collection times, are likely to reduce household incomes. These constraints will particularly affect elderly and female wastepickers, who may face more significant challenges in adapting to the new conditions.

7.4.42 Existing Control and Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.4.43 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Develop livelihood restoration programs. Provide alternative livelihood opportunities, such as training wastepickers for employment at the RDF facility or other local businesses.
- Provide social security and health benefits. Ensure that wastepickers affected by reduced waste availability are enrolled in social welfare programs, including health insurance.
- Ensure transparent communication. Regularly inform wastepickers about upcoming changes and available support through consultations and meetings.
- Monitor income levels. Track changes in the income of wastepickers pre- and post-operation of the RDF plant and provide assistance to those most affected.

7.4.44 According to the consideration above, the impact rating for disruption of wastepicker livelihood is summarized as follows.

Table 7-36 Impact Assessment of Wastepicker Livelihoods

Impact	**Impact to E&S Aspect** **Disruption of Wastepicker Livelihoods**				
Impact Nature	Negative	Neutral	Positive		
	Disruption of Wastepicker Livelihoods due to construction activities of Sub-project considered as negative impacts				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Disruption of wastepicker livelihood is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the operation phase, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	The potential impact of disruption of wastepicker livelihood will be felt at the local level, as the wastepickers at the TPA Sanggrahan are residents from the surrounding area.				
Impact Frequency	Impacts will arise during the operational period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	Medium	High	

Impact	Impact to E&S Aspect Disruption of Wastepicker Livelihoods				
Impact Significance	Sensitive receptors identified in the area of influence are considered to have high sensitivity.				
	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Critical.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Without mitigation measures, unplanned or extreme impacts will occur with high likelihood.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Major				

Impact on Waste Collector Activities

7.4.45 Potential Impact: The operational activities of the TPST Sanggrahan are projected to reduce the incoming waste to the Sanggrahan residual landfill by up to 50%. According to the material flow described by DPRKPLH Temanggung, approximately 92.05% of the total waste received consists of non-market waste. This type of waste will first pass through the picking bay, where waste pickers will have the opportunity to collect reusable materials before the waste is transferred to the unloading area. This process may reduce the amount of waste available for sorting by waste pickers and could also impact the volume of waste collected by waste collectors from the Sanggrahan landfill.

7.4.46 Baseline Condition: Based on the household survey conducted with waste collectors, it was found that three groups of collectors operate at the Sanggrahan landfill, each taking turns collecting waste from waste pickers' sorting areas according to a predetermined schedule. Each group employs workers to assist in transporting and sorting the waste. On average, the collectors earn a net monthly income of around Rp3,916,667. Two of the three groups not only collect waste from the Sanggrahan landfill but also gather waste from other locations, such as Wonosobo.

7.4.47 Existing Control and Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.4.48 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct socialization
- Develop livelihood restoration plans
- Ensure compensation mechanisms consider the vulnerability of these groups.

7.4.49 According to the consideration above, the impact rating for waste collector acitivites aspect is summarized as follows.

Table 7-37 Impact Assessment of Waste Collector Activities

Impact	Impact to E&S Aspect Waste Collector Activities				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
	Economic displacement of waste collectors due to operation activities of Sub-project considered as negative impacts				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual

Impact	Impact to E&S Aspect Waste Collector Activities				
	Economic displacement of waste collectors is considered as direct impact				
Impact Duration	Temporary	Short-term	**Long-term**	Permanent	
	Given the nature of the construction phase and likely to continue into the operational period, the impact duration is to be long-term				
Impact Spatial Extent	**Local**	Regional	Global		
	The potential impact of economic displacement for waste collector will be felt at the local level, as the waste collectors at the TPA Sanggrahan are residents from the surrounding area.				
Impact Frequency	Impacts will arise during the construction period and likely to continue into the operational period				
Impact Magnitude	Negligible	Low	Medium	**High**	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered high.				
Receptor Sensitivity	Negligible	Low	**Medium**	High	
	Sensitive receptors identified in the area of influence are considered to have medium sensitivity.				
Impact Significance	Negligible	Minor	Moderate	**Major**	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Major.				
Impact Likelihood	Extremely Unlikely	Low	**Medium**	High / Inevitable	
	Without mitigation measures, the impact will occur with medium likelihood				
Residual Impact	Negligible	Minor	**Moderate**	Major	Critical
	The residual impact is assessed as Moderate, reflects that despite mitigation efforts, there may still be significant impacts experienced by the waste collectors as a result of their relocation.				

Impact on Community Concerns

7.4.50 Potential Impact: Operation activities, such as the increased movement of waste trucks and process operation at TPST and residue waste landfilling at the residual landfill may lead to complaints from the community, including disruptions to daily activities and health issues due to noise, dust, bioaerosol, and odor emissions, and traffic. Composting process may also attack unwanted vermins and wildlife in the vicinity of the sub-peoject area. Additionally, the recruitment of labour for the construction of the TPST Sanggrahan may also raise concerns and complaints from local residents. Meeting the expectations of the community should be considered as a mitigation measure to address any potential concerns and complaints that may arise during the construction phase. However, there is a risk of negative public perception or backlash if concerns are not adequately addressed.

7.4.51 Baseline Condition: Activities at the Sanggrahan Waste Transfer Station have resulted in multiple complaints from the community, primarily regarding unpleasant odors and litter along the roads caused by passing waste trucks. Despite these issues, the development project for the Sanggrahan Waste Management System (TPST) has generated optimism among residents, as they look forward to local human resources being engaged in the project, particularly as construction workers.

7.4.52 Existing Control and Mitigation: The Public Housing, Residential Areas, and Environment Department of Temanggung Regency has established channels for complaints through WhatsApp, telephone, and email. However, the public rarely submits complaints concerning waste management activities. Most complaints are directed to the UPTD TPA Sanggrahan in person.

7.4.53 Proposed additional Mitigation, Management and Monitoring measures are as follows:

- Conduct a baseline survey to identify community expectation and concern to the project.
- Review of community grievances about the project activity.
- Prepare Grievance redress mechanism
- Maintain optimal/adequate composting process conditions and installation of odor control system at the TPST enclosed areas to minimise odor generation
- Implement good housekeeping practices within the TPST area and regular inspection for presence of vermins

7.4.54 According to the consideration above, the impact rating for community concerns is summarized as follows.

Table 7-38 Impact Assessment of Community Concern

Impact	**Impact to E&S Aspect Community Concern**				
Impact Nature	Negative	Neutral	Positive		
	Community Concern is considered to have a negative impact. Operation activities may trigger concerns and grievances from the surrounding community. These complaints may include leachate, odor, noise or dust generated by the construction. In addition, the potential mobilization of heavy equipment and the recruitment of workers could also lead to complaints from the community. These concerns may arise due to increased traffic congestion, noise, and dust pollution caused by construction activities, which could disrupt daily life and impact the well-being of local residents.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Community concern is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the operation phase, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	his impact is considered to be felt by the community in the affected area				
Impact Frequency	Impacts will arise during the operational period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium. There are many community activities carried out around the Sub-project.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable

Impact	Impact to E&S Aspect Community Concern				
	Concerns from the community can arise at any time. Even small changes in community comfort can lead to concerns and grievances				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	If the community's concerns only involve minor issues, such as temporary disturbances (noise, dust, traffic), and the impacts are neither significant nor long-lasting, then the residual impacts can be considered minor.				

Impact on Community Disease

7.4.55 Potential Impact: The operation of a TPST can influence disease prevalence in an area, both positively and negatively. Effective waste management and active community involvement are critical to maximizing public health benefits while minimizing health risks associated with waste disposal. During the construction phase, there may be a temporary increase in cases of ISPA and other waste-related diseases; however, these risks are expected to decline once operational activities begin. The improved waste management facilitated by the TPST will help reduce disease vectors, such as flies and rodents, thereby contributing to better public health conditions in the area.

7.4.56 Baseline Information: Data from the ten most common diseases recorded at the Kranggan Community Health Centre (Puskesmas Kranggan) between 2021 and 2023 highlights respiratory tract infections (ISPA) as a health issue linked to waste-related conditions. Notably, ISPA was the most frequently reported illness in the Puskesmas Kranggan service area in 2022.

7.4.57 Existing Controls/Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.4.58 Proposed Additional Mitigation, Management and Monitoring:

- Conduct a baseline survey to identify disease prevalence for community around the project
- Collecting secondary data about community health status

Table 7-39 Impact Assessment of Community Disease

Impact	Impact to E&S Aspect Community Disease				
Impact Nature	Negative	Neutral	Positive		
	Community disease is considered to have a positive impact. The operation of TPST Sanggrahan may lead to reduce the prevalence of diseases in the community.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Community disease is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the community in the affected area				
Impact Frequency	Impacts will arise during the operational period				
Impact Magnitude	Negligible	Low	Medium	High	

Impact	Impact to E&S Aspect Community Disease				
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the receptor sensitivity of the impact is considered low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Changes of community disease prevalence may occur during the operation phase and considered as likely Low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Negligible				

Impact on Environmental Sanitation

7.4.59 Potential Impact: When properly managed, TPSTs can enhance overall sanitation in the area by reducing open dumping and controlling waste disposal practices. This improvement can potentially lead to a decrease in vector-borne diseases, such as dengue fever and malaria, that are often linked to inadequate waste management. By effectively managing waste, communities can create a cleaner environment, thereby reducing the breeding grounds for disease-carrying vectors.

7.4.60 Baseline Information: Interviews with local leaders from the affected villages confirm that most communities rely on the PAMSIMAS program for their main water source. This contrasts with the broader Temanggung Regency trend, where 47.57% of the population depends on protected or unprotected springs (BPS 2024). Additionally, the majority of households in the region have access to individual sanitation facilities, with goose-neck toilets being the most commonly used type. Proper waste management during the operational phase of the TPST will be crucial to maintaining these services and preventing contamination of water sources.

7.4.61 Improving access to sanitation and reducing waste-related contamination have a direct link to better health outcomes, particularly in reducing stunting. According to the Ministry of Health (Kemenkes, 2018), improved sanitation can reduce stunting prevalence by 20.58% among toddlers and 27.55% among children aged 5-18 years. Data from the Kranggan Community Health Center in 2024 shows a positive trend, with the number of stunted children decreasing from 192 to 185 within one year. Of the 185 stunted children, 117 reside in villages affected by the sub-project, demonstrating that maintaining good environmental conditions through TPST operations can further support these improvements.

7.4.62 Existing Controls/Mitigation: at this stage, there has been no indication that any mitigation plans prepared by the local government

7.4.63 Proposed Additional Mitigation, Management and Monitoring:

- Conduct a baseline survey to identify disease prevalence for community around the project
- Collecting secondary data about community health status

Table 7-40 Impact Assessment of Environmental Sanitation

Impact	Impact to E&S Aspect Environmental Sanitation				
Impact Nature	Negative	Neutral	Positive		
	Environmental sanitation is considered to have a positive impact. The operation phase of TPST may lead to a sanitation improvement				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Environmental sanitation is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of the construction phase, the impact duration is to be long-term				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the community in the affected area				
Impact Frequency	Impacts will arise during the operational period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Considering the contamination already experienced by the community, particularly on agricultural land, the receptor sensitivity is categorized as low.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as Minor.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Improvement of environmental sanitation may occur during the operation phase and considered as likely Low.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Negligible				

Impact on Occupational Health and Safety : Worker accidents and health issues

7.4.64 Workplace accident risks during the operational phase of a TPST can rise due to factors like heavy machinery operation, worker interactions, and waste handling processes. Workers often face hazardous conditions, including unstable waste piles, exposure to dangerous gases from the landfill, and large vehicle movement, all of which can lead to accidents. Additionally, a dirty and disorganized environment increases the likelihood of slips, falls, or injuries from sharp object. Exposure to emissions from composting process and possible vermin infestation increases the likelihood of respiratory and health issues.

7.4.65 Proposed Additional Mitigation, Management and Monitoring:

- Conduct a baseline survey to identify occupational health and accidents around the project
- Collecting secondary data about occupational health and accidents status
- Implement good housekeeping practices within the TPST and residual landfill areas and regular inspection for presence of vermins
- Provide appropriate mask for the workers at the compost processing area
- Provide local exhaust ventilation with dust collection system and odor control system at the TPST facility
- Prepare site specific Emergency Response Plan to cover OHS risks during operation

7.4.66 According to the consideration above, the impact rating for work accident concerns is summarized as follows.

Table 7-41 Impact Assessment of Work Accidents

Impact	Impact to E&S Aspect H&S: Increase in work accidents				
Impact Nature	Negative	Neutral	Positive		
	Work accident during the operation phase is considered to have a negative impact.				
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
	Work accident during the operation phase is considered as direct impact				
Impact Duration	Temporary	Short-term	Long-term	Permanent	
	Given the nature of work accidents can result in disability and fatality, the impact duration is to be a permanent.				
Impact Spatial Extent	Local	Regional	Global		
	This impact is considered to be felt by the individual worker.				
Impact Frequency	Impacts will arise during the operational period				
Impact Magnitude	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the magnitude of the impact is considered medium.				
Receptor Sensitivity	Negligible	Low	Medium	High	
	Due to the duration, frequency, and affected area, the receptor sensitivity is considered medium. This can still be mitigated by implementing the procedures and supervision.				
Impact Significance	Negligible	Minor	Moderate	Major	Critical
	Considering both the magnitude and sensitivity, the impact significant is assessed as moderate.				
Impact Likelihood	Extremely Unlikely	Unlikely	Low	Medium	High / Inevitable
	Work accident may occur during the operation phase and considered as likely medium.				
Residual Impact	Negligible	Minor	Moderate	Major	Critical
	The residual impact is assessed as Minor.				

7.5 Environmental and Social Impact Assessment During Post-Operations

7.5.1 During the post-operation of the TPST and residual landfill facilities, the environmental and social impacts associated with the post-operation activities which include but not be limited to, air quality, odor, noise, soil, surface and groundwater, waste management, health and safety of workers and communities, impacts on waste pickers, should be addressed and managed in accordance with the requirements of the Minister of Public Works and Housing Regulation No. 03/PRT/M/2013 on the Implementation of Infrastructure and Facilities for Solid Waste in Handling Household Waste and Waste Similar to Household Waste. The activities and appropriate measures to be implemented during the post-operation phase should also be inline with applicable Good International Industry Practices (GIIP) in order to prevent or minimize the potential impacts.

7.5.2 The monitoring activities conducted during the operation phase related to air quality, odor, soil, surface and groundwater, and disruption of waste pickers' livelihoods should also be implemented during the post-operation stage.

7.5.3 The LPMU and CPMU to ensure that environmental and social management and monitoring plan for the post-operation phase should be established for implementation.

7.6 Climate Change/GHG Emission

7.6.1 This section reviews the existing and projected climate change conditions and climate related hazards pertaining to the Project, to assess the baseline and future risks on the Project.

7.6.2 Climate change projections for the region were based on climate change projection data from the Sixth Phase of the Coupled Model Inter-comparison Project (CMIP6), which forms the basis of the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC). Climate change projection for the Project considered two selected Shared Socio-economic Pathways (SSPs)-based scenarios or SSP-RCP scenarios as follows:

- **SSP2-4.5: Middle of the road scenario** – CO_2 emissions hover around current levels before beginning to decline by mid-century. Socio-economic factors follow their historical trends, with no significant change. Progress toward sustainability is slow, with disparate development and income growth. Under this scenario, temperatures rise by 2.7°C by the end of the century.
- **SSP5-8.5: Fossil fuel-driven development scenario** – This is the "worst case scenario". Current levels of CO_2 emissions are almost doubled by 2050. The world economy grows rapidly, but this growth is driven by fossil fuel exploitation and very energy-intensive lifestyles. By 2100, the average temperature of the planet will have risen by a catastrophic 4.4°C.

7.6.3 Where projection data based on the CMIP6 were not available for future climate scenario projection, CMIP5 model projections were used instead, with the following RCP scenarios assessed for the current study:

- **RCP 4.5: Moderate scenario** – Emissions peak around 2040 and then decline.
- **RCP 8.5: Highest baseline emissions scenario** – Emissions continue to rise throughout the twenty-first century.

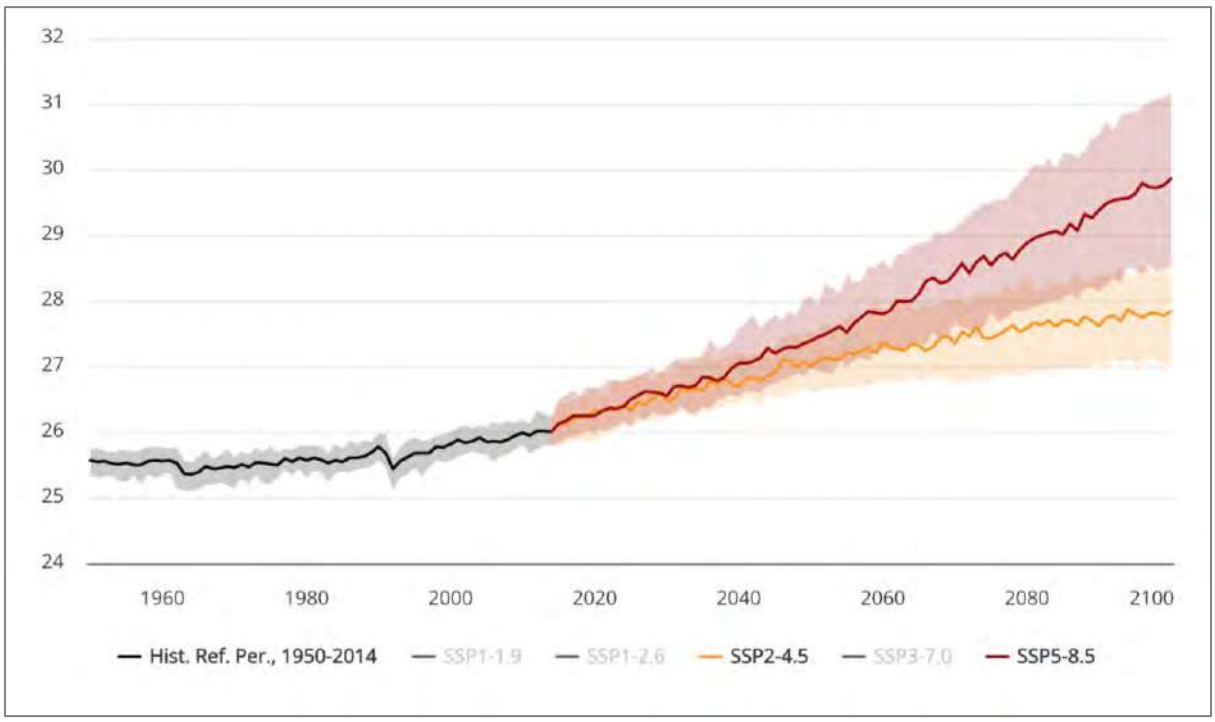
Climate Change Variables

7.6.4 Climate change variables refer to specific climate system elements that can be analysed to understand how the climate is changing and its impact. The main climate change variables of temperature and precipitation were considered in this assessment.

Temperature

7.6.5 Changes in global average temperature are associated with widespread changes in weather patterns and events such as heatwaves, droughts, and wildfires**.** **Figure 7-1** show the projected average mean, maximum, and minimum surface air temperature for Central Java (Jawa Tengah) (where the Project is located), based on data from CMIP6 (accessible through the Climate Change Knowledge Portal). The projections indicate a continuous increase in surface air temperature under the CMIP6 scenarios. Shading represents the standard deviation of the model ensemble. The solid line represents the median of the model ensemble with the shaded areas showing the 10th – 90th percentile.

Figure 7-1 Projected Average Mean Surface Air Temperature (°C) of Central Java, Indonesia; (Ref. Period: 1995 – 2014); Multi-Model Ensemble



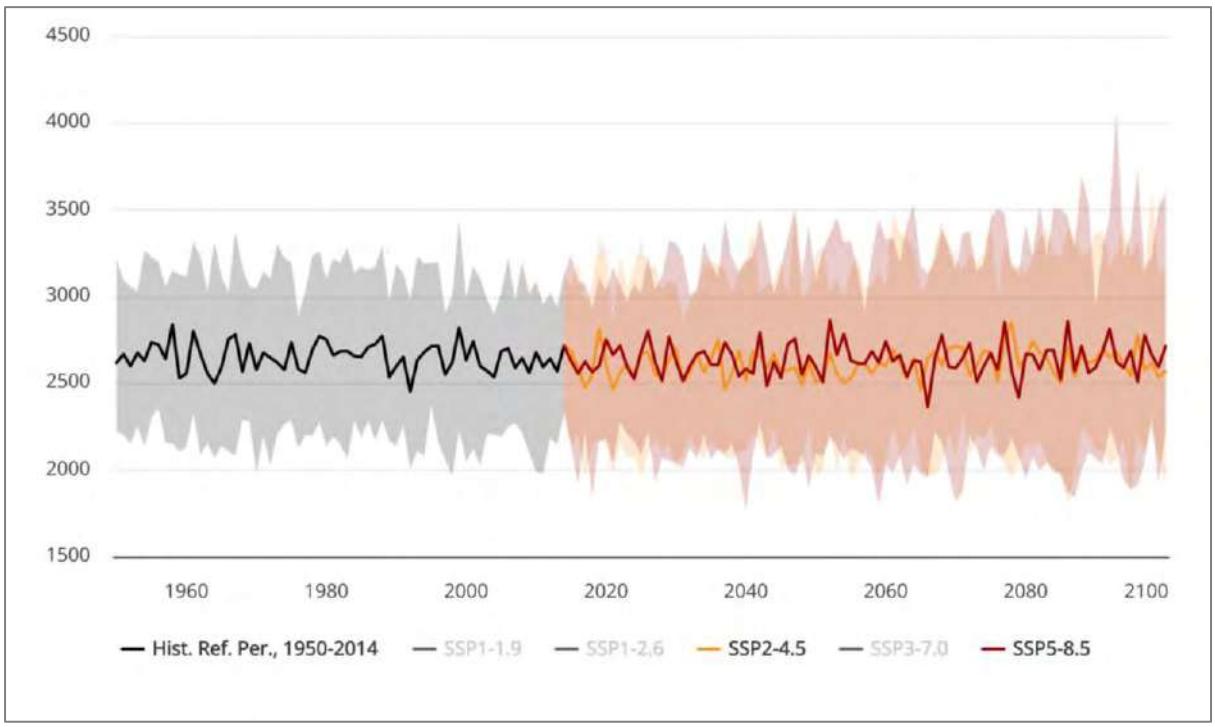
Source: Climate Change Knowledge Portal, World Bank Group

Available at: https://climateknowledgeportal.worldbank.org/country/indonesia/climate-data-projections

Precipitation

7.6.6 Similar to temperature, changes in precipitation can have significant impacts on climate conditions and events such as flooding, landslides, droughts, extreme weather events, etc. **Figure 7-1** and **Figure 7-2** show the projected precipitation for Central Java based on the CMIP6 scenarios. The projections of future rainfall are more uncertain than temperature. The model ensemble suggests a slight increase in precipitation levels under the two SSP-RCP pathways by the late century but also a large uncertainty in this estimate, as seen in the 10th – 90th percentile range represented by the shaded areas.

Figure 7-2 Projected Precipitation (mm) for Central Java, Indonesia; (Ref. Period: 1995 – 2014); Multi-Model Ensemble



Source: Climate Change Knowledge Portal, World Bank Group

Available at: https://climateknowledgeportal.worldbank.org/country/indonesia/climate-data-projections

Climate Related Hazards

7.6.7 Based on the Index for Risk Management INFORM 2019 Index[5], Indonesia ranked 59th out of 191 countries in terms of natural hazard risk, with an above-average overall risk level (4.7 in comparison to the global average of 3.8). **Table 7-42** provides the Risk Indicators for various categories of natural hazards.

7.6.8 According to the Index, Indonesia has high exposure to flooding and tropical cyclones, with risk scores that are significantly higher than the global averages. Nevertheless, the country scores moderately in terms of vulnerability and coping capacity.

Table 7-42 Natural Hazard Risk Indicators for Indonesia based on INFORM 2019 Index

Flood	Tropical Cyclone	Drought	Vulnerability	Lack Of Coping Capacity	Overall Risk Level	Rank
(0-10)	(0-10)	(0-10)	(0-10)	(0-10)	(0-10)	(out of 191)
8.1 (4.5)	6.1 (1.7)	3.4 (3.2)	3.2 (3.6)	4.5 (4.5)	4.7 (3.8)	59

Note: For the sub-categories of risk, higher scores represent greater risks. Conversely, the most-at-risk country is ranked 1st. Values in brackets in the lower row represents global average scores.

[5] Climate Risk Profile: Indonesia (2021): The World Bank Group and Asian Development Bank.

7.6.9 The risk levels for various natural disasters for Temanggung Regency according to the Disaster Risk Index of Indonesia[6] published by the country's Disaster Data, Information and Communication Centre, are as provided in **Table 7-43**.

7.6.10 Based on this index, the Regency experiences moderate risks of flooding hazards and extreme weather, but high risks of drought, wildfires, and landslides.

Table 7-43 Natural Disaster Risk Index for Temanggung Regency

Disaster	Flood	Drought	Land & Forest Fire	Landslide	Extreme Weather	Overall
Score	140.2	15.18	22.77	15.18	8.60	121.33
Rank	**Moderate**	**High**	**High**	**High**	**Moderate**	**Moderate**

Risk Assessment of Climate Change Hazards

7.6.11 Based on the Climate Risk Assessment (CRA) Report of the sub-project attached in **Appendix H**, there are 5 climate-related hazards that potentially impacted the sub-project site. The hazards are extreme heat, flood, landslides, cyclone, and sea level rise. Each identified impact or risk for the sub-project shall be assigned an overall level of risk, determined as a function of the **probability (or likelihood)** of the event occurring and the **consequence** if the event occurs.

7.6.12 'Likelihood' ratings shall be assigned based on consideration of the historical occurrence, as well as the level of confidence associated with the climate change projections, for the key hazards. The likelihood of impact occurrence is defined by the Task Force into following categories, shown in table below.

Table 7-44 Likelihood of Risk Table

Likelihood	Description	Recurrent or Event Risks
Almost Certain (L1)	Expected to occur in most circumstances	Could occur several times a year
Likely (L2)	Will probably occur in most circumstances	May occur once every year
Possible (L3)	May occur at some time	May arise once in 5 years
Unlikely (L4)	May occur at some time, but considered unlikely	May arise once in 5 to 50 years
Rare (L5)	Could occur in exceptional circumstances	Unlikely during the next 50 years

7.6.13 The consequence of a natural hazard's impact on the sub-project and its associated facilities is assessed based on consequences that fall within six (6) categories, namely internal operations, capital and operating costs, number of people affected, public health and worker safety, economy, and the environment. Table below shows the categories for assessing the consequences of a climate-related hazard's impact on the proposed sub-project.

[6] *Indeks Risiko Bencana Indonesia Tahun 2021* (2021): Disaster Data, Information and Communication Centre, National Board for Disaster Management of Indonesia.

Table 7-45 Consequence of Risk Table

Consequence	Efficiency Of Operations	Maintenance Requirements	Safety
Extreme (C5)	Significant losses in terms of operations efficiency	There is significant increase in maintenance requirements. Damage to infrastructure due to adverse weather events exceed capacity to conduct repairs.	Fatality occurs due to adverse weather conditions
Major (C4)	Major losses in terms of operations efficiency	There is significant increase in maintenance requirements. Major damage to critical infrastructure due to adverse weather events at least once over the next 50 years.	Multiple major injuries or permanent disabilities due to adverse weather conditions
Moderate (C3)	Moderate losses in terms of operations efficiency	There is an increase in maintenance requirements. Major damage to non-critical infrastructure or minor damage to critical infrastructure due to adverse weather events over the next 50 years.	Single major injuries or several minor injuries due to adverse weather conditions
Minor (C2)	Minor damages in terms of operations efficiency	There is no change in maintenance requirements. Minor damage to infrastructure due to adverse weather events over next 50 years.	Minor injury due to adverse weather conditions
Negligible (C1)	Negligible damage or losses in terms of operations efficiency	There is a reduction in maintenance requirements. Negligible damage to infrastructure due to adverse weather events during life of asset.	Minimal risk of injury to personnel

7.6.14 Each risk event shall be assigned an overall level of risk determined as a function of the probability (or likelihood) of the event occurring and the consequence if the event occurred, as shown in the Table below.

Table 7-46 Risk Assessment Matrix

Likelihood	Consequence				
	C1	C2	C3	C4	C5
L1	Low	Moderate	High	Extreme	Extreme
L2	Low	Moderate	Moderate	High	Extreme
L3	Low	Low	Moderate	High	Extreme
L4	Low	Low	Moderate	Moderate	High
L5	Low	Low	Low	Moderate	Moderate

7.6.15 Risk rating from the table above falls into 4 categories as describe below:

Table 7-47 Risk Rating Description

Risk Rating	Description
Extreme	Present-day or imminent risks for which adaptation strategies should be evaluated and developed as necessary
High	Risks for which adaptation strategies may need to be developed in the near future or which further information is needed
Moderate	Risks for which impacts should be monitored but may not need action at this time
Low	Risks predicted to occur after the climate planning time horizon; may be re-evaluated in the future

Table 7-48 Risk Assessment on Climate Change Hazards

Hazard	Potential Impact	Description	Risk Rating SSP 2-4.5			Risk Rating SSP 5-8.5			Existing Adaptation Measures	Residual Risk After Adaptation	
Future (Climate Change) Risks											
Risk Category			L	C	R	L	C	R		SSP2-4.5	SSP5-8.5
Extreme Heat	TPST site	• Extreme heat can subject facility components to thermal stress. Overheating may affect the performance of MBT/RDF plant equipment, reducing their output efficiency. • High temperatures may also impact the reliability of electrical and mechanical systems, potentially affecting the safety and stability of the plant's operations, in addition to endangering workers' health and safety and affecting performance and productivity.	L4	C2		L3	C2		• A fire protection system and an environmental monitoring system have been proposed to be provided.		

Hazard	Potential Impact	Description	Risk Rating SSP 2-4.5			Risk Rating SSP 5-8.5			Existing Adaptation Measures	Residual Risk After Adaptation	
Future (Climate Change) Risks											
Risk Category			L	C	R	L	C	R		SSP2-4.5	SSP5-8.5
Flooding	TPST site	• Flooding may cause electrical damage to equipment, requiring repair, replacement, or extra maintenance activities. • Flooding may cause unforeseen shutdowns of the facility (MBT/RDF plant, electrically operated systems, etc.) causing disruption to waste processing activities. • Flooding of access roads may cause inaccessibility to the site and disruption to waste transport and processing activities. • Flooding may result in increased leachate that needs to be collected and treated.	L4	C3		L3	C3		• The storage area of the RDF will be closed to the possible entry of rainwater and prepared with a leachate drainage system.		

Hazard	Potential Impact	Description	Risk Rating SSP 2-4.5			Risk Rating SSP 5-8.5			Existing Adaptation Measures	Residual Risk After Adaptation	
Future (Climate Change) Risks											
Risk Category			L	C	R	L	C	R		SSP2-4.5	SSP5-8.5
		• Flooding may lead to waste and leachate runoff, leading to potential soil and water contamination. • Health and safety risks to on-site personnel, as well as public health risks from the flood water contamination.									
Landslide	TPST site	• Landslides may threaten the lives and safety of on-site personnel. • Landslides may cause significant structural damage to the facility, resulting in high repair costs and operational disruption.	L4	C3		L4	C3		• No information available.		
Cyclones	TPST site	• Cyclones or cyclone-induced extreme weather can cause significant damage to	L5	C3		L4	C3		• No information available.		

Hazard	Potential Impact	Description	Risk Rating			Risk Rating			Existing Adaptation Measures	Residual Risk After Adaptation	
Future (Climate Change) Risks			SSP 2-4.5			SSP 5-8.5					
Risk Category			L	C	R	L	C	R		SSP2-4.5	SSP5-8.5
		infrastructure and closure of facility. • Extreme rainfall and flooding, causing inaccessibility to the site and pollution dispersal by flood waters and runoff. • Safety risks to on-site personnel.									
Sea Level Rise	TPST site	• Sea level rise can cause erosion, flooding, and corrosion of facility components, causing damage to buildings, drainage systems and equipment.	L5	C2		L5	C2		• Temanggung is not a coastal city; and hence, sea level rise will not impact the SWM components.		

7.6.16 The table below summarizes the priority climate hazards based on the assessment of climate hazard occurrence probability and the climate risk assessment in the table above.

Table 7-49 Hazard Priority based on Likely impacts TPST project due to Climate Change

Hazard	Baseline	SSP 2-4.5 (Middle of The Road Scenario)		SSP 5-8.5 (Fossil Fuel-Driven Development Scenario)	
		2030	2050	2030	2050
Extreme Heat					
Floods					
Landslides					
Cyclones					
Sea Level Rise					

7.6.17 To address climate hazards, recommended actions are provided based on each hazard rating. These actions are tailored to the severity of the identified hazards.

Table 7-50 Level of Recommended Action for Addressing Hazard

Hazard Rating	Level of Recommended Action
	Present-day or imminent hazards for which adaptation strategies should be evaluated and developed as necessary
	Hazards for which adaptation strategies may need to be developed in the near future or which further information is needed
	Hazards for which impacts should be monitored but may not need action at this time
	Hazards predicted to occur after the climate planning time horizon; may be re-evaluated in the future

Recommended Climate Adaptation Measures

7.6.18 The climate adaptation action shall be taken to make sure the sub-project can sustain its operation and resilience over the climate hazard. The adaptation action is divided based on the impacted component, namely a sub-project/asset integrity, workplace health and safety, and surrounding facilities and receptors. The recommended climate adaptation for the sub-project is shown in the table below.

Table 7-51 Recommended Climate Adaptation in the Sub-project

Categories	Hazard	Existing Adaptation Measures	Recommended Adaptation / Monitoring Measures	Implementation
Climate change risk to **project/asset integrity**	• Extreme heat • Floods • Landslides • Cyclone-induced extreme weather	• A fire protection system and an environmental monitoring system have been proposed to be provided.	• Assess equipment and facility design for resilience against flood risks. • Review design structural thresholds considering flood risks. • Waterproofing of equipment and buildings, securing of equipment and adequate emergency-response and contingency plan to minimize downtime. • Ensure proper drainage system design to reduce water accumulation and pressure build-up in the slopes/ soil structure which may lead to instability. • Stabilise existing or potential slopes that may affect the Project, e.g. through reshaping the slope to reduce its steepness. • Ensure regular maintenance of drainage system. • Ensure that critical equipments are properly maintained, and that backup power systems are in place and functional. • Increase storage capacity for vital equipment and supplies • Development of External Lightning Protection System (ELPS) • Implementation of measures related to lightning protection.	• Recommended measures should be considered in the detailed design stage.
Climate change risk to **workplace health and safety**	• Extreme heat • Floods • Cyclone-induced extreme weather	• The storage area of the RDF will be closed to the possible entry of rainwater and prepared with a leachate drainage system.	• Prepare an emergency preparedness and response plan to manage and mitigate the impacts of potential climate hazard-induced emergencies.	• Recommended measures should be considered in the construction and operations stage. • Asset operator should develop systems and procedures for the implementation of

Categories	Hazard	Existing Adaptation Measures	Recommended Adaptation / Monitoring Measures	Implementation
		• Health and Safety Management System	• Identification and incorporation (as necessary) of regional and national government's emergency response policy and protocols to cyclones. • Weather forecasting during operations. • Provide adequate Personal Protective Equipment to work outdoors. • Improve health and safety policies considering climate change risks. • Monitor or track number of reported cases of mosquito-borne diseases within the area/site boundary • Adopt vector-borne disease control programme	specific measures such as weather forecasting – e.g. integrating tools/ software into asset management systems, obtaining specialised third-party services, etc.
Climate change risk to **surrounding facilities and receptors**	• Extreme heat • Floods	• A fire protection system and an environmental monitoring system have been proposed to be provided. • The storage area of the RDF will be closed to the possible entry of rainwater and prepared with a leachate drainage system.	• Prepare an emergency preparedness and response plan to manage and mitigate the impacts of potential climate hazard-induced emergencies. • Weather forecasting during operations and scheduling of waste transport.	• Recommended measures should be considered in the construction and operations stage. • Asset operator should develop systems and procedures for the implementation of specific measures such as weather forecasting – e.g. integrating tools/ software into asset management systems, obtaining specialised third-party services, etc.

7.7 Summary of Environmental and Social Impacts

Table 7-52 Summary of Environmental and Biodiversity Impacts during Construction, and Operation

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
Construction					
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities) • Commissioning	Air Quality	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and Increased in Gas Concentration (CO, CO_2, NO_2, SO_2, H_2S, and HC)	Moderate	• Stabilizing exposed surfaces, as soon as practically possible, by compaction or application of vegetative cover. • Water spraying or sprinkling the dust generating areas (e.g. land clearing areas, excavation areas, soil loading/unloading areas, unpaved access roads). • Apply gravel or asphalt surfacing to access roads within the construction site. • During dry and windy season, minimize activities that potentially suspend dust particles e.g. earthworks, minimise drop height of materials during loading/unloading, and implement more frequent water spraying/sprinkling. • Provide wheel washing facilities, such as hose-pipes, with ample water supply at the sub-project site exit; • Install construction hoarding as wind breaks to attenuate wind velocity through the sub-project site and reduce likelihood of wind-blown dust; • Locate material stockpiles as a far as practicable from and downwind of air sensitive receivers (nearest community)	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
				• Maintain the stockpile height below the construction hoarding or wind breaks height • Cover soil stockpiles with erosion control blankets • Implement and enforce maximum speed limit e.g. 35 km/h within the sub-project site to reduce turbulence on the ground and dust formation • Covering truck loads with clean impervious sheeting e.g. tarpaulin and controlling loading capacity to avoid spillage during transport of materials • Ensure that construction vehicle, plant and equipment are well maintained, correctly operated and not left to idle/run unnecessarily • All equipment with visible black smoke emissions in normal operations to be withdrawn and maintained before reuse • Apply good practice in construction such as sequencing the construction works in phases to avoid scattered impacts that are difficult to control.	
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop	Noise	Noise pollution	Moderate	• Providing construction hoarding or wall enclosure around the sub-project site • Installing soundproofing devices on equipment that may generate high noise.	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
• Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)				• Use of low-noise and new or well-maintained construction machinery and equipment, when possible, to reduce overall noise levels • Ensure that all machinery and vehicles are regularly and well maintained to prevent excessive noise due to malfunctioning parts. • Implement and enforce maximum speed limit e.g. 35 km/h when passing through residential areas to ensure that noise levels do not exceed the standard limits. • Limit sub-project construction activities and delivery of materials to daytime hours to minimize disturbances to the surrounding nearby villages	
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Vibration	Increased vibration	Moderate	• Using a foundation method that produces less vibration (e.g. drill pile foundation) • Regular maintenance of heavy equipment / machinery	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Hydrology	Increased run off	Moderate	• Removing all construction waste from construction sites and surrounding water bodies in a systematic manner. • Minimise the duration of stockpiling • Protect water bodies from sediment load by using sediment traps or other barriers. • It is recommended to conduct construction activities during the dry season • Construct and rehabilitate adequate drainage channels to accommodate surface runoff. • Maintain water conservation by making biopore infiltration holes in green open spaces or parks. • Not dumping rubbish in drainage channels • Maintain drainage channels from rubbish and mud	Minor
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation	Soil	Increased Soil Erosion	Moderate	• Building sediment traps • Using geo-bags, rocks, and concrete to build protective walls; • Planting vegetation that functions to reduce surface soil erosion and increase soil stability.	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
• Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)					
• Temporary landfill construction - Waste disposal handling during construction (Associated Facilities	Soil	Soil contamination	Moderate	• Temporary landfill will be constructed with geomembrane liner. • All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only. • Exposed site areas should be kept to a minimum during the construction of the new facilities and completed areas should be hard surfaced/re-vegetated as soon as practicable; • Provision of effective construction site run-off controls such as controlled discharge and temporary drains; • Proper management of refuelling activities, waste storage and disposal; • Hard surfaced with perimeter drain at re-fuelling areas; • Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident;	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
				• In-place spill response and clean-up procedures; and • Temporary fuel storage tanks constructed with adequate secondary containment/bunded.	
• Construction of access road (Associated Facilities) • Base Camp and Workshop • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • TPA Rehabilitation • Commissioning	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	Major	• Implement the landfill rehabilitation plan. • The existing landfill will be covered using geomembrane to prevent infiltration of rainwater. • Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016). • Implement proper hazardous waste and hazard substances storage and management at construction site. • Hazardous waste and hazard substances shall be stored at concrete area with roof and kerb/secondary containment kerb to prevent spillage to waterbodies.	Minor
• Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	Major		Minor
• Temporary landfill construction - Waste disposal handling during construction (Associated Facilities	Groundwater quality	The leachate of temporary landfill could infiltrate to the groundwater and potentially pollute it if the environmental protection and membranes do not meet the standard.	Moderate	• Temporary landfill will be provided with geomembrane liner. • All hazardous substances to be collected and stored accordingly based on their	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
				characteristics, and to be disposed of by certified contractors only. • Exposed site areas should be kept to a minimum during the construction of the new facilities and completed areas should be hard surfaced/re-vegetated as soon as practicable; • Provision of effective construction site run-off controls such as controlled discharge and temporary drains; • Proper management of refuelling activities, waste storage and disposal; • Hard surfaced with perimeter drain at re-fuelling areas; • Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident; • In-place spill response and clean-up procedures; and • Temporary fuel storage tanks constructed with adequate secondary containment/bunded.	
• Land Preparation • Construction of Base Camp and Workshop • Construction of TPST Facilities (basic facilities, environmental protection	Waste Management	Increased Construction Waste	Moderate	• Construction waste to be disposed accordingly. • General construction waste can be disposed into the existing landfill.	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
facilities and supporting facilities) • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)				• Segregate hazardous waste for proper storage and collection by licensed hazardous waste collectors.	
• Construction of Base Camp and Workshop	Waste Management	Increased Domestic Waste (include Hazardous Waste	Moderate		Minor
• Construction of Base Camp and Workshop	Wastewater management	Increased domestic wastewater	Moderate	• Establish domestic wastewater management	Minor
• Construction of access road (Associate facilities) • Land Preparation • Construction of Base Camp and Workshop • Construction of TPST facilities • TPA rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Terrestrial biodiversity	Habitat Loss	Minor	• Limit the construction area according to the planned DED. • Mitigation based on identified disturbed species/ habitat/ecosystem by the sub-project in biodiversity is required.	Minor
• Mobilization of Equipment and Materials	Terrestrial biodiversity	Roadkill and human-wildlife conflict	Minor		Minor
Operation					

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
• Operation of TPST including composting process • Operation of residual landfill • RDF Combustion by offtaker	Air Quality	Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and emission of bioaerosol from landfill and composting process	Moderate	• Establishing frequent waste collection schedules. • Optimize waste collection routes to minimize distance travelled and overall fuel use and emissions. • Develop and implement a standard operation procedure to control and minimize emission of dust and bio-aerosol during loading/unloading. • Include landfill gas collection system designed and operated in accordance with the applicable national requirements. • Ensure waste received at TPST will be processed and residual waste will be transported to the landfill within the same day to prevent accumulation of unprocessed and residual waste • Tipping of waste from a low drop height to minimise dust and bioaerosols generation. • Enclose potentially dusty process areas such as tipping area, feedstock preparation, shredding, storage and packaging areas and provide local exhaust ventilation with dust collection system • Maintain the optimal temperature of the compost e.g. between 55°C and 65°C by daily temperature measurement	Minor
• Operation of TPST including composting process • Operation of residual landfill • RDF combustion by offtaker	Air Quality	Increased Gas Concentration (NO_2, SO_2, H_2S, VOC, NH_3, and HC) and odor emissions	Moderate		Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
				• Maintain optimal/adequate temperature, moisture content, and oxygen content during composting process by regular and efficient turning or aeration and adding bulking agents such as wood chips and dry leaves. • Avoid over turning or over aeration during composting process • Maintain feedstock and nutrient balance in the compost (ideal ratio is roughly three parts browns to one part greens by volume) • Assessing and adjusting the pH of the composting mix (e.g. maintaining acidic environment can aid in the conversion of ammonia to ammonium) • Cooperation agreements with PT Solusi Bangun Indonesia to make sure the air pollution from RDF combustion is managed through the existing air pollution control system at their facility.	
• Operation of TPST • Operation of residual landfill	Soil	Soil contamination	Moderate	• Proper drainage, WWTP, and LTP system are to be maintained. • All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only.	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
				• Exposed site areas should be kept to a minimum during operations of the sub-project and ensure open areas in hard surfaced/re-vegetated as soon as practicable; • Proper management of refuelling activities, waste storage and disposal; • Hard surfaced with perimeter drain at re-fuelling areas; • Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident; • In-place spill response and clean-up procedures; and • Temporary fuel storage tanks or hazardous substances storage is constructed with adequate secondary containment/bunded.	
• Operation of TPST • Operation of residual landfill	Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)	Moderate	• Develop and implement transportation management plan that includes usage of material cover during material transportation and/or perform dust control by spraying water on the streets & roads when mobilization is performed during a particular hot day (dry season) twice a day (noon and afternoon). • Conduct the application of speed limit.	Minor
• Operation of TPST • Operation of residual landfill	Water Quality	Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium	Moderate		Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
				• Minimize the daily exposed working face and use perimeter drains and landfill cell compaction, slopes and daily cover materials to reduce infiltration of rainfall into the deposited waste. • Prevent run-on of precipitation into the active area. • Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016). • Regular monitoring of effluent quality to ensure leachate treatment plant operates well. • Direct the wastewater from truck/vehicle wash to the drainage channel.	
• Operation of TPST • Operation of residual landfill	Waste management	Increased Domestic Waste Generation (Including Hazardous Waste from TPST operation and from waste trucks entering the TPA)	Moderate	• Collect hazardous waste in the Hazardous Waste Temporary Storage and dispose the hazardous waste through the licensed hazardous waste disposal. • Conduct periodic random inspections of trucks to check and identify any hazardous or prohibited waste mixed with domestic waste as per Appendix IX of Government Regulation (GR) No. 22/2021	Minor

Activity/Aspect	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
				• Prohibit the entry of truck containing hazardous waste into the TPA facility • Instruct the drivers to take the waste to licensed hazardous waste treatment or disposal facility. • Applied the ERP for oil spill.	
• Operation of TPST • Operation of residual landfill	Wastewater Management	Increased Domestic Wastewater	Moderate	• Establish domestic wastewater management	Minor
• Operation of TPST • Operation of residual landfill	Aquatic biota	Disturbance to Aquatic Biota Habitat	Minor	Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016)	Minor

Table 7-53 Summary of Social Impacts during Pre-construction, Construction, and Operation

No	Project Activity	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
Pre-Construction						
1	Stakeholder socialization	Social Economic	Land user income disruption	Unlikely	• Monitor replacement land use • Establish a grievance redress mechanism (GRM	Negligible
2	Land Acquisition	Social Cultural	Increase of community concerns	Moderate	• Conduct public consultation • Develop a grievance redress mechanism • Establish a dedicated complaints team • Prepare traffic management • Conduct regular air quality and odour monitoring	Minor
Construction						
3	Recruitment Activities	Social Economic	Workforce Opportunity	Low	• Prioritise local recruitment. • Establish a transparent recruitment process. • Provide training to local workers. • Prioritise employment for vulnerable groups, such as local wastepickers. • Establish a grievance mechanism.	Minor
		Social Cultural	Community Concern	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Minor
		Social Cultural	Community Concern	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Minor
		Social Economic	Disruption of Wastepicker Livelihoods	Critical	• Develop and implement livelihood restoration programs specific to vulnerable group of waste pickers • Provide alternative job opportunities	Major

No	Project Activity	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
		Social Cultural	Community Concern	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Minor
4	Construction of Base Camp and Workshop	Social Economic	Business Opportunity	Low	• Conduct a desktop review about the number of businesses near the project area	Minor
		Social Cultural	Community Concern	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Minor
5	Mobilization of Equipment and Materials	Social Cultural	Community Concern	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Minor
		Transportation	Disruption to Land Traffic	Medium	• Conduct a traffic impact assessment • Implement a traffic management plan	Minor
			Increase in Traffic Accidents	Medium	• Assess the road safety risks • Implement traffic control measures	Minor
6	Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	Social Cultural	Community Concern	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Minor
7	Temporary landfill construction - Waste disposal handling during	Social Economic	Wastepicker Relocation	High	• Conduct socialization • Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans	Moderate

No	Project Activity	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
	construction (Associated Facilities)				• Develop livelihood restoration plans specific to vulnerable group of wastepickers, ensuring gender sensitive and inclusive approaches. • Ensure compensation mechanisms consider the vulnerability of these groups.	
		Social Cultural	Community Concern	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Minor
8	Workforce release	Social Economic	Workforce Release	Low	• Provide training to local workers. • Prioritise employment for vulnerable groups, such as local wastepickers. • Establish a grievance mechanism.	Minor
Operation						
9	• TPST/ residual landfill Recruitment • Operation of TPST	Socio-economic	Workforce Opportunities	Moderate	• Affected communities will be prioritised in workforce recruitment, tailored to their respective competencies. • TPST Sanggrahan will absorb 80-100 workers. • Establish a transparent recruitment process. • Provide training to local workers. • Prioritise employment for vulnerable groups, such as local wastepickers. • Establish a grievance mechanism.	Minor
10		Socio-economic	Disruption of wastepickers' livelihoods	High	• Develop livelihood restoration programs. • TPST operations will involve waste pickers to sort the waste. • Qualified wastepickers will be prioritised to work at TPST Sanggrahan. If the scavenger is unable to work directly, then a family member (child or close relative) who meets the criteria will prioritised to fill available positions. • Provide social security and health benefits. • Ensure transparent communication.	Major

No	Project Activity	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
					• Monitor income levels.	
11	• Operation of TPST including composting process • Operation of residual landfill	Socio-cultural	Community Concern Community Health	Medium	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism • Maintain optimal/adequate composting process conditions and installation of odor control system at the TPST enclosed areas to minimise odor generation • Implement good housekeeping practices within the TPST area and regular inspection for presence of vermins • Periodic control and checking for pests, rats, mosquito and flies, not only in the TPST area, but also in nearby settlements • The existing landfill will be covered with geomembrane to reduce odour and fly populations around the landfill and settlements	Minor
12	• Operation of TPST including composting process • Operation of residual landfill	Health and Safety	The risk of workplace accidents during the operational phase in TPST can increase due to various factors, including the operation of heavy machinery, interactions among workers, and waste handling processes. Workers are often exposed to hazardous working conditions, such as unstable piles of waste, dangerous gases, and the movement of large vehicles that can lead to accidents.	Medium	• Conduct routine risk assessments to identify hazards in the landfill area, including working conditions and equipment. • Audit work procedures to ensure compliance with safety measures and adequate training for workers. • Monitor past accidents to identify high-risk patterns or trends. • Implement a comprehensive safety training program covering emergency procedures and personal protective equipment (PPE). • Implement good housekeeping practices within the TPST and residual landfill areas and regular inspection for presence of vermins • Provide appropriate mask for the workers at the compost processing area • Provide local exhaust ventilation with dust collection system and odor control system at the TPST facility	Low

No	Project Activity	Receptor	Potential Impact	Impact Evaluation Significance (Pre-Mitigation)	Mitigation	Residual Impact (Post-mitigation)
			A dirty and disorganized work environment can also contribute to the risk of accidents, such as slips, falls, or being injured by sharp objects. Exposure to emissions from composting process		• Develop safe work procedures for all operational activities, including heavy machinery operation and waste handling. • Maintain strict supervision of worker activities and appoint safety officers on-site. • Install warning signs and markers in hazardous areas. • Periodic control and checking for pests, rats, mosquito and flies, not only in the TPST area, but also in nearby settlements. • Ensure cleanliness and organization in the work area through regular cleaning. • Establish an effective communication system for reporting hazards, accidents, or emergencies for prompt action.	

8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Introduction

8.1.1 The Environmental and Social Management Plan (ESMP) implementation involves a multi-tiered approach, engaging several key institutions to ensure the comprehensive management of environmental and social impacts.

8.1.2 The specific objectives of the ESMP at the sub-project level are:

- Based on the impacts and risks identified through the assessment process, to identify the mitigation measures during the program-wide ESMPF and sub-project specific ESIA;
- Facilitate the implementation of the mitigation measures during implementation of SWM-SUD;
- Maximize and sustain potential program benefits and control negative impacts;
- Outline roles and responsibilities for program proponent, contractors, consultants, and other members of the program team for the environmental and social management of the program; and
- Define a monitoring mechanism and identify monitoring parameters to:
- Ensure the implementation and effectiveness of mitigation measures;
- Maintain proper management of assessment of impacts on natural resources and on society; and
- Assess environmental training requirements for different stakeholders at various levels.

8.1.3 The Environmental and Social Management Plan sets out:

- Identification and description of activity that causes impact for various environmental and social aspects across the pre-construction, construction and operation phases;
- Mitigation and enhancement measures required to be taken which will be required to eliminate or offset adverse environmental impacts (or to reduce them to acceptable levels); and
- Responsibility for the implementation and supervision of the mitigation and enhancement measures.

8.1.4 The Environmental and Social Monitoring Plan builds on the Management Plan by providing

- Monitoring Plan and Reporting requirements to assess the effectiveness of the mitigation measures employed;
- Performance Indicators; and
- Estimation of cost of implementation of ESMP

8.1.5 This chapter also provides the institutional arrangement for implementation of ESMP including training and capacity development.

8.2 Environmental Management and Monitoring

8.2.1 The general environmental management plan during construction and operation phases of the sub-project is provided in the Project-level Environmental and Social Management Planning Framework (ESMPF) Volumes I and II. The site-specific Construction Environmental and Social Management Plan and Operation Environmental and Social Management Plan for the TPST and residual landfill should be prepared by the contractor for construction and operator of the TPST and residual landfill, respectively, based on the ESMPF. The site-specific ESMPs shall be reviewed and updated should there be any changes in the Sub-project design.

8.2.2 The following **Table 8-1** present the sub-project-specific environmental management during operation and **Table 8-2** provides the sub-project-specific environmental monitoring plan during construction and operation phases.

Table 8-1 Sub-project Specific Environmental Management Plan during Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation Implementation Responsibility	
				Implementation	Supervision
• Operation of TPST – Composting • RDF combustion by offtaker	Air Quality	Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and emission of bioaerosol from landfill and composting process	• Ensure waste received at TPST will be processed and residual waste will be transported to the landfill within the same day to prevent accumulation of unprocessed and residual waste • Tipping of waste from a low drop height to minimise dust and bioaerosols generation. • Enclose potentially dusty process areas such as tipping area, feedstock preparation, shredding, storage and packaging areas and provide local exhaust ventilation with dust collection system • Maintain the optimal temperature of the compost e.g. between 55°C and 65°C by daily temperature measurement • Maintain optimal/adequate temperature, moisture content, and oxygen content during composting process by regular and efficient turning or aeration and adding bulking agents such as wood chips and dry leaves. • Avoid over turning or over aeration during composting process • Maintain feedstock and nutrient balance in the compost (ideal ratio is roughly three parts browns to one part greens by volume) • Assessing and adjusting the pH of the composting mix (e.g. maintaining acidic environment can aid in the conversion of ammonia to ammonium) • Cooperation agreements with PT Solusi Bangun Indonesia to make sure the air pollution from RDF combustion is managed through the existing air pollution control system at their facility.	Local Government / LPMU	CPIU
• Operation of TPST – Composting • Operation of residual landfill • RDF combustion by offtaker	Air Quality	Increased Gas Concentration (NO_2, SO_2, H_2S, VOC, NH_3, and HC) and odor emission			

Table 8-2 Sub-project Specific Environmental Monitoring Plan during Construction and Operation

Activity/Aspect	Receptor	Potential Impact	Monitoring	Monitoring Implementation Responsibility		Budget Estimate (IDR)
				Implementation	Supervision	
Construction Phase						
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities) • Commissioning	Ambient Air Quality	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and Increased of Gas Concentration (CO, CO2, NO2, SO2, H2S, and HC)	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring sites and near sensitive receptors that may include dust, vehicle emission, and odour on 6 monthly basis.	Contractor	Local Government, LPMU	20,400,000
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials	Noise	Noise pollution	Noise monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6 months, or as and when required. The noise standard should ensure compliance with the relevant	Contractor	Local Government, LPMU	4,800,000

Activity/Aspect	Receptor	Potential Impact	Monitoring	Monitoring Implementation Responsibility		Budget Estimate (IDR)
				Implementation	Supervision	
• Construction of TPST Facilities • Construction of TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)			provisions of Minister of Environment Decree (Kepmen LH) No 48 of 1996 on Noise Standards and EHS Guideline 48 hour			
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Vibration	Increased vibration	Vibration monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6 months, or as and when required. The noise standard should ensure compliance with the relevant provisions of Minister of Environment Decree (Kepmen LH) No 49 of 1996 on Vibration Standard	Contractor	Local Government, LPMU	TBC
• Construction of access road (Associated Facilities) • Land Preparation	Hydrology	Increased run off	Once every 3 months during the construction phase especially during the rainy season. In the event of rain observation of drainage channels should be carried out	Contractor	Local Government, LPMU	1,000,000

Activity/Aspect	Receptor	Potential Impact	Monitoring	Monitoring Implementation Responsibility		Budget Estimate (IDR)
				Implementation	Supervision	
• Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)						
• Construction of access road (Associated Facilities) • Base Camp and Workshop • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • TPA Rehabilitation • Commissioning	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	Sampling and analysis for surface water and leachate treatment effluent, at the same location with the same parameters as the baseline sampling, before construction commences. Regular monitoring for surface water management plan will be conducted by contractor at established monitoring point in water body every 3 months. The monitoring result will be compared against threshold limit value as stipulated in Government Regulation No 22 of 2021 Appendix VI on Management of Water Quality and Water Pollution Control.	Contractor	Local Government, LPMU	21,000,000
• Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)		Contractor	Local Government, LPMU	10,000,000

Activity/Aspect	Receptor	Potential Impact	Monitoring	Monitoring Implementation Responsibility		Budget Estimate (IDR)
				Implementation	Supervision	
• Temporary landfill construction - Waste disposal handling during construction (Associated Facilities	Groundwater quality	The leachate of temporary landfill could infiltrate to the groundwater and potentially pollute it if the environmental protection and landfill membranes does not meet the standard.	Monitor groundwater quality from monitoring wells every 3 months.	Contractor	Local Government, LPMU	10,000,000
• Land Preparation • Construction of Base Camp and Workshop • Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • TPA Rehabilitation • Temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Waste Management	Increased Construction Waste	Any complaints as to the management of on-site waste are forwarded to the Director of TPA Sanggrahan as soon as practical. Complaints and any actions arising from a complaint are recorded in a complaints register maintained by site management. Use TPA Sanggrahan SOP to maintain documentation of waste generation, storage, and disposal.	Contractor	Local Government, LPMU	TBC
Construction of Base Camp and Workshop	Wastewater management	Increased domestic wastewater		Contractor	Local Government, LPMU	TBC
Construction of Base Camp and Workshop	Wastewater management	Increased domestic wastewater	Regular monitoring at established points and report to related agencies every 3 months.	Contractor	Local Government, LPMU	2,500,000

Activity/Aspect	Receptor	Potential Impact	Monitoring	Monitoring Implementation Responsibility		Budget Estimate (IDR)
				Implementation	Supervision	
Land clearing, use of heavy machinery	Biodiversity	Loss of habitat, impact on local flora and fauna, potential fatalities of species, forced relocation of wildlife	Monitoring terrestrial biota at establish site and near sensitive receptor during construction phase.	Contractor	Local Government, LPMU	15.000.000-20.000.000 per Monitoring.
Operation Phase						
• Operation of TPST • Operation of residual landfill RDF combustion by offtaker	Air Quality	Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and bioaerosols	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring points and near sensitive receptors that may include dust, vehicle emission and odour on 6 monthly basis.	Local Government / LPMU	CPIU	20,400,000
• Operation of TPST • Operation of residual landfill RDF combustion by offtaker	Air Quality	Increased of Gas Concentration (NO_2, SO_2, H_2S, and HC)	Monitoring sites near sensitive receptors, 6-monthly during operation, and closure. Submit a monitoring report to related agencies every 6 months.	Local Government / LPMU	CPIU	
• Operation of TPST • Operation of residual landfill	Soil	Soil contamination	Document and report soil quality management activities, maintain grievances register.	Local Government / LPMU	CPIU	28,000,000
• Operation of TPST • Operation of residual landfill	Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)	Regular monitoring for surface water management plan will be conducted by landfill operators at established monitoring point in water body every 3 months. The monitoring result will be compared against threshold limit value as stipulated in Government Regulation No 22 of	Local Government / LPMU	CPIU	21,000,000

Activity/Aspect	Receptor	Potential Impact	Monitoring	Monitoring Implementation Responsibility		Budget Estimate (IDR)
				Implementation	Supervision	
			2021 Appendix VI on Management of Water Quality and Water Pollution Control.			
• Operation of TPST • Operation of residual landfill	Water Quality	Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium	Record leachate effluent discharge and pH on daily basis; Monitor leachate effluent quality every month; Monitor groundwater quality from monitoring well every 3 months; During operation stage, the result for scheduled monitoring should be reported to related agency every 3 months. Monitor the implementation of Operation and Maintenance of Leachate Treatment Plant (LTP) as stated in the Environmental Management Plan.	Local Government / LPMU	CPIU	10,000,000
• Operation of TPST • Operation of residual landfill	Waste management	Increased Domestic Waste Generation (Including Hazardous Waste from TPST operation and from waste trucks entering the residual landfill)	Document and report waste management activities, maintain waste disposal records.	Local Government / LPMU	CPIU	TBC

Activity/Aspect	Receptor	Potential Impact	Monitoring	Monitoring Implementation Responsibility		Budget Estimate (IDR)
				Implementation	Supervision	
• Operation of TPST • Operation of residual landfill	Wastewater Management	Increased Domestic Wastewater	Regular monitoring at established points, report to related agencies every 3 months.	Local Government / LPMU	CPIU	2,500,000
Facility operation, leachate discharge	Biodiversity	Ongoing impact on aquatic biota and biodiversity from potential leachate discharge	Monitor aquatic biota at established sites and near sensitive receptors every 6 months during construction, operation, and closure. Report to related agencies every 6 month	Local Government / LPMU	CPIU	15.000.000-20.000.000 per Monitoring

8.3 Social Management and Monitoring

8.3.1 The general social management and monitoring plans during pre-construction and construction phases of the sub-project are provided in the Project-level Environmental and Social Management Planning Framework Volumes I and II. The site-specific Construction Environmental and Social Management Plan and Operation Environmental and Social Management Plan for the TPST and residual landfill should be prepared by the contractor for construction and operator of the TPST and residual landfill, respectively, based on the ESMPF. The site-specific ESMPs shall be reviewed and updated should there be any changes in the Sub-project design.

8.3.2 The following **Table 8-3** present the sub-project-specific social management during operation and **Table 8-4** provides the sub-project-specific social monitoring plan during the operation phase.

Table 8-3 Sub-project Specific Social Management Plan during Pre-construction and Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility	
				Implementation	Supervision
Pre-construction					
Construction of access road and temporary landfill construction - Waste disposal handling during construction (Associated Facilities)	Socio-cultural	Community Health and Safety	• The design of temporary facilities and access road shall be reviewed by AIIB and PUPR before construction to ensure compliance with the GoI and AIIB standards.	Contractor	Local Government / LPMU
Operation					
• TPST/ residual landfill Recruitment • Operation of TPST	Socio-economic	Workforce Opportunities Disruption of wastepickers' livelihoods	• Affected communities will be prioritised in workforce recruitment, tailored to their respective competencies. • TPST Sanggrahan will absorb 80-100 workers. • TPST operations will involve waste pickers to sort the waste. • Qualified wastepickers will be prioritised to work at TPST Sanggrahan. If the scavenger is unable to work directly, then a family member (child or close relative) who meets the criteria will prioritised to fill available positions.	Local Government / LPMU	CPIU
Operation of TPST – Composting	Socio-cultural	Community Health	• Maintain optimal/adequate composting process conditions (e.g. temperature, moisture, oxygen content, pH, carbon and nitrogen ratio) and installation of odor control system at the TPST enclosed areas to minimise odor generation • Implement good housekeeping practices within the TPST area and regular inspection for presence of vermins • Periodic control and checking for pests, rats, mosquito and flies, not only in the TPST area, but also in nearby settlements	Local Government / LPMU	CPIU
Operation of residual landfill			• Ensure landfill for residual materials/waste will be covered with soil every 4 days and commitment from LG for budget allocation.	Local Government / LPMU	CPIU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility	
				Implementation	Supervision
			• The existing landfill will be covered with geomembrane to reduce odour and fly populations around the landfill and settlements		
Transport of Waste, RDF, and Compost Materials	Socio-cultural	Community Health and Safety	• Develop and implement a Traffic Management Plan which covers the daily transport of waste to the TPST facility and transport of RDF and compost to offtakers based on the final agreed frequency of collection from the TPST. • Ensure the trucks transporting waste are covered to minimise odor and avoid littering of waste on the road. • Ensure the trucks transporting compost are covered to avoid exposure to excessive heat, sunlight or rain.	Local Government / LPMU	CPIU
Operation of TPST – Composting	Health and Safety	Exposure to emissions from composting process	• Implement good housekeeping practices within the TPST area and regular inspection for presence of vermins • Periodic control and checking for pests, rats, mosquito and flies • Provide appropriate mask for the workers at the compost processing area • Provide local exhaust ventilation with dust collection system and odor control system at the TPST facility	Local Government / LPMU	CPIU
Handling, storage, and use of the compost by the offtaker (farmers)	Soil and crops	pH changes, nutrient imbalance (excessive nutrient), nutrient runoffs	• Ensure good quality of compost (e.g. optimum pH, nutrient balance, maturity, moisture content) is produced and tested prior to distribution to the offtakers. • Instructions on the proper handling, storage, and use or application of the compost to be established by the TPST Operator and Local Government / LPMU and included in the packaging or as separate brochures to be followed by the offtakers (farmers). • Awareness training on the proper handling, storage and use or application of the compost, including the benefits and potential hazards of using compost, should be provided to the offtakers (farmers).	TPST Operator Local Government / LPMU	CPIU
	Health and Safety	Exposure to odor and potential pathogens from composts		Offtaker, Local Government / LPMU	CPIU
		Pests and vermins		Offtaker	Local Government / LPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility	
				Implementation	Supervision
Operation of residual landfill	Workers Safety	Hazardous working conditions due to potential landfill landslide / waste avalanche	• Ensure slope stabilization of the waste pile in the landfill cell. • Provide early warning system at the residual landfill that can be used by the operators for any sign of potential landfill landslide / waste avalanche. • Implement Emergency Response Plan for landfill landslide / waste avalanche scenario including appropriate coordination with the waste pickers and nearby villages.	Local Government / LPMU	CPIU

Table 8-4 Sub-project Specific Social Monitoring Plan during Construction and Operation

Activity/Aspect	Receptor	Potential Impact	Monitoring	Mitigation and Implementation Responsibility		Budget (IDR)
				Implementation	Supervision	
Construction						
Recruitment Activities	Socio-economic	Workforce Opportunity	• Monthly recruitment reports • Grievance log updates • Training completion reports	Contractor	Local Government / LPMU	TBC
Workforce release	Socio-economic	Decrease Job Opportunity	• Workforce transition plan completion • Monitoring of released workers' employment status • Review GRM Report	Contractor	Local Government / LPMU	TBC
Construction of Base Camp and Workshop	Socio-economic	Business Opportunity	• Quarterly reports on engagement with local businesses	Contractor	Local Government / LPMU	TBC
Temporary disposal site construction - Waste disposal handling during construction (Associated)	Socio-economic	Wastepickers Relocation	• Monitoring of displaced wastepickers • Bi-annual socio-economic impact reports • Monitoring of compensation and livelihood programs • Review GRM Report	Contractor	Local Government / LPMU	TBC
Land Preparation	Socio-economic	Disruption of wastepickers' livelihoods	• Quarterly socio-economic assessments • Monitoring of livelihood restoration program participation • Review GRM Report	Contractor	Local Government / LPMU	TBC
• Recruitment • Construction of access road (Associated Facilities) • Land Preparation	Socio-cultural	Community concern	• Bi-annual community surveys • Regular grievance mechanism updates	Contractor	Local Government / LPMU	TBC
	Community Health and Safety	Increase in community risks Increase in vulnerable populations	• Prepare hazard identification and risk assessment, and prepare the work procedures. • Build a buffer zone or high security fence. • Installation of safety signs and traffic signals.	Contractor	Local Government / LPMU	TBC

Activity/Aspect	Receptor	Potential Impact	Monitoring	Mitigation and Implementation Responsibility		Budget (IDR)
				Implementation	Supervision	
• Base Camp and Workshop • Mobilization of Equipment and Materials • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)			• Evaluate the air and water quality. • Conduct community engagement and feedback with meeting and/or events • Collaborate with local educational parties and community groups • Review GRM Report			
	Workers Health and Safety	Increase in work accidents Hazards exposure Additional factors (i.e. fatigue, insufficient training, and lack of supervision)	• Conduct a toolbox meeting before starting work. • Track workplace accidents involving construction workers throughout the construction process. • Prepare hazard identification and risk assessment, and prepare the work procedures. • Review GRM Report	Contractor	Local Government / LPMU	TBC
Mobilization of Equipment and Materials	Transportation	Disruption to Land Traffic	• Monthly traffic monitoring reports • Review traffic incidents and impact • Review GRM Report	Contractor	Local Government / LPMU	TBC
		Increase in Traffic Accidents	• Monthly accident reports • Road safety audits • Review GRM Report	Contractor	Local Government / LPMU	TBC

Activity/Aspect Operation	Receptor	Potential Impact	Monitoring	Mitigation and Implementation Responsibility Implementation	 Supervision	Budget (IDR)
• TPST/ residual landfill Recruitment • Operation of TPST	Socio-economic	Workforce Opportunities	• Monthly recruitment reports • Monitoring of vulnerable group employment • Review of grievance mechanism updates	Local Government / LPMU	CPIU	10,000,000
• Operation of TPST • Operation of residual landfill	Socio-economic	Disruption of wastepickers' livelihoods	• Quarterly livelihood restoration monitoring • Reports on income levels of wastepickers • Evaluation of social security and health benefits • Review GRM Report	Local Government / LPMU	CPIU	100,000,000
		Disruption of waste collectors' livelihoods	• Quarterly livelihood restoration monitoring • Reports on income levels of waste collectors • Review GRM Report	Local Government / LPMU	CPIU	20,000,000
• TPST/ residual landfill Recruitment • Operation of TPST including composting process	Socio-cultural	Community Concern Community Health	• Quarterly grievance mechanism report • Monitoring community satisfaction levels and feedback through surveys	Local Government / LPMU	CPIU	30,000,000
• Operation of TPST including composting process	Health and Safety	Increase in work accidents Hazardous working conditions	• Track workplace accidents involving TPST and residual landfill workers throughout the operation phase.	Local Government / LPMU	CPIU	30,000,000

Activity/Aspect	Receptor	Potential Impact	Monitoring	Mitigation and Implementation Responsibility		Budget (IDR)
				Implementation	Supervision	
• Operation of residual landfill		Disorganized work environment Health concerns due to exposure to emissions from landfill and TPST operations	• Prepare hazard identification and risk assessment and prepare the work procedures. • Build a policy, organisation chart and responsibility, work programmes. • Monitor the implementation of slope stabilization. • Health monitoring of the TPST and residual landfill workers annually • Prepare safety report to local government in every 3 months, and annual report for internal progress evaluation. • Periodically controlling and checking for pets, rats, mosquito and flies, not only in the TPST area, but also in nearby settlements. • Review GRM Report			

8.4 Roles and Responsibilities for Implementing the ESMP

8.4.1 The Environmental and Social Management Plan (ESMP) implementation involves a multi-tiered approach, engaging several key institutions to ensure the comprehensive management of environmental and social impacts.

8.4.2 The roles and responsibilities of each institution are outlined as follows:

1. **Asian Infrastructure Investment Bank (AIIB):** As a funding entity, the AIIB is involved in the oversight and evaluation of the project to ensure it meets the required environmental and social standards. The AIIB provides financial support and may also offer technical assistance to strengthen the implementation capacity of the client.
2. **Central Project Management Unit Ministry of Public Works and Housing (CPMU MPWH)**: CPMU has the following duties:
    a. Project-level monitoring and evaluation
    b. Coordination, supervision, and technical guidance/support to CPMUs/LGs
    c. Provide support, supervision, and quality control to field staff working on environmental and social risk management
    d. Reviewing screening forms for new sub-projects
    e. Deciding project categorization (based on ESMPF framework)
    f. Ordering CPIU to prepare the necessary Environmental and Social (ES) Instruments (ESIA, RAP, LRP, ESMP, C-ESMP, O-ESMP, etc.) to meet AIIB ESF requirements
    g. Supervise overall implementation and monitoring of environmental and social mitigation and management activities, prepare progress reports from the local/sub-project level, and report to the AIIB
    h. Train staff and contractors who will be responsible for implementing the ESMP
    i. If contracts are centrally managed, ensure that all bidding and contract documents include all relevant E&S management provisions in accordance with the screening forms, and ESMPs
    j. Submit project reports to the AIIB
3. **Central Project Implementation Unit (CPIU)**: This ministry is responsible for overarching policy guidance, strategic planning, monitoring, evaluation, and coordination at the national level ((Ministry of Public Works and Housing (MPWH), National Development Planning Agency (Bappenas), Ministry of Home Affairs (MoHA), Ministry of Health (MoH)).
    a. Sub-project mentoring and review
    b. Support CPMU to manage project operations in accordance with institutional responsibilities
    c. Provide technical guidance and assist LPMU in developing technical instruments (DED, E&S Instruments, etc.) and monitoring project implementation through consultant
    d. Review the grievance recapitulation prepared by consultant and report to CPMU
4. **Ministry of Environment and Forestry (MoEF):** The MoEF is the central authority for environmental management and policy formulation. It oversees the implementation of

environmental regulations and ensures compliance with national standards. The MoEF also provides technical guidance and support to local governments.

5. **Local Government/ Local Project Management Unit (LPMU):** The City/Regency LGs, often established within the local government structure, is responsible for the day-to-day management and implementation of the ESMP. This includes coordinating with contractors and consultants, ensuring compliance with environmental and social safeguards, and reporting to the MoEF or Provincial Environmental Service Department for national safeguards compliance. The City/Regency LGs acts as the primary point of contact for stakeholders and the local community. In this project, the LGs within the local government structure are the Regional Planning and Development Agency (Bappeda), the Environmental Agency (DLH), and Public Works Agency (PU).
    a. Sub-project level implementation and monitoring
    b. Ensure project activities are not included in the Negative List. Complete the Screening Form for relevant sub-project activities and submit the form to the national level.
    c. If relevant, complete the site-specific ESMP for sub-project activities and submit to the national level.
    d. Ensure the preparation and implementation of the Environmental and Social (ES) Instruments (ESIA/LRP/RAP/ESMP/O-ESMP/C-ESMP) to meet AIIB ESF requirements.
    e. Oversee the daily implementation and monitoring of environmental and social mitigation measures, and report progress and performance to the national level on a monthly basis.
    f. Provide training to contractors and local communities on relevant environmental and social mitigation measures, roles and responsibilities.
    g. If the contract is managed regionally, ensure that all bidding documents and contracts include all relevant E&S management provisions in accordance with the screening form and ESMPs.
    h. To disclose information to the public, conduct public consultations
    i. Review the complaint summary and report to the CPIU
6. **Provincial Project Implementation Unit (PPIU)**: In this project, the PPIUs within the local government structure are the Regional Settlement Infrastructure Agency (BPPW) and the Public Works Agency (PU).
    a. Supervise activities and conduct work assessments from the Regency/City level and facilitator staff;
    b. Make progress reports on the implementation of physical and financial activities;
    c. Assist and provide full support in the process of making evaluations of activity implementation;
    d. Prepare and assist with related mission smoothness programs;
    e. Provide technical guidance to the Regency/City Coordination Team and District Project Management Unit to record the progress of the projects;
    f. Prepare annual procurement plans;
    g. Create good working relationships with the Central Project Management Unit (CPMU);

h. Coordinate and disseminate information on project progress, including physical and financial reports and others;
i. Monitor and evaluate program implementation through visits to the Regency/City and
j. Monitors the activities of the Provincial Advisory Consultant and District Advisory Consultant.

7. National Project Management Consultant (NPMC):
   a. Support CPMU to manage the project through the project cycle;
   b. Ensure substantial risk environmental & social documents prepared by PLPMUs and consultant before submission to the AIIB;
   c. Review and approve medium & low risk environmental & social documents prepared by LPMUs and consultant;
   d. Provide training and capacity building, including training on ESMP and other relevant topics for project agencies (CPMU, CPIU, PLPMU, NPMC, consultant);
   e. Provide evaluation of ESMP implementation for Mid-Term Project Review and Completion of Implementation (MTR and ICR)
   f. Monitor project implementation and prepare project consolidated reports twice a year for CPMU;
   g. Oversee the overall implementation of the project including the management of environmental and social risks and impacts.
8. **Contractor / Consultant:** Contractors and consultants are engaged to carry out specific tasks related to the project, including construction activities, environmental monitoring, and impact assessments. They must adhere to the mitigation measures outlined in the ESMP and report on their progress to the PLPMU.
9. **Offtaker**: An offtaker refers to an entity that agrees to purchase and utilize a product or output generated from TPST operation. In the context of this project, PT Solusi Bangun Indonesia is the designated offtaker for Refuse-Derived Fuel produced at the TPST. To ensure that the environmental and social impacts related to RDF consumption are properly managed, through a formal cooperation agreement with the Local Project Management Unit. The cooperation agreement will establish clear expectations and responsibilities regarding collection and transport of the RDF from the TPST facility, environmental compliance, social safeguards, and sustainable practices in line with GIIP and AIIB standards.

8.4.3 The ESMP implementation organigram defining the lines of communication is provided below:

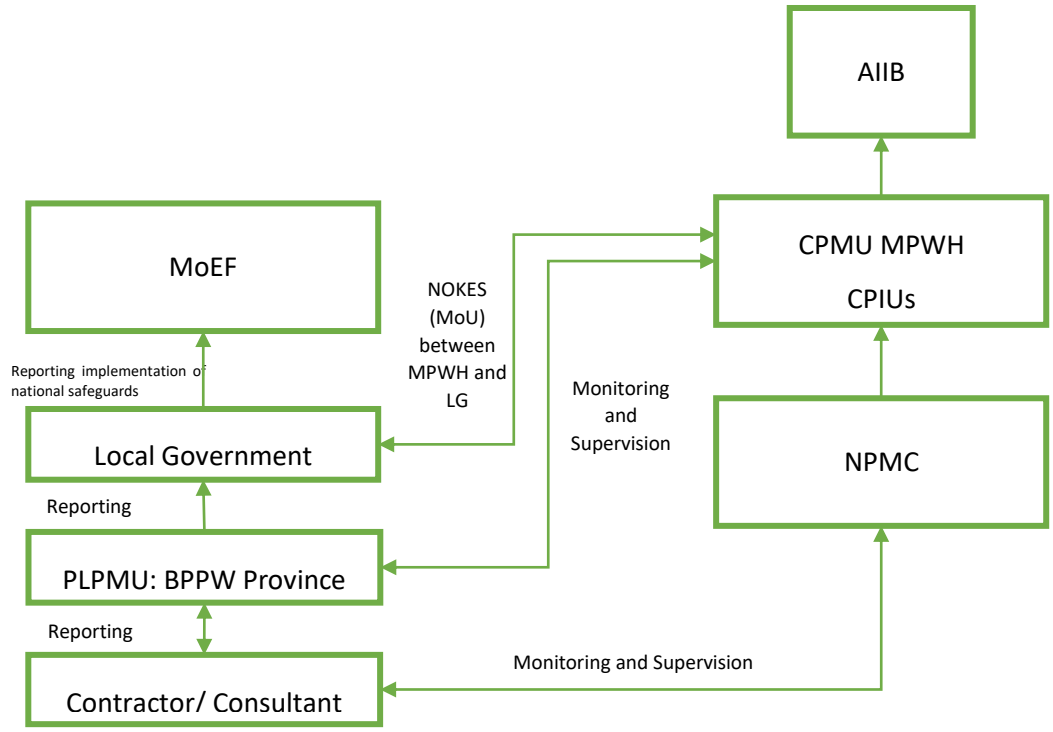


Figure 8-1 Institutional Arrangement for ESMP Implementation on Construction Stages

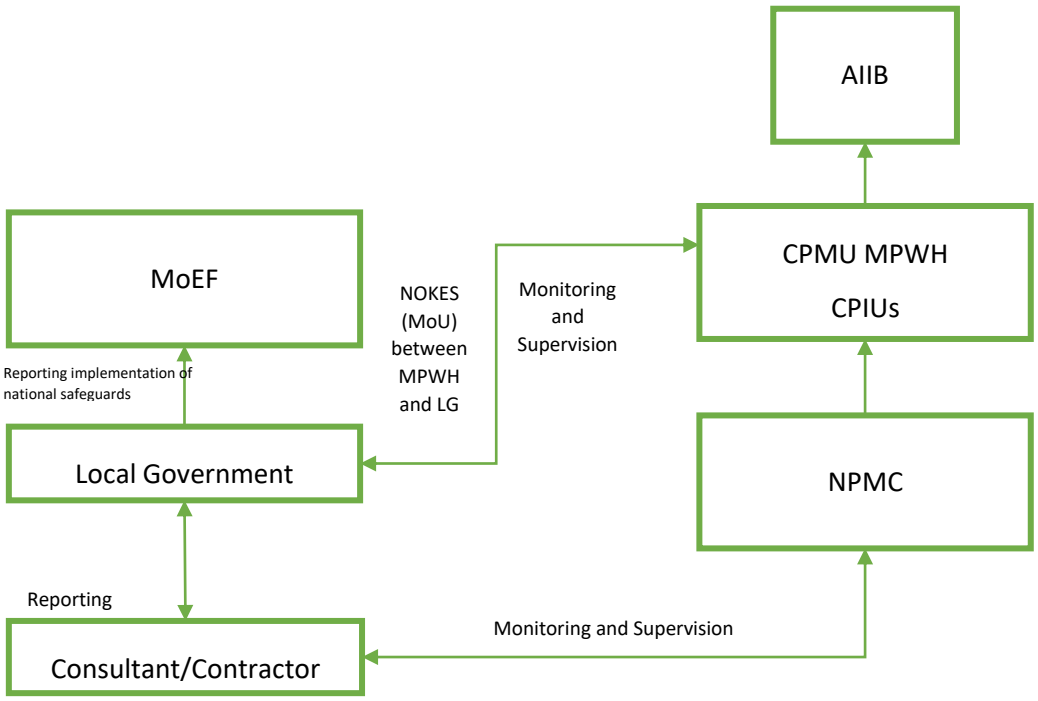


Figure 8-2 Institutional Arrangement for ESMP Implementation on Operation Stages

8.4.4 The draft memorandum of agreement already includes monitoring, evaluation, and reporting activities. These activities are carried out by CPIU and LG at least twice a year and include monitoring, evaluation, and reporting activities for landfill, TPST, LTP operations, and groundwater monitoring. The results of monitoring and evaluation are compiled in the form of a Monitoring and Evaluation Report Document to become a joint report as input for planning further synergies programs.

8.4.5 The LPMU and CPMU shall formally commit to the implementation of all mitigation measures and monitoring plan described in the ESMP. This commitment can be documented through mechanisms such as the NOKES system or a Memorandum of Understanding (MOU), and by requiring the incorporation of the measures and monitoring activities into the Contractor's Scope of Work and Environmental and Social Management Plan (CESMP). The LPMU and CPMU shall ensure that any changes in the Sub-project design shall be incorporated Scope of Work and addressed in the CESMP.

8.4.6 The budget for ESMP Implementation can be sourced from APBD or the budget committed by Local Government in NOKES.

8.5 Training and Capacity Development

8.5.1 The Central Project Implementation Unit (CPIU) and AIIB will ensure that the level of delivery organization expertise is sufficient to undertake the identified sub-project implementation tasks. Once prepared and approved, the ESIA will also contain details, specifications, and requirements for staff training and obligations for project staff working at sub-project sites to be inducted into the environmental and social awareness training process.

8.5.2 Delivery organizations (e.g., consultants, contractors, NGOs, etc.) are responsible for ensuring systems are in place so that relevant employees, contractors, and other workers are aware of the environmental and social requirements for project implementation contained within the ESMPF.

8.5.3 All project personnel will be required to attend an induction that covers relevant ESMPF requirements, including health, safety, environment and cultural requirements.

8.5.4 All sub-project workers, particularly involved during the construction and/or operations phases, engaged in any activity with the potential to cause serious social and/or environmental harm (e.g. working at the TPST and residual landfill, handling of hazardous materials) will receive task specific training and certification (as required).

8.5.5 The draft memorandum of agreement Article 8 regulates the financing for SWM-SUD activities. In general, the financing for this activity will come from the APBN, APBD, and other financing (Loan and Grant). For capacity building and training activities, the financing is planned to come from loans or grants.

8.5.6 The CPMU is responsible for ensuring that the capacity of all parties, especially field implementers, in implementing the ESMPF, has met the minimum requirements. Capacity building will be provided to staff appointed by the CPMU and facilitated by NPMC environmental and social specialists. Key topics for the capacity building program may be reviewed during project implementation. The training will be conducted after the Loan Agreement is signed and the NPMC has been formed. The capacity-building activities of the SWM-SUD program are as follows.

Table 8-5 Proposed Training Program

Proposed Program	Target Participant	Facilitator	Scope of Training	Activity Timeline		
				Y1	Y2	Y3
Training of Trainers	NPMC	AIIB Safeguard Specialist	Development of training modules and materials, required standards and guidelines.			
General implementation of ESMF	CPMU CPIU LG/LPMU PLPMU Contractor/ Consultant	Environment and Social safeguard expert NPMC	Components and subcomponents of SWM-SUD activities ESMPF, SEP, ESIA, and National Safeguard (AMDAL, UKL/UPL, SPPL) Key points/rules/procedures (screening), assessment, management, and monitoring of environmental and social risk and impact management.			
Environmental and social risk screening	CPMU LG/LPMU PLPMU Contractor/ Consultant	Environment and Social safeguard expert NPMC	Risk screening and scoping, including the application of negative lists and risk assessment tools when developing sub-project activities.			
Environmental and social risk and impact management		Environment and Social safeguard expert NPMC	Development of environmental and social instruments and their implementation and monitoring arrangements			
Environment, health and safety during civil works		Environment and Social safeguard expert NPMC	Construction management related to environmental and social aspects and how to use ESMPF,GRM, K3, and Public Health and Safety Management (including C-ESMP for Contractor)			
Social risk management		Environment and Social safeguard expert NPMC	Community participation approaches especially related to affirmative action and promotion of social inclusion for vulnerable groups, gender mainstreaming, socio-cultural engagement approaches Grievance management and communication skills for project implementers.			

Proposed Program	Target Participant	Facilitator	Scope of Training	Activity Timeline		
				Y1	Y2	Y3
			Other context-specific issues such as access restrictions, development of livelihood plans for wastepickers, prevention and response to gender-based violence, where skills and resource requirements can be tailored to the complexity of these issues.			

9 CONCLUSION AND RECOMMENDATION

9.1 Conclusion

9.1.1 The environmental and social assessment process for the proposed sub-project has identified environmental and social concerns, but no significant negative impacts that cannot be mitigated have been identified. The sub-project components are relatively medium in scale and involve straightforward construction and operational activities, resulting in localised and manageable impacts. Most of these impacts are related to the construction phase, which involves the relocation of wastepickers and impacts on wastepickers' income.

9.1.2 However, due to the routine nature of these impacts, effective mitigation measures can be applied to reduce them to acceptable levels. These measures have been developed and will be supported by a comprehensive environmental and social monitoring programme to ensure that they are implemented correctly and to assess the intended protection of the environment and community. Monitoring will include both on-site and off-site observations, document reviews and interviews with workers and residents.

9.1.3 This sub-project will provide long-term benefits to the community by improving public health and quality of life through the establishment of an integrated landfill and resource recovery facility. The sustainability of the project will depend on the generation of revenue from citizens to support the operation and maintenance of the facility, as well as revenue from the sale of by-products such as compost, recyclables and other materials. Potential adverse environmental impacts associated with the failure of technologies during operation can be minimised with the proposed mitigation measures. All mitigation measures and associated costs will be integrated into the overall operation and maintenance budget of the project.

9.1.4 Stakeholder engagement has been a key aspect of the development of the Environmental and Social Impact Assessment (ESIA), with discussions taking place through site visits and public consultations. The feedback received has been incorporated into the ESIA. The ESIA will be made available to the public at local venues, as well as through the project website, the project location/local government website, and the AIIB website. The consultation process will continue and be expanded during project implementation to ensure ongoing stakeholder engagement and provide opportunities for public participation in the development and implementation of the project. A grievance redress mechanism (GRM) is included in the ESIA to ensure that any concerns raised by the public are addressed promptly.

9.1.5 The supporting documents, including the Stakeholder Engagement Plan (SEP), Gender Action Plan, Grievance Redress Mechanism (GRM) and other management plans will be developed separately and will further guide the management of the project and ensure compliance with applicable frameworks.

9.2 Recommendation

9.2.1 The sub-project requires a site-specific Environmental and Social Management Plan (ESMP), which includes mitigation measures for both the construction and operation phases. The contractor will be required to prepare a management plan outlining its responsibilities for the implementation of the ESMP, which is based oon the framework provided in the ESIA and must be approved prior to the start of construction. A copy of the ESMP should always be available on-site during construction to ensure that all mitigation measures are followed.

9.2.2 The environmental and social impacts of this sub-project are mainly related to the construction and operation of the plant. The most significant issues include odour, water contamination from leachate and the risk of landslides. Improving the leachate management infrastructure, drainage system and ensuring regular waste cover will help to mitigate these negative impacts. All mitigation measures must be implemented in accordance with international standards and national regulations to protect the surrounding environment.

9.2.3 Stakeholder engagement is critical to ensuring that the sub-project meets expectations. Public consultations will continue throughout project implementation to address community concerns, especially for vulnerable groups such as wastepickers, women and the elderly who may be affected. A grievance redress mechanism will be established to collect and address complaints promptly.

9.2.4 Regular monitoring will be carried out to ensure that all mitigation measures are properly implemented. Reports from the monitoring activities will be used to assess the impacts of the project and additional measures will be taken as necessary. Monitoring will include field observations, document review, and interviews with workers and affected community members.

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Appendix A Site Visit Checklist

Screening form for potential environmental and social safeguards issues

Administrative	
Project Title	Temanggung RDF Project
Scope of project and activity	Development of RDF Facility and Landfill Rehabilitation
Local Counter Part Contact	Temanggung Environmental Agency (*DPRKPLH/Dinas Perumahan Rakyat, Kawasan Permukiman, dan Lingkungan Hidup*)
Site Description	
Name of Site	TPA Sanggrahan
Description of Site Location	Already developed as landfill site
Land Ownership Status	Owned by Local Government

Question	Answer (Yes/No)	Required Documents If Yes
Is the project a landfill using a controlled/sanitary landfill system with a capacity ≥ 500 tons/day?	No	AMDAL
Is the project a landfill using a controlled/sanitary landfill system with a capacity ≤ 500 tons/day?	Yes	UKL-UPL
Is the project an integrated waste processing site (TPST) with physical and mechanical-biological processing with a capacity ≥ 500 tons/day?	No	AMDAL
Is the project an integrated waste processing site (TPST) with physical and mechanical-biological processing with a capacity between 50 and 500 tons/day?	Yes	UKL-UPL
Is the project an integrated waste processing site (TPST) with physical and mechanical-biological processing with a capacity < 50 tons/day?	No	SPPL

Question	Answer (Yes/No)	Required Documents If Yes
Is the project an integrated waste processing site (TPST) involving thermal processing with a capacity ≥ 50 tons/day?	No	AMDAL
Is the project an integrated waste processing site (TPST) involving thermal processing with a capacity < 50 tons/day?	No	UKL-UPL

Screening based Indonesia Procedure	
AMDAL type project	No
UKL UPL type project	Yes
SPPL type project	No

Comments: The development of RDF project in Temanggung Regency has obtained environmental permit through the UKL-UPL in the 2023

Question	Answer (Yes/No)	AIIB Policy Triggered	Required Documents If Yes
Could the subproject lead to significant adverse environmental impacts that are sensitive, diverse, or unprecedented? Please provide a brief description:	No, the environmental impacts of the project are likely to be moderate and localized, primarily related to the expansion of the landfill and RDF plant. They are not considered diverse or unprecedented.	Environmental Assessment Category A	Environmental and Social Impact Assessment (ESIA)
Do the impacts extend beyond the project sites or facilities and are they significant and irreversible? Please provide a brief description:	No, the impacts are expected to be contained within the project boundaries (landfill, RDF facility), and mitigation measures can effectively prevent significant, irreversible environmental effects.	Environmental Assessment Category A	Environmental and Social Impact Assessment (ESIA)
Is the proposed project likely to have minimal or no adverse environmental effects? Please provide a brief justification:	No, the project involves significant construction and waste management activities, which may lead to moderate	Environmental Assessment Category C	No action needed beyond screening

Question	Answer (Yes/No)	AIIB Policy Triggered	Required Documents If Yes
	environmental impacts. Therefore, it does not fall under Category C.		
Does the project fall into a category that is neither Category A nor Category C? Please provide a brief justification:	Yes, the project has some environmental and social risks, but these are manageable through mitigation measures. The impacts are neither severe enough for Category A nor minimal enough for Category C.	Environmental Assessment Category B	Limited ESIA or ESMP
Are the project impacts expected to have significant adverse social effects that are sensitive, diverse, or unprecedented? Please provide a brief description:	Yes, social impacts may arise, particularly for local communities and wastepickers who depend on the landfill for their livelihood. Economic displacement is a key concern that needs to be addressed.	Environmental Assessment Category A or B	ESIA or Limited ESIA/ESMP
Will the project negatively impact physical cultural resources? Please provide a brief justification:	Although there is no evidence that the landfill has affected the sacred site 500 metres away, the potential for disruption to the sacred site and annual community events needs to be monitored to avoid future social conflict.	Environmental Assessment Category B or C	Limited ESIA or ESMP
Will the project involve the conversion or degradation of non-critical natural habitats? Please provide a brief justification:	No, the project is located in an area predominantly used for waste management, agricultural activities, and residential purposes. No significant natural habitats are expected to be impacted	Habitats	Addressed in ESIA
Will the project result in the significant conversion or degradation of critical natural habitats?	No, there are no critical natural habitats in the project area, and the project is not expected to lead to significant conversion or degradation of natural environments.	Habitats	Not eligible
Does the sub-project involve involuntary land acquisition, loss of assets, access to assets, or loss of income sources or means of livelihood? Please provide a brief justification:	Of the 69 wastepickers at the landfill, 49 are women and 24 are elderly. The construction of TPA Sanggrahan will have a significant impact on the income of 69 wastepickers. This is a major economic issue that needs to be addressed in the project's mitigation plan to prevent loss of livelihoods without clear solutions.	Environmental Assessment Category B	ESIA

Question	Answer (Yes/No)	AIIB Policy Triggered	Required Documents If Yes
Are there any customary law communities in the sub-project area that are likely to be affected either negatively or positively by the proposed sub-project? Please provide a brief justification:	No, there are no customary or indigenous communities within the project area. The surrounding population consists primarily of local residents involved in farming and waste management activities.	Indigenous People	Indigenous Peoples Plan
Will the project potentially impact the health and quality of forests or the rights and welfare of people dependent on forests, or does it aim to change the management, protection, or use of natural forests or plantations? Please provide a brief justification:	No, the project is not located in or near any forests, and there are no communities dependent on forest resources for their livelihoods.	Forestry	Addressed in ESIA
Will the project potentially lead to significant impacts or significant conversion or degradation of critical natural forests or other natural habitats?	No, the project is located in a rural-urban area, and no critical natural forests or habitats are at risk from the planned activities.	Forestry	Not eligible

Conclusion and Safeguards Instruments Required:

The sub project is classified as a Category B project as per Asian Infrastructure Investment Bank

ESMPF, and the following safeguards instruments will be prepared: ESIA and ESMP

Screening

Project Title:	Temanggung RDF Project
City	Temanggung Regency

Screening Question	Yes/No	Remarks
A. Project Siting		
Is the project area densely populated?	No	The project is located in a semi-rural area with scattered settlements, not densely populated.
Is the project area heavily developed?	No	The area is predominantly agricultural with some residential areas and waste management facilities.
Is the project adjacent to or within any environmentally sensitive areas?	No	The project area is not within or adjacent to officially recognized sensitive environmental areas.
- Cultural heritage site	No	No direct impacted to cultural heritage
- Protected area	No	There are no protected areas near the project site.
- Wetland	No	No wetlands are present in the project area.
- Mangrove	No	The project is not located near any mangrove ecosystems.
- Estuarine	No	The project is not located in an estuarine area.
- Buffer zone of protected area	No	The project is not located within a buffer zone of a protected area.
- Special area for protecting biodiversity	No	There are no biodiversity conservation areas in proximity to the project site.
- Bay	No	The project is inland, with no direct connection to coastal or bay areas.
Will the project cause impact to natural habitats, including terrestrial or aquatic ecosystems?	No	The project is located in an area used for waste management, with minimal impact on natural habitats.
B. Potential Environmental Impacts		
Will the project cause impact associate with the transport of waste to the disposal site or treatment facility?	Yes	Waste transport may cause traffic and dust, especially during peak construction and operation periods.

Screening Question	Yes/No	Remarks
Will the project cause significant impacts during the construction of access roads as an associated facility (dust, noise, land acquisition)?	Yes	Road widening for access may cause dust, noise, and temporary disruptions for local residents.
Will the project impair historical/cultural monuments/areas or cause loss/damage to these sites?	No	
Will the project lead to degradation of aesthetic and property value loss?	Yes	Potential odors and visual impacts could lead to reduced property values in nearby residential areas.
Will the project cause nuisance to neighbouring areas due to foul odor, influx of insects, rodents, etc.?	Yes	Odors, insects, and rodents are common issues with landfills that could affect nearby communities.
Will the project involve the handling, transport, or disposal of hazardous waste materials?	Yes	There may be handling of hazardous waste materials, particularly in the RDF facility.
Will the project lead to contamination of natural water bodies due to improper hazardous waste disposal?	Yes	Leachate from the landfill or RDF facility could contaminate local water bodies if not managed properly.
Will the project result in relocation or involuntary resettlement of people?	No	Economic displacement may occur for wastepickers, but no physical displacement or land acquisition is needed.
Will the project disproportionately impact the poor, women, children, indigenous peoples, or other vulnerable groups?	Yes	Vulnerable groups, particularly wastepickers (many of whom are women and elderly), may be economically displaced.
Will the project pose risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction and operation?	Yes	There are risks related to worker health and safety, particularly from waste handling and machinery during operations.
Will the project affect or pose risks to nearby natural habitats or protected species?	No	The project area is not located near natural habitats or protected species.
Is there personal protective equipment available at the landfill?	Yes	Workers are expected to use PPE during landfill operations.
Will the project pose community health hazards from odor, smoke from fires, and diseases transmitted by flies, insects, birds, and rats?	Yes	Potential hazards include odors, smoke from landfill fires, and disease vectors like insects and rats.

Screening Question	Yes/No	Remarks
Will the project cause deterioration of water quality as a result of contamination of receiving waters by leachate from the land disposal system?	Yes	If leachate is not properly managed, it could contaminate nearby water bodies.
Will the project lead to contamination of ground and/or surface water by leachate from the land disposal system?	Yes	There is a risk of groundwater contamination if the landfill leachate is not controlled.
Will the project lead to land use conflicts?	No	No significant land use conflicts are expected as the land is already used for waste management.
Will the project cause pollution of surface and groundwater from leachate coming from sanitary landfill sites or methane gas produced from the decomposition of solid wastes in the absence of air, which could enter the aquifer or escape through soil fissures at places far from the landfill site?	Yes	Groundwater pollution is a risk if methane gas and leachate are not adequately managed.
Is there an inadequate buffer zone around the landfill site to alleviate nuisances?	Yes	The landfill is close to residential areas, which may lead to complaints about odors and nuisances.
Will the project cause road blocking and/or increased traffic during construction of facilities?	Yes	Construction activities will likely cause increased traffic and road blockages.
Will the project cause noise and dust from construction activities?	Yes	Construction activities, especially for road widening and the RDF facility, will generate noise and dust.
Will the project cause temporary silt runoff due to construction?	Yes	Silt runoff during construction could affect nearby water bodies, particularly during rainy periods.
Will the project pose hazards to community health due to inadequate management of the landfill site caused by inadequate institutional and financial capabilities for the management of the landfill operation?	Yes	If the landfill is not properly managed, there could be significant health hazards to the surrounding community.
Will the project cause emission of potentially toxic volatile organics from the land disposal site?	Yes	Toxic gases from the decomposition of waste are possible and must be monitored and controlled.

Screening Question	Yes/No	Remarks
Will the project cause surface and groundwater pollution from leachate and methane gas migration?	Yes	Leachate and methane gas migration pose significant pollution risks if not properly contained.
Will the project lead to the loss of deep-rooted vegetation (e.g., trees) from the landfill site?	Yes	Vegetation clearance may occur, particularly for access road widening and landfill expansion.
Will the project cause an explosion or toxic response from accumulated landfill gas in buildings?	Yes	Methane buildup could cause explosions if not properly vented from the landfill.
Will the project cause contamination of air quality from incineration?	No	The project is focused on RDF and landfill activities, not incineration.
Will the project pose health and safety hazards to workers from toxic gases and hazardous materials at the site?	Yes	Workers may face exposure to hazardous materials and toxic gases during landfill and RDF operations.
Will the project lead to social conflicts if workers from other regions or countries are hired?	No	There is no indication that the project will bring in external workers, minimizing the risk of social conflict.
Are wastepickers engaged in informally collecting recyclable wastes or organic wastes on roads, at final disposal sites, and other places, to earn income or livelihoods?	Yes	Wastepickers are currently active at the landfill, collecting recyclables for their livelihood.
Are wastepickers subject to health risks?	Yes	Wastepickers face significant health risks from direct contact with waste materials.
Are there ways to address the wastepickers' health risks?	Yes	Health risks can be mitigated through protective measures, formalized waste collection systems, and safety training.
Is there any organization of wastepickers to increase their political voice?	No	There is no formal organization representing the wastepickers, though informal groups may exist.
Are there any organizations that have an interest in the project?	Yes	Local government and community groups may have an interest in the project's impacts on health and the environment.
Will the subproject investment affect wastepickers?	Yes	Wastepickers may be economically displaced or affected by changes to waste collection systems during construction

Screening Question	Yes/No	Remarks
Do wastepickers at the landfill have other income besides scavenging?	No	Primary livelihood activity for scavangers is in landfill
Do women and children play any role in the SWM system?	Yes	Many wastepickers are women, and there may be children involved in informal waste collection activities.
Are there any political or ethnic issues associated with sharing a waste disposal site?	No	
Are there any labor safety and health risks faced by SWM workers (formal and informal)?	Yes	Both formal workers and wastepickers face significant health risks from exposure to hazardous materials and toxic gases.
Have the waste transport drivers ever experienced or seen accidents inside or outside the landfill?	Yes	There may be a risk of accidents during transportation, especially with increased traffic from construction activities.
Are the most vulnerable groups (e.g., households in close proximity to existing or planned waste transfer and disposal sites, wastepickers, women) affected by current SWM practices?	Yes	Vulnerable groups, particularly wastepickers and nearby residents, are affected by waste management practices and odors.
Are waste management service users currently satisfied with their existing solid waste collection points?	No	There are likely community concerns regarding the current state of waste collection, as evidenced by complaints about odors and pollution.
Are service users aware of the need to manage solid waste better?	Yes	There is an awareness among the community about the need for better waste management practices.
Does the municipality/city corporation authority provide information and respond to complaints?	Yes	Local authorities engage with the community and are expected to respond to complaints, although the response may not always be timely or sufficient.
Are there community safety risks due to both accidental and natural hazards, especially where the structural elements or components (e.g., landfill or incinerator) of the project are accessible to members of the affected community, or where their failure could result in injury to the community throughout project construction, operation, and decommissioning?	Yes	Accidental hazards, such as fires and gas explosions, pose safety risks, particularly during construction and operation phases.

Screening Question	Yes/No	Remarks
Are there existing environmental contamination issues (e.g., soil, surface water, groundwater) at the project site?	Yes	There are concerns regarding contamination from leachate affecting soil, groundwater, and surface water.
Is there a history of community grievances related to the project site?	Yes	Community members have raised complaints in the past, primarily related to odors.
Do the communities around the TPA know about the project activities?	Yes	Community hear about general plan, but no formal information disclosure to community
Are there any community concerns regarding the project activities?	Yes	Concerns may include health risks, odors, and the potential displacement of wastepickers during construction.
Does the local community support the project?	Yes	The community likely supports waste management improvements, though there may be concerns regarding the project's impacts.
Are there existing impacts on local biodiversity and aquatic biota due to historical solid waste management practices?	Yes	There may be existing impacts on local biodiversity and water bodies due to the historical mismanagement of solid waste.
Is the local community currently or previously impacted by health issues related to solid waste management?	Yes	Community health has likely been affected by poor waste management, with risks related to water contamination and air quality.
Are there any health facilities close to the landfill?	Yes	There are likely health facilities within the vicinity, though not in immediate proximity to the landfill.
Do people around the landfill have difficulty getting clean water?	Yes	There is a risk of water contamination, and some communities may face challenges in accessing clean water.
Do people have its own facilities?	Yes	Many residents have access to basic sanitation facilities, but infrastructure improvements may be needed.
Have there been past instances of improper hazardous waste disposal at the site?	Yes	There is a history of improper waste management, including hazardous materials, which has led to environmental concerns.
Are there known issues with legacy waste leachate contamination in local water bodies?	Yes	Leachate from legacy waste may have contributed to contamination of local water bodies.

Screening Question	Yes/No	Remarks
Are there unresolved legacy social impacts related to the displacement of communities for waste management facilities?	No	No known cases of physical displacement, though economic displacement of wastepickers may have occurred.
Are there adequate environmental protection infrastructure at the project site?	No	The leachate treatment plant is currently non-functional, and improvements are needed for environmental protection.
Are routine environmental monitoring carried out?	No	Local Agency regularly monitors groundwater quality and leachate quality. However, the environmental monitoring is still inadequate, with limited assessments of soil, surface water, and air quality.
Are there known legacy waste leachate contamination issues in local water bodies?	Yes	Leachate contamination from the landfill is a known issue that affects local water quality.
Are there unresolved legacy social impacts related to the displacement of communities for waste management facilities?	No	There are no unresolved legacy social impacts related to community displacement.
Will the project cause environmental or social impacts due to the establishment of a temporary disposal area during construction (e.g., leachate, odor, pollution)?	Yes	The temporary landfill site may cause short-term environmental and social impacts, including leachate runoff and odor

Screening Questions	Score	Remarks
Location and Design of Project		
Is the siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	1	The project is in a semi-rural area that may experience flooding, landslides, and droughts, which could impact landfill operations.
Would the project design (e.g., the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?	0	No major hydrological features near the site; the design does not need to consider sea level rise or river flow.
Materials and Maintenance		

Screening Questions	Score	Remarks
Would weather, current and likely future climate conditions (e.g., prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity) likely affect the selection of project inputs over the life of project outputs (e.g., construction material)?	0	The region does not experience significant temperature fluctuations.
Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	Regular maintenance schedules would account for the local climate, but no extreme maintenance impacts are anticipated.
Performance of Project Outputs		
Would weather/climate conditions, and related extreme events likely affect the performance (e.g., annual power production) of project output(s) (e.g., hydro-power generation facilities) throughout their design lifetime?	1	Climate conditions such as extreme rainfall and droughts may affect landfill management and leachate treatment efficiency.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses resulting in a total score of 0 will categorize the project as low risk. If the total score is between 1 and 4, with no individual response scoring 2, the project will be assigned a medium risk category. A total score of 5 or more, or any single response scoring 2, will categorize the project as high risk.

With a score of 2, the project remains in the Medium Risk category. This score reflects manageable climate and weather-related impacts, with no critical design concerns linked to hydro-meteorological parameters.

Appendix B List of the Stakeholder Engagement and Consultation during ESIA Preparation

Stakeholder engagement and consultation during ESIA Preparation as follows.

No	Date of Meeting	Stakeholder	Summary
1.	15 March 2024	PUPR ESC	ESMPF content formulation workshop
2.	16 May 2024	• ESC: Mery Purnamasarie, Deananda Utami, Ahmad Ali • Dit. Sanitasi PUPR: Mba Grace • BPPW Jawa Tengah: Pak Rohmat, Mas • DLH: Bu Atun, Mas Mirza, • Wastepickers	Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training)
3.	4 June 2024	AIIB AEPW ESC	Technical Assistance for Preparation of Solid Waste Management - *Sustainable Urban Development Project (SWM-SUD)*; Discuss of findings from each regency; Flow chart of the decision-making process; Initial proposed exclusion list.
4.	21 June 2024	AIIB AEPW ESC	AIIB feedback on the exclusion list draft
5.	15 – 16 July 2024	PUPR - Bu Marsa - Bu Dessi BPPW AIIB AEPW ESC ARKONIN	- Discussion of the ESMPF Document - Public consultation needs to be carried out before loan negotiation to discuss the draft ESMPF document with LG and Civil Development Organization (CDO)
6.	5–9 August 2024	ESC DLH Dinas Kebudayaan dan Pariwisata Kabupaten Temanggung Residents of the hamlet closest to the TPA (Dusun Tegalombo, Losari)	Baseline survey

No	Date of Meeting	Stakeholder	Summary
		Wastepicker	
7.	8 August 2024	GROUP 1 Directorate of Housing and Settlement Area, Bappenas 1) Faiq Yahya Hidayah Directorate of Multilateral Financing, Bappenas 2) Heni Apriani Directorate of Development Funding Planning, Bappenas 3) Riesella 4) Dewi Ambarsari Directorate of Sanitation, MPWH 5) Ibu Marsaulina 6) Ibu Indrastuti 7) Ibu Ryvia Hananda 8) Ibu Terra Prima Sari 9) Ibu Maria Stefany Gulo 10) Ibu Lucita Meliana	Visit to Jepara, Rembang (Group 1) Visit to Tasikmalaya (Group 2) Site visits final draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training) Discussion on the FS Confirm the fulfilment of RCs. Discussion on Nokes (Nota Kesepakatan) Offtaker sitevisit (Tasikmalaya – Sugar Factory)
8.	9 August 2024	Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH 11) Muhammad Iqbal 12) Suhaili Yarham Directorate of Synchronization for Regional Development I, MOHA 13) Bu Cynthia Resti Eriyadi Directorate of Synchronization for Regional Development II, MOHA 14) Pak Danil 15) Pak Lucky 16) Bu Adita Mubarika	Visit to Jepara, Rembang (Group 1) Visit to Tasikmalaya (group 2) Site visits Discussions on the final draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training) Discussion on the FS

No	Date of Meeting	Stakeholder	Summary
		Local governments AIIB 17) Pak Krisnan 18) Bu Xiang 19) Translator AEPW 20) Ibu Mia ESC 21) Sidqy GROUP 2 Directorate of Housing and Settlement Area, Bappenas 1) Bu Nur Aisyah Nasution (Koordinator) 2) Rasya Budi Asmara Directorate of Sanitation, MPWH 3) Bu Grace Roseline 4) Pak Eka Wisnu Sumantri 5) Bu Asri Farida Silaholo 6) Pak I Gusti Bagus Angga 7) Bu Trya Arini Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH 8) Bu Indy 9) Pak Nino Directorate of Synchronization for Regional Development II, MOHA 10) Pak Zidi 11) Ihsan	Confirm the fulfilment of RCs. Discussion on Nokes (Nota Kesepakatan

No	Date of Meeting	Stakeholder	Summary
		12) Ahmad Azzam Al Asyraf Directorate of Local Enterprise, Public Service and Assets, MOHA 13) Pak Saiful Arif (Kasi) 14) Pak Andi Hutama Local governments AIIB 15) Bu Jana 16) Bu Edith 17) Pak Beno 18) Bu Sabah 19) Bu Nurul AEPW 20) Pak Riki ESC 21) Pak Marco	
9.	12 August 2024	GROUP 1 Directorate of Housing and Settlement Area, Bappenas 1) Pak Faiq Yahya Hidayah Directorate of Multilateral Financing, Bappenas 2) Bu Agustin (Direktur) 3) Bu Bagas (koordinator) Directorate of Development Funding Planning, Bappenas 4) Bu Riza Hamzah (Koordinator)	Visit to Temanggung (Group1) Visit to Reg Magelang & Gunung Kidul (Group 2) Site visits Discussions on the draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water

No	Date of Meeting	Stakeholder	Summary
		5) Pak Pribadi Charisna Hanif Directorate of Sanitation, MPWH 6) Bu Grace Roseline	monitoring, community engagement, budget, staffing, training) Confirm the fulfilment of RCs. Offtaker site visits (PT SBI – Temanggung)
10.	13 August 2024	7) Bu Tuti 8) Bu Asri Farida Silaholo 9) Pak Suharmo 10) Bu Hana Luthfiyana 11) Pak M. Iqbal Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH 12) Bu Finda Septiawati 13) Bu Elvia Nasrul Jalal 14) Bu Olawaty Annissa Hutagalung Directorate of Synchronization for Regional Development 1, MOHA 15) Pak Kunto Bimaji (Kasubdit) Directorate of Synchronization for Regional Development II, MOHA 16) Bu Anita Directorate of Local Enterprise, Public Service and Assets, MOHA 17) Bu Dina Irvina (Kasubdit) 18) Pak Galih Aji Pratama Local governments AIIB 19) Bu Jana 20) Pak Krisnan 21) Bu Xiang 22) Bu Jiaqi	Visits to Temanggung (Group 1) Visit to Reg Magelang & Gunung Kidul (Group 2) Site visits Discussions on the draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training) Confirm the fulfilment of RCs. Discussion on Nokes (Nota Kesepakatan Offtaker site visits (PT SBI – Temanggung)

No	Date of Meeting	Stakeholder	Summary
		23) Vic AEPW ESC 24) Sidqy GROUP 2 Directorate of Housing and Settlement Area, Bappenas 1) Bu Aisyah (Koordinator) 2) Bu Nadifa Directorate of Multilateral Financing, Bappenas 3) Bu Narulita 4) Bu Cendana Directorate of Sanitation, MPWH 5) Bu Marsaulina (Kasubdit) 6) Bu Arindita Dessi 7) Bu Olivia Stefany 8) Bu Sylvia 9) Bu Egis Prastiwi 10) Bu Raras Patriyanti Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH 11) Bu Amel 12) Bu Indy Directorate of Synchronization for Regional Development II, MOHA 13) Pak Azies 14) Pak Bayu	

No	Date of Meeting	Stakeholder	Summary
		MOH 15) Bu Dewi Marlina Local governments AIIB 16) Bu Nicole 17) Bu Edith 18) Pak Beno 19) Bu Sabah 20) Bu Nurul AEPW ESC 21) Pak Marco	
11.	14 August 2024	PUPR AIIB AEPW ESC ARKONIN	Confirm the readiness and completion of: ESMPF and ESIA (including ES risk management measures in the design, construction and operations, stakeholder-NGO engagement, GRM system and reporting arrangement, budget, training) Discussion of the ESMPF document Need to change the components from 2 to 4 FS (including Economic Analysis and Climate Change aspects)
12.	5 – 9 August 2024		Baseline survey

DOCUMENTATION

16 May 2024

 **Interview with Wastepickers**	 **Open Dumping Landfill**	 **Site Observation**
 **Zone 6 Area (Location Plan for TPST)**	 **Access Road closed by Waste**	

Appendix C Social Management Plan

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ABREVIATION

APBD	:	*Anggaran Pendapatan dan Belanja Daerah*/Regional Budget
APBN	:	*Anggaran Pendapatan dan Belanja Negara*/National Budget
ATR/BPN	:	*Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional* (Agrarian and Spatial Planning/Head of the National Land Agency
BOD	:	Biological Oxygen Demand
CITES	:	Convention on International Trade in Endagered Species
COD	:	Chemical Oxygen Demand
DLH	:	*Dinas Lingkungan Hidup*/Environmental Service
DO	:	Dissolved Oxygen
DPRKPLH	:	*Dinas Perumahan Rakyat, Kawasan Permukiman dan Lingkungan Hidup*/ Department of Public Housing, Settlement Areas and the Environment
E&S	:	Environment and Social
ECMWF	:	European Centre for Medium-Range Weather Forecasts
ESEL	:	Environmental and Social Exclusion List
ESIA	:	Environmental and Social Impact Assessment
ESMP	:	Environmental and Social Management Plan
ESP	:	Environmental and Social Policy
GAP	:	Gender Action Plan
GBV	:	Gender Based Violence
GoI	:	Government of Indonesia
IFC PS	:	International Finance Corporation (IFC) Performance Standards.
IUCN	:	International Union of Conservation for Nature
KLHK	:	*Kementerian Lingkungan Hidup dan Kehutanan*/Ministry of Environment and Forestry
LG	:	Local Government
LTP	:	Leachate Treatment Plant
PPM	:	Project-affected People's Mechanism
PPSNO	:	*Paguyuban Pengelola Sampah Non Organik*/Non-Organic Waste Management Association
RDF	:	Refuse Derived Fuel

SEAH	:	Sexual Exploitation, abuse and Harassment
SEP	:	Stakeholder Engagement Plan
SNI	:	*Standar Nasional Indonesia*/ Indonesian National Standard
SWM-SUD	:	Solid Waste Management for Sustainable Urban Developmen
TPA	:	Final Disposal Site/Landfill
TPS3R	:	Reuse, Reduce, Recycle Facilities
TPSD	:	Village Waste Management Center
TPST	:	*Tempat Pengolahan Sampah Terpadu*/Integrated Waste Processing Site
UKL-UPL	:	*Upaya Pengelolaan Lingkungan* – Upaya Pemantauan Lingkungan/Environmental Management Effort – Environmental Monitoring Effort) report and submission of *Izin Lingkungan* (Environmental Permit
UPTD	:	*Unit Pelaksana Teknis Dinas*/Service Technical Implementation Unit
WBG	:	World Bank Group

1 INTRODUCTION

1.1.1 The Social Management Plan (SMP) has been developed as a framework for addressing social concerns related to the Solid Waste Management for Sustainable Urban Development (SWM-SUD, 'Project') in Temanggung. In early August 2023, the Alliance to End Plastic Waste (AEPW) and the Asian Infrastructure Investment Bank (AIIB) entered into a cooperation agreement to provide technical assistance to the Government of Indonesia (GoI) in project preparation. The SMP incorporates the Stakeholder Engagement Plan (SEP), Grievance Redress Mechanism (GRM), Gender Action Plan, Local recruitment and Emergency Response Plan.

1.1.2 The Stakeholder Engagement Plan (SEP) provides an overview of past engagement activities, updates on stakeholder identification and analysis, and strategies and planning for stakeholder engagement throughout the project cycle. Furthermore, this document provides an indicative budget for implementation. The SEP is a dynamic document that will be subject to regular review and updates as required.

1.1.3 The Grievance Redress Mechanism (GRM) has been developed to define the procedures for managing stakeholder concerns and complaints in a planned, timely, and respectful manner.

1.1.4 The social impact assessment identifies potential risks and impacts of the project, particularly in relation to women. The Gender Action Plan (GAP) has been developed to mitigate the negative social and environmental impacts of the project on women and to ensure that project benefits (both direct and indirect) help address existing gender gaps and barriers.

2 CONSULTATION AND STAKEHOLDER ENGAGEMENT

2.1 Introduction

2.1.1 This Chapter provides an overview of the processes involved in information disclosure, consultation, and participation concerning the TPA/TPST development. It covers topics such as stakeholder analysis, the dissemination of information, consultations, and the mechanisms for ongoing community feedback and grievance handling. This chapter also includes a recap of previous efforts in information disclosure, consultation, and participation.

2.1.2 The Sub-project is committed to actively engaging with key stakeholders both before and during the construction and operational phases. Effective stakeholder engagement is crucial for establishing strong, constructive, and responsive relationships, which are vital for successfully managing environmental and social impacts. This engagement is a continuous process that encompasses different levels of involvement, including:

- Stakeholder analysis (influence and interest) and planning;
- Disclosure and dissemination of information;
- Consultation and participation;
- Grievance management; and
- On going reporting to and engagement with affected stakeholders

2.2 Summary and Assessment of Stakeholder Engagement to Date

2.2.1 During the scoping visit and baseline study, the LPMU carried out several engagement activities with stakeholders to gain a comprehensive understanding of current conditions and explore the perceptions, concerns, and hopes of those involved particularly PAPs. These activities included consultations with a total of 45 stakeholders, including 35 men and 10 women through a variety of methods such as Key Informant Interviews (KII), Focus Group Discussions (FGD), and household surveys.

2.2.2 The respondents ranged from PAPs to waste pickers, waste truck drivers, and other relevant parties. These engagements served as a crucial component of the consultation process, ensuring that the concerns of all affected groups were considered. The findings from these discussions, along with their perceptions, suggestions, and feedback, are detailed in the Social Baseline section and further summarized in **Table 2-1** below.

Table 2-1 Stakeholder Engagement to Date

Event	Stakeholders	Date and Type of Engagement	Summary of Discussion Points
Scoping Visit	Environmental Agency	16 May 2024 Face to face group meetings	• There is a cemetery located in the same direction as the Sanggrahan landfill site. • The road leading to the landfill is owned by the local government. • There are no social monitoring reports. • No village is exempt from fees/levies; the fee system at the village level is decided at the village level. • Fees by the TPSD are paid to the Department of Environment (DLH). • Service fees are paid to the DLH, while fees by institutions that directly dispose of waste at the landfill (without using service routes) are paid to the Technical Implementation Unit (UPT). Both are deposited into the regional treasury. • The current structure is the UPT, which does not include OH&S staff (this is in accordance with the applicable regulations). In the future, the management of TPST will use the BLUD system. • There are 7 non-civil servants and 4 civil servants in the UPT TPA. • Wastewater quality measurements are conducted monthly by the DPRKPLH Laboratory Unit. • Compensation measures in the landfill operations include free health check-ups in collaboration with the Health Department and local health centers (Puskesmas) for landfill workers and surrounding communities, waste management outreach programs, and the proposal and implementation of SPALDS programs at 54 points around the landfill area. • The raw water supply for the landfill comes from the PAMSIMAS system in Kaloran Village. • The local community is involved in environmental management decision-making processes at the landfill through outreach and discussions with village authorities and local residents. • There is no formal Occupational Health and Safety (OHS) structure or designated OHS personnel in place.
	Wastepickers Representatives		• There are two respondents who are representatives of PPSNO (Paguyuban Penumpul Sampah Non Organik), namely Mr. Kumpul (55) and Mrs. Minarti (40). • Both Wastepickers are from Dusun Losari. • PPSNO has been established since the establishment of the Sanggrahan landfill site, and its organizational structure remains the same as when it was first formed. • There are joint activities, such as a ceremonial feast held once a year (usually on the 1st of Suro). They also receive occasional assistance or donations from various parties. • Most Wastepickers are from Desa Sanggrahan (though there are some from other villages). The majority (70%) of Wastepickers are women who begin their scavenging work after completing their household chores. Some Wastepickers also work as farm laborers and porters. • The working hours of Wastepickers are flexible, ranging from early morning to night. • According to local stories, some Wastepickers see animals like goats if they scavenge too late at night. When this happens, they usually choose to go home. • There are three major collectors who come to the landfill (Mr. Budi, Mr. Bambang, Mr. Muji). Their warehouses are located near the landfill. • Collectors take turns coming to the landfill, twice a week. • On average, a Wastepicker's daily income ranges between Rp35,000 and Rp50,000.

Event	Stakeholders	Date and Type of Engagement	Summary of Discussion Points
			• Each Wastepicker has their own spot. • The price of waste is currently declining (since the pandemic). • Common illnesses among Wastepickers include fatigue, body aches, colds, and headaches. Some of them have access to the National Health Insurance (JKN). • Wastepickers are aware of the plan to expand the Sanggrahan landfill. They do not feel that this activity is a cause for concern
	Kaur Perencanaan		• From his house in Dusun Tegalombo (approximately 500 meters from the landfill), he initially smelled an unpleasant odor, but now he is used to it. • The local community receives assistance from the UPT for events, as well as other help such as clean water and septic tank services. • To date, no reports have been found related to diseases caused by the landfill in the surrounding community. The water conditions have also not changed. The local community uses Pamsimas as their water source. • There is a cattle farming group located near the Sanggrahan landfill in Dusun Tegalombo. • Mr. Narno received replacement land in Kranggan, which is smaller in size compared to the "bengkok" land near the landfill. However, in terms of production capacity, it is more productive. • The distribution of "bengkok" land from the land swap is done through a lottery system
Scoping Visit	Head of Sanggrahan Village	17 May 2024 Face to face group meetings	• Wastepickers are registered as BPJS recipients, and if unavailable, they can use Jamkesda (if there is a budget). • The residents of Temanggung used to dispose of their waste in Dusun Losari, but there was a landslide of waste at that time. • The community of Dusun Losari was previously dominated by less educated people, so the village government endeavored to improve the local human resources by striving to keep the landfill site for Temanggung Regency in Desa Sangrahan. • There have been no complaints from the surrounding community regarding waste. However, the community smells an unpleasant odor when the waste is stirred. • Wastepickers receive BLT (Direct Cash Assistance) and posyandu (integrated health service post) for the elderly. • There have been no specific disease complaints related to the landfill. • The "bengkok" land used for the expansion of the landfill was exchanged for government land, but it is smaller in area compared to the "bengkok" land. The village government attempted to maintain the area of the "bengkok" land by appealing up to the provincial level, but the area remained unchanged. • The allocation of "bengkok" land has not yet been resolved at the village level
	Secretary of Kranggan Sub-District		• Waste management in Kranggan District is carried out through a waste bank and there are scrap collectors. • There are 7 FPK (Sub-district Waste Facilitators) who oversee FPD (Village Waste Facilitators) – there are also PSRT or Household Waste Activists. •
	Waste Collector Representative		• The job of being a waste collector has been carried out for 6 years. • The waste collected is not only from the Sanggrahan landfill but also from out-of-town areas such as Magelang and Ngadirejo. • The waste collected includes plastic waste, scrap, black and white plastic, white scrap, cardboard, duplex, cans, and iron. The prices of waste vary depending on the type. • The sorted waste is sent to various regions, including Pikatan, Solo, and Gombong (Kebumen). • There are two types of workers employed: sorters and weighers.

Event	Stakeholders	Date and Type of Engagement	Summary of Discussion Points
			• There are 6 sorters who are paid Rp500/kg, while there are 4 weighers who are paid around Rp150,000 – Rp225,000 per weighing session. Weighing is done twice a week. • The net income from the waste collection business is around Rp7,000,000 per month. • Wastepickers can apply for loans from collectors and can repay them in installments or have the loan amount deducted from the proceeds of the weighed waste they have collected
Baseline Survey	Head of Kranggan Health Center Head of Administration of Kranggan Health Center Environmental Division of Kranggan Health Center	6 Agustus 2024 Offline discussion Face to face group meetings	• The disease with the highest prevalence is diarrhea, especially during the rainy season. • Diseases originating from rats and flies at the landfill site, such as plague (PES), are localized. This is due to the large amount of waste available at the landfill, preventing it from spreading to the community. • Many Wastepickers suffer from respiratory infections. • There is a routine Posbindu (integrated health post) program near the landfill. • Sanggrahan Village has the highest number of stunting cases within the service area of the Kranggan Community Health Center. • There was an outbreak of lice among the Wastepicker community, and the community health center intervened by providing detox medication. • There are complaints of foul odors in Gentan Village. • Three infants have been found at the landfill. • There was a case of sexual violence in Gentan Village in 2023. • There are many plywood and shoe factories in Kranggan Sub-District. • Cases of dengue fever, chikungunya, and elephantiasis have been reported. • Of the five pillars of STBM (Community-Based Total Sanitation), issues frequently occur with the fourth (solid waste) and fifth (water infiltration) pillars. • Many residents in Gentan and Pendowo Villages still burn their waste. • During certain seasons, such as the tobacco harvest season, incidents of immoral behavior often occur. • In 2024, there were 10 HIV cases reported at the Kranggan UPT (Public Health Unit). • The community health center supports the development of the Sanggrahan TPST (Waste Management Facility) as the landfill is currently overloaded.
Baseline Survey	Head of Gentan Village	6 August 2024 Offline discussion Face to face group meetings	• Waste is collected and disposed of in the village, and then transported to the Sanggrahan landfill. In some hamlets, it is sorted by the PKK (Family Welfare Movement) and waste banks. • The community has complained about the odor and the increase in flies caused by the landfill's operations. • Health issues related to mosquitoes are frequently encountered. • Several accidents have occurred on the road leading to the landfill. • In general, the community supports the development of the Sanggrahan Waste Management Facility (TPST). It is hoped that the development will bring benefits, local human resources will be employed by the project, and the road leading to the landfill will be improved.
Baseline Survey	Representatives of Drivers and Loaders	7 August 2024 Offline discussion	• There are three types of vehicles: trucks, pick-ups, and amrols (roll-off containers).

Event	Stakeholders	Date and Type of Engagement	Summary of Discussion Points
		Face to face meetings	• Trucks are operated by five personnel, pick-ups by three personnel, and amrols by one personnel. • Some of the drivers and loaders are civil servants, while others are contract workers. • All vehicles are parked at the Department of Environment (DLH), where drivers and loaders collect the vehicles along with supporting tools such as rakes, sacks, and baskets. • DLH provides personal protective equipment (PPE), such as boots (every six months), gloves, and shirts (once a year). • There are frequent incidents of injuries caused by glass, nails, and satay skewers. • On a typical workday, only one trip is made, while amrol vehicles make five to six trips. • Working hours start at 5 a.m., and usually end by 10 a.m. • Contract workers are provided with health insurance (BPJS Kesehatan) and employment insurance (BPJS Ketenagakerjaan) by DLH. • Contract workers earn an average monthly income of Rp 1,800,000. • Monthly meetings are held, where workers can express concerns related to their work. • There was a work accident that resulted in a worker's hand being broken, leading to reassignment as a street cleaner. • Drivers and loaders work seven days a week. • Workers can be called in for special events, with overtime pay of Rp 25,000 per hour, plus a meal allowance of Rp 50,000 if they work more than four hours. • During rainy weather, raincoats are provided by DLH. • A workshop at DLH is available for the maintenance of garbage trucks. • The workshop personnel are honorary workers. • All drivers and loaders are male, while females are employed as street cleaners. • Honorary workers are entitled to six days of leave. • Workers hope that the establishment of the Waste Management Facility (TPST) will improve the organization of waste, ensure adequate water supply, and enhance facilities like the prayer room (mushola).
Baseline Survey	Head of Pendowo Village	7 August 2024 Offline discussion Face to face meetings	• Many residents of Pendowo work at the Sanggrahan landfill. • The community has raised complaints about the odor, particularly noticeable at night, waste scattered on the roads during transport by trucks, leachate entering residents' agricultural land, and reduced livestock appetite due to foul-smelling grass. • The plan for the development of the Sanggrahan Waste Management Facility (TPST) has not yet been widely socialized. • The community hopes that the establishment of the TPST will help reduce odors and improve the local economy. It is recommended that the road infrastructure leading to the landfill be improved.
Stakeholder engagement workshop	DPRKPLH Temanggung Regency	7 August 2024 Offline discussion Face to face meetings	• The list of stakeholders related to this project is the central and regional governments to villages, NGOs/NGOs/CSOs, RDF product buyer companies, waste banks and surrounding communities
Baseline Survey	Community Representative (men group)	8 August 2024 Offline discussion (FGD)	• Key community figures include the village head, hamlet heads, RT/RW leaders (neighborhood and community leaders), religious figures (Mr. Sukron, Abdul Jabar, Sholihin, Mrs. Zaidah),

Event	Stakeholders	Date and Type of Engagement	Summary of Discussion Points
		Face to face group meetings	community figure (Sudianto), female leader (the village head's wife), and youth leader (Mr. Juwarto). • The community's access is not disrupted by the landfill's operations. • The village's spring water is only used by residents for agriculture. • Farmers are pleased with the leachate flowing into their fields, as it enriches the soil and reduces the need for fertilizers. • Public transportation is available in the form of motorcycle taxis (ojek) and public minibuses (angkot) on the Kranggan–Kaloran route. • Residents are accustomed to the odor from the landfill and remain comfortable with it. • Cultural traditions such as Nyadran (ancestral worship ceremony) and the commemoration of Indonesia's Independence Day are observed. • Men and women in the village have equal roles. • Most of the youth work in factories. • Various animals can be found around the landfill, including monitor lizards, rats, snakes, lizards, squirrels, eagles, egrets, and starlings. • There are also plants growing around the landfill, including dry fields, fruit trees, and timber trees. • The community is concerned that the closure of the landfill could eliminate livelihoods. • The community hopes that the development of the TPST will create more jobs, reduce the current odor, and make the Sanggrahan landfill more organized
Baseline Survey	Community Representative (women & Vulnerable group)	8 August 2024 Offline discussion (FGD) Face to face group meetings	• There are two female hamlet heads (Dusun Gunungpring and Dusun Tegalombo). • The Tanggulasri inscription has been discovered. • The majority of rice fields are classified as "bengkok" land (land allocated for village officials). • There are no reported issues of bullying against individuals with disabilities or cases of violence. • Some Wastepickers bring their grandchildren to the landfill because the parents work in factories. • There are women's groups, such as the PKK (Family Welfare Movement), Yasinan (religious prayer groups), Darusan (Qur'an recitation groups), and KWT (Women Farmers Group). • Many women work in garment, wood, and shoe factories. • A monthly Posyandu (integrated health post) for the elderly is conducted. • The community is concerned that Wastepickers may lose their livelihood due to the project. • The community hopes that child-friendly facilities will be provided at the landfill, that Wastepickers affected by the construction will receive compensation, that women will be allowed to sell goods during the construction phase, that the TPST can serve as an educational waste tourism site, and that local human resources will be employed as workers. • The community generally supports the project, as long as it has a positive impact and does not disrupt residents' daily activities.

2.3 Stakeholder Identification

2.3.1 Stakeholder Identification Activity has been conducted together with the project manager to obtain complete identification with:

- Project beneficiaries
- People negatively affected by the sub-project
- Affected Households (AH)
- Affected Persons (AP)
- Affected Communities.

2.3.2 This chapter also identifies key community stakeholders such as community groups, project affected people, resource users, men, women, youth, elderly, people with disabilities, other vulnerable groups, and other stakeholders who are interested or may be affected by the sub-project. The list of stakeholder identification can be seen in **Table 2-2**.

Table 2-2 List of Stakeholder Identification

Stakeholders	Interests	Influence
Central Government		
Directorate General of Sanitation, Ministry of PUPR	Facilitate the budget for the procurement of waste infrastructure. Transfer of information and knowledge to local governments	Have the authority to decide the eligibility of a project for funding assistance
Ministry of Environment and Forestry	Monitoring and evaluation of waste management activities	The impact on the project has not been seen
Provincial Government		
BPPW CENTRAL JAVA PROVINCE	Facilitate the technical work of waste infrastructure development. Assist in the preparation of RC	Create a DED for a project
DLHK Central Java Province	Monitoring and evaluation of waste management activities	The impact on the project has not been seen
Regency Government		
Regent	Achievement of work targets	a. give approval to the TPST budget (for example, the preparation of a temporary landfill. Determine the waste management policy, give approval to
Local People's Representative Council (DPRD)	Determine waste management policies	give approval for the operational allocation of TPST
Regional Secretary of Temanggung Regency	Achievement of work targets	a. give approval to the TPST budget (for example, the preparation of a temporary landfill. Determine waste management policies. Facilitate and coordinate cooperation and division of tasks between stakeholders
BAPPEDA Temanggung Regency	supporting the sustainability of the TPST program	a. ensuring the achievement of performance targets from each OPDb. RC setup

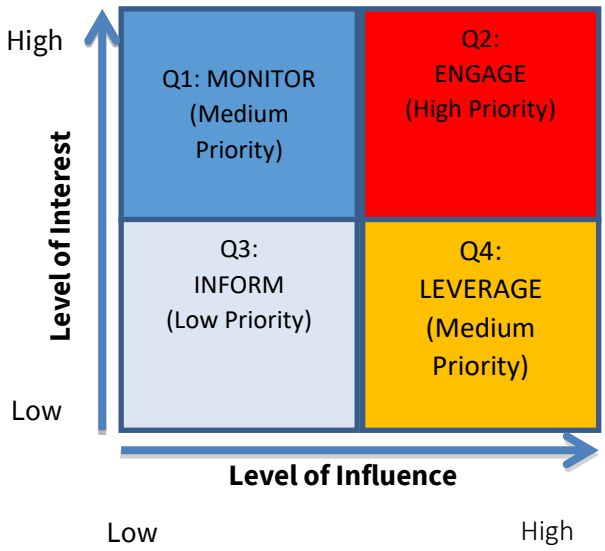
Stakeholders	Interests	Influence
DPRKPLH	Conducting planning and technical studies on waste infrastructure development, carrying out waste management activities in the Regency	RC setup project sustainability (construction-post-operation)
BPKPAD	a. Providing assistance and providing land for the construction of waste facilities. b. supporting the sustainability of the TPST program	RC setup
DPUPR	Providing assistance and facilitating changes in the status of prospective location land and the preparation of DED for waste facilities. supporting the sustainability of the TPSTc program.	RC setup
DKPPP	Facilitate the testing of compost quality and the utilization of compost processed waste. supporting the sustainability of the TPST program	RC setup
Dinpermades	Facilitate the village-level waste management budget through the desab fund. supporting the sustainability of the TPST program	RC setup
DINKOPDAG	Facilitating the marketing of processed waste products. supporting the sustainability of the TPST program	RC setup
Transportation Agency	Supporting project sustainability	RC setup
District and Village Governments		
Village Governments are directly and indirectly affected by the project	Facilitating land preparation, community conditioning and waste infrastructure development locations, carrying out village-level waste management activities	Support for the project
Village Governments Receive Waste Collection Services	Carry out village-level waste management activities	Project Sustainability Support
Other Stakeholders		
Project affected people (PAP) : wastepickers (men, women, elderly, vulnerable groups)	They have a strong interest in the sub-project as it has a direct impact on their livelihoods, health and quality of life.	• Project Sustainability Support • Wastepickers have limited influence over sub-project decisions but can increase their influence through collective action, media attention, or advocacy (e.g., protests or complaints through grievance mechanisms)
Project affected people (PAP) : community around the sub-project site who will be impacted by the sub-project activities	Concerned about the environmental, social and economic impacts of the sub-project	• Project Sustainability Support • The local community has more influence than the waste pickers because they can exert social and political pressure (e.g. through local leaders, pressure groups or the media). If they collectively oppose the sub-project, they

Stakeholders	Interests	Influence
		could have a significant impact on its progress.
KPP/KSM/BUMDes TPS3R/TPSD	As an implementing institution for waste management activities at the village level, providing jobs for village communities	Project Sustainability Support
Adiwiyata School (SD, SMP, SMA)	Providing education and waste management practices in school support internal interests in achieving activity targets. Creating educational media related to waste management	Project Sustainability Support
Waste Bank Group Unit	Managing waste in their respective regions	Project Sustainability Support
Waste board	Helping to provide education to the community about waste management	Project Sustainability Support
Mr. Sunarno (Head of Planning, Sanggrahan Village)	Coordination between DPRKPLH and the community around the landfill	Project Sustainability Support
Mr. Surat (Chairman of PPSNO TPA Sanggrahan)	Coordination between DPRKPLH and the community around the landfill	Project Sustainability Support
Collector	Distributor of processed landfill products	Project Sustainability Support
PT SBI, Sindoro Sumbing Tawon Cooperative (Off-taker)	Beneficiaries of TPST processed products	project sustainability support, RC equipment needs
Greenprosa, Indotex Lasindo Jaya (Off-taker)	Beneficiaries of TPST processed products	project sustainability support, RC equipment needs
Mass media	Submission of information related to the project	Project Sustainability Support
University	Providing education and waste management practices in schools	Project Sustainability Support
Apindo (Association of Companies)	Beneficiaries of TPST processed products	Project Sustainability Support

2.4 Stakeholder Mapping and Analysis

2.4.1 The Project's approach to stakeholder engagement is tailored in terms of nature, frequency, and effort, aligning with the limited social and environmental risks and impacts associated with the Project (**Figure 2-1**). The Project is dedicated to sharing relevant information to help affected stakeholders grasp the associated risks, impacts, and opportunities of the project.

Figure 2-1 Engagement Strategy According to Stakeholders' Categorization



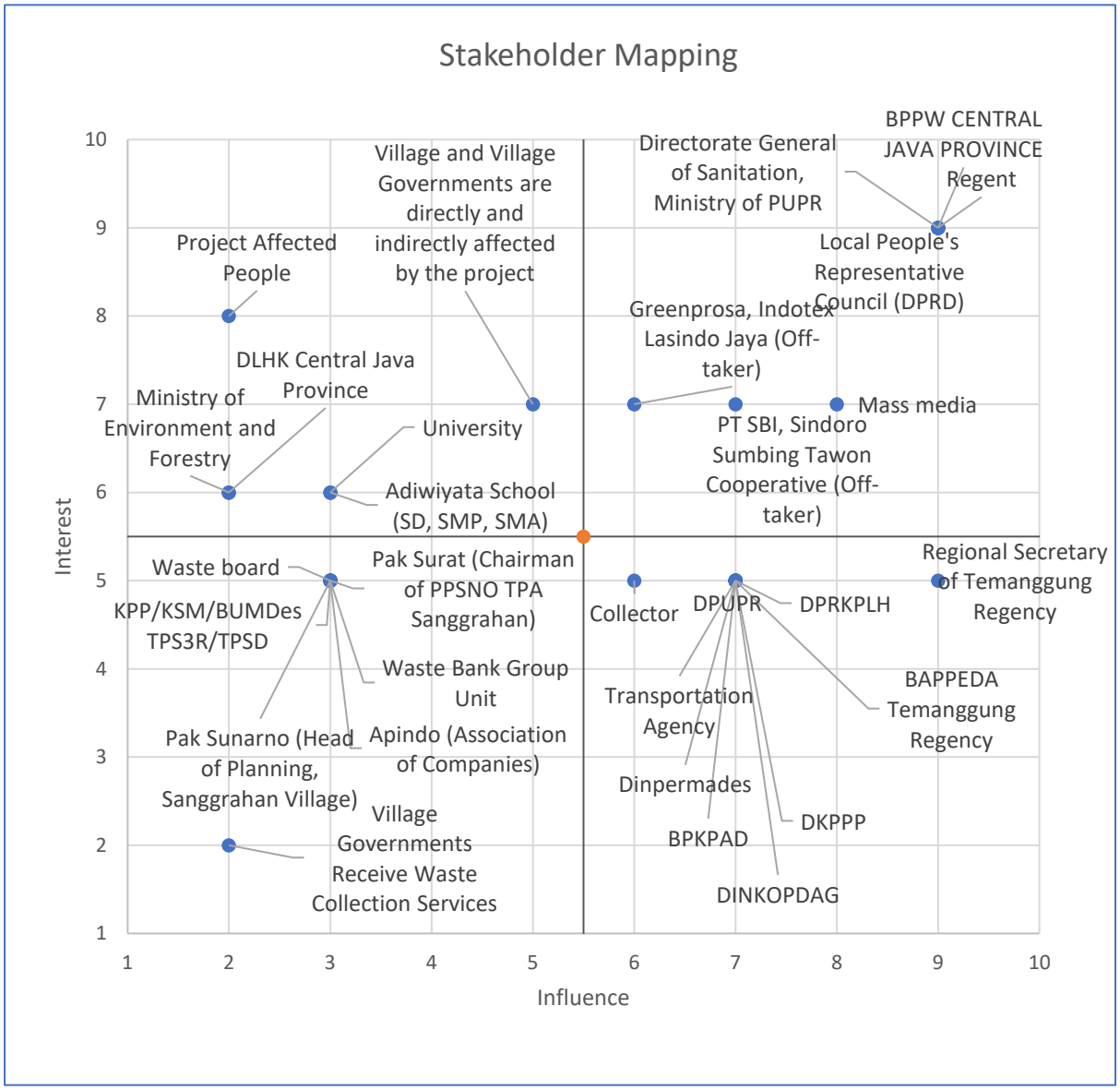
2.4.2 **Table 2-3** and **Figure 2-2** are the results of stakeholder analysis based on level of stakeholders influence and interest.

Table 2-3 Stakeholder Analysis based on their influence and interest

Stakeholder	Interest	Influence	Type of Engagement
Central Government			
Directorate General of Sanitation, Ministry of PUPR	High	High	Engage
Ministry of Environment and Forestry	High	Low	Monitor
Provincial Government			
BPPW CENTRAL JAVA PROVINCE	High	High	Engage
DLHK Central Java Province	High	Low	Monitor
Regency Government			
Regent	High	High	Engage
Local People's Representative Council (DPRD)	High	High	Engage
Regional Secretary of Temanggung Regency	Low	High	Leverage
Regional Secretary of Temanggung Regency	Low	High	Leverage
DPRKPLH	Low	High	Leverage
BPKPAD	Low	High	Leverage
DPUPR	Low	High	Leverage
DKPPP	Low	High	Leverage
Dinpermades	Low	High	Leverage
DINKOPDAG	Low	High	Leverage
Transportation Agency	Low	High	Leverage
District and Village Governments			

Stakeholder	Interest	Influence	Type of Engagement
Village and Village Governments are directly and indirectly affected by the project	High	Low	Monitor
Village Governments Receive Waste Collection Services	Low	Low	Inform
Other Stakeholder			
Project affected people (PAP) : wastepickers (men, women, vulnerable groups e.g. elderly, children)	High	Low	Monitor
Project affected people (PAP) : community around the sub-project site who will be impacted by the sub-project activities	High	Low	Monitor
KPP/KSM/BUMDes TPS3R/TPSD	Low	Low	Inform
Adiwiyata School (SD, SMP, SMA)	High	Low	Monitor
Waste Bank Group Unit	Low	Low	Inform
Waste board	Low	Low	Inform
Pak Sunarno (Head of Planning, Sanggrahan Village)	Low	Low	Inform
Pak Surat (Chairman of PPSNO TPA Sanggrahan)	Low	Low	Inform
Collector	Low	High	Leverage
PT SBI, Sindoro Sumbing Tawon Cooperative (Off-taker)	High	High	Engage
Greenprosa, Indotex Lasindo Jaya (Off-taker)	High	High	Engage
Mass media	High	High	Engage
University	High	Low	Monitor
Apindo (Association of Companies)	Low	Low	Inform

Figure 2-2 Stakeholder analysis matrix based on their influence and interest



2.4.3 After identifying each stakeholder's influence and interest based on the quadrant, an engagement strategy, communication format, and style tailored to each stakeholder can be established and developed before initiating any project activities or at the early stages of the project cycle.

Table 2-4 Stakeholder Engagement Strategies for Each Stakeholder Category

Level of Interest & Influence	Strategy of Engagement
Inform	• Keep informed and consulted the stakeholders through marketing campaign, sustainability report, publication, and news coverage. • Press conference, media gathering, media trip for media.
Monitor	• Inform via general communications, such as letter, newsletter, and website. • Monitor the stakeholders' feedback.

Level of Interest & Influence	Strategy of Engagement
Leverage	• Inform and consult the stakeholders through formal communications, such as meetings letters, and written documents. • Obtain input, feedback, support for technical guidance. • Provide sponsorship, involve in survey, sent mass email or newsletter, communicate through social media, and invited to a conference.
Engage	• Involve in joint venture, partnership, research collaboration, and summit. • Engaged and consulted formal and informally. • Involved in governance and decision making.

2.4.4 The Project has engaged in consultations that provide affected stakeholders with opportunities to voice their opinions on the risks, impacts, and mitigation measures associated with the Project, allowing the Project to consider and address their feedback. From the outset, stakeholder engagement has been documented and conducted as a two-way process that adheres to the following principles:

- Starts early in the identification of environmental and social risks and impacts and continues as new risks and impacts emerge.
- Provides information that is relevant, transparent, objective, meaningful, and easily accessible (e.g., in a culturally appropriate manner, local languages, and in simple formats).
- Prioritizes engagement with those directly affected, with special attention to disadvantaged or vulnerable groups.
- Is free from external manipulation, interference, coercion, or intimidation.
- Ensures meaningful participation from affected individuals.

2.4.5 The sub-project recognises the importance of an informed consultation and participation approach as a fundamental and ongoing component of stakeholder engagement, rather than a process dependent on the identification of significant adverse impacts. While the initial risk and impact analysis provides a preliminary understanding, the full extent of potential disruption, particularly to the livelihoods of waste pickers, is still being assessed. Given their vulnerability, the sub-project remains cautious in its conclusions and recognises that even temporary disruptions could have significant impacts. Stakeholder feedback will continue to inform sub-project decision-making, mitigation measures and the equitable distribution of development benefits and opportunities.

2.4.6 The Sub-project's stakeholder engagement procedures (Table 2-4) establish a structured, disciplined, and integrated approach to systematically achieving the engagement objectives outlined above. The External Relations team is responsible for implementing and resourcing these procedures, with specific tasks including:

- **Preparation for Stakeholder Engagement:** Identify stakeholders, consider their concerns, assess their influence and interest, and document these in a Stakeholder Engagement Procedure. This process is continuously updated to reflect changes in project conditions and external stakeholder perceptions.
- **Conducting Stakeholder Engagement:** Follow the established procedure for stakeholder engagement (refer to Table 2-4).

- **Analyzing Stakeholder Feedback:**
  - Evaluate feedback from stakeholders and incorporate it appropriately into project planning and operations.
  - Provide transparent and timely feedback to stakeholders, informing them of how their input and concerns have been addressed (noting that input may be considered but not necessarily adopted). Stakeholders' responses to the feedback are monitored and documented.
- **Reviewing and Updating the Stakeholder Engagement Procedure:** Periodically review and update the procedure as necessary to enhance engagement effectiveness.

2.4.7 The Stakeholder Engagement Procedure covers the entire operational footprint of the project, including its direct and indirect zones of influence, facility, and region. Stakeholders are broadly defined as individuals or groups who can influence, be affected by, or have a legitimate interest in the company's performance.

2.5 Stakeholders Engagement Program

2.5.1 Future stakeholder engagement activities will focus on key interactions throughout the sub-project's pre-construction, construction, and operation phases. Engagement is anticipated to intensify during the construction phase, as this period involves a higher volume of activities.

Table 2-5 Future Stakeholders Engagement Program

No	Name of Stakeholder	Stakeholder Category	Interest/Issue	Methods of Engagement
1	Directorate General of Sanitation, Ministry of PUPR & BPPW Central Java Province,	Q2 (Engage)	Facilitate the budget for the procurement of waste infrastructure. Transfer of information and knowledge to local governments	• Engaged and consulted formal and informally. • Involved in governance and decision making
2	PT SBI, Sindoro Sumbing Tawon Cooperative (Off-taker), Greenprosa, Indotex Lasindo Jaya (Off-taker), Mass media	Q2 (Engage)	• Project sustainability support • RC equipment needs	• Engaged and consulted formal and informally. • Involved in governance and decision making
3	Regent, Local People's Representative Council (DPRD)	Q2 (Engage)	• Achievement of work targets • Determine waste management policies	• Engaged and consulted formal and informally. • Involved in governance and decision making
4	Ministry of Environment and Forestry, DLHK Central Java Province	Q1 (Monitor)	Monitoring and evaluation of waste management activities	• Inform via general communications, such as letter, newsletter, and website. • Monitor the stakeholders' feedback.
5	Village Governments are directly and indirectly affected by the project, Adiwiyata School (SD, SMP, SMA), University	Q1 (Monitor)	Project Sustainability Support	• Inform via general communications, such as letter, newsletter, and website. • Monitor the stakeholders' feedback.

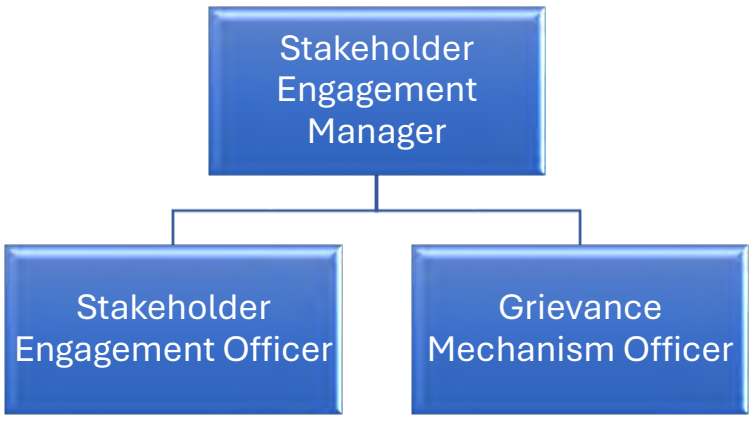
No	Name of Stakeholder	Stakeholder Category	Interest/Issue	Methods of Engagement
6	Collector	Q4 (Leverage)	• Project Sustainability Support	• Inform and consult the stakeholders through formal communications, such as meetings letters, and written documents. • Obtain input, feedback, support for technical guidance. • Provide sponsorship, involve in survey, sent mass email or newsletter, communicate through social media, and invited to a conference.
7	Regional Secretary of Temanggung Regency, Regional Secretary of Temanggung Regency, DPRKPLH, BPKPAD, DPUPR, DKPPP, Dinpermades, DINKOPDAG, Transportation Agency	Q4 (Leverage)	Facilitate project related compliance and prepare RC	• Inform and consult the stakeholders through formal communications, such as meetings letters, and written documents. • Obtain input, feedback, support for technical guidance. • Provide sponsorship, involve in survey, sent mass email or newsletter, communicate through social media, and invited to a conference.
8	Village Governments Receive Waste Collection Services, KPP/KSM/BUMDes TPS3R/TPSD, Waste Bank Group Unit, Waste board, Head of Planning, Sanggrahan Village, Apindo (Association of Companies)	Q3 (Inform)	Project Sustainability Support	• Keep informed and consulted the stakeholders through marketing campaign, sustainability report, publication, and news coverage. • Press conference, media gathering, media trip for media.
9	Project affected people (PAP) : wastepickers (man, women, olders, vulnerbale).	Q1 (Monitor)	• Project Sustainability Support • Wastepickers has limited influence over project decisions but can increase their influence through collective action, media attention, or advocacy (e.g., protests or complaints through grievance mechanisms)	• Keep Inform via general communications, such as letter, newsletter, and website. • Monitor the stakeholders' feedback.

No	Name of Stakeholder	Stakeholder Category	Interest/Issue	Methods of Engagement
10	Project affected people (PAP) : community around the project site who will be impaected by the project activity	Q1 (Monitor)	• Project Sustainability Support • The local community has more influence than the waste pickers because they can exert social and political pressure (e.g. through local leaders, pressure groups or the media). If they collectively oppose the project, they could have a significant impact on its progress.	• Keep Inform via general communications, such as letter, newsletter, and website. • Monitor the stakeholders' feedback.

2.6 Resource and Responsibilities

2.6.1 A well-resourced team with trained and experienced staff is critical for effectively implementing and managing stakeholder engagement activities. Team members should have expertise in social/community management and development, strong communication skills, and knowledge of local customs and practices. A typical structure for a stakeholder engagement team is shown in **Figure 2-3**. The Stakeholder Engagement unit can be integrated into the LPMU's organizational structure. Currently, there is no specific section that manages stakeholder engagement activities, but in the future, this will be adjusted to the revised LPMU organizational framework.

Figure 2-3 Team Structure for Stakeholder Engagement



2.6.2 LPMU is to assign a stakeholder engagement division within the TPST organogram structure with a clear roles, responsibilities, and processes to undertake effective engagement activities during the Project lifecycle. The role/ responsibilities for each personnel in the typical Stakeholder Engagement division on organogram are given in **Table 2-6**.

Table 2-6 Proposed Roles and Responsibilities in SEP

Title	Role/Responsibilities
Stakeholder Engagement Manager	• Oversee the execution, tracking, and assessment of the Stakeholder Engagement Plan (SEP), including the communication strategy and budget for stakeholder engagement activities. • Identify and assess external stakeholders related to the sub-project. • Develop and propose strategies for effective engagement and external relations. • Build and maintain relationships with government officials at national, provincial, and local levels. • Coordinate and supervise the execution of the Livelihood Restoration Plan and community development programs ensuring alignment with stakeholders engagement strategies. • Assign specific responsibilities to units or personnel involved in the implementation of the LRP, including coordination with the Livelihood Restoration Unit. • Manage, supervise, and monitor the planning, development, and implementation of overall programs and activities, as well as budgeting within the stakeholder engagement division in alignment with the SEP. • Supervise the Stakeholder Engagement Officer, Grievance Mechanism Officer, and other relevant personnel involved in stakeholder engagement activities • Plan and oversee the implementation of the SEP and grievance mechanism.
Stakeholder Engagement Officer	• Collaborate with the Stakeholder Engagement Manager to coordinate, communicate, and monitor the implementation of stakeholder engagement programs. • Execute engagement and monitoring activities as outlined in the Stakeholder Engagement Plan (SEP). • Support the implementation of the Livelihood Restoration Plan by facilitating consultations with affected households, assisting in data collection and verification, coordinating with relevant government agencies, and monitoring the effectiveness of resettlement measures. • Ensure coordination with the Livelihood Restoration Units to align resettlement activities with livelihood restoration efforts. • Document all stakeholder engagement activities in the stakeholder log. • Monitor and manage the attitudes and behaviors of local stakeholders regarding the Sub-project's activities. • Establish and maintain relationships with various stakeholders, including government officials, community groups, businesses, and NGOs. • Maintain close communication and coordination with the external relations officer and grievance mechanism team regarding the SEP's implementation. • Review monthly data collection and submit monitoring data to the Stakeholder Engagement Manager.

Title	Role/Responsibilities
Grievance Mechanism Officer	• Implement and manage the grievance mechanism, including receiving, acknowledging, logging, following up, and resolving grievances, as well as handling other tasks outlined in the Grievance Mechanism. • Report to and coordinate with the Stakeholder Engagement Manager on all grievance matters. • Maintain close communication and coordination with the Stakeholder Engagement Officer regarding the implementation of the Stakeholder Engagement Plan (SEP). • Support the execution of the stakeholder engagement program and its activities. • Ensure all grievances related to livelihood restoration are properly recorded, categorized, and addressed in collaboration with the Livelihood Restoration Units

2.7 Monitoring and Reporting

2.7.1 The implementation of SEP will be subject to quarterly monitoring and reporting to evaluate the environmental and social controls and procedures in place, ensuring their continued applicability to the activities in question. Reviews will be conducted by the Project Proponent/Local Government, and the full SEP, as well as the monitoring and reporting frequency, will be subject to review and update as necessary based on the monitoring outcomes and stakeholder engagement developments.

2.8 Estimated Budget of Stakeholders Engagement Activities

2.8.1 The estimated budget to implement the SEP from planning to operation, including the GRM and GAP related activities is provided in **Appendix 3** (showing the detailed breakdown by program). The fund for the estimated budget will be allocated and provided by the LGU.

3 GENDER ACTION PLAN

3.1 Background

3.1.1 The importance of a gender action plan in Temanggung is highlighted by evidence showing a strong link between women's empowerment and poverty reduction, demonstrating that tackling gender inequality is crucial for achieving wider economic objectives. However, creating such a plan requires a nuanced understanding of the cultural, economic, and legal factors that influence women's experiences in the region. A comprehensive approach to these issues will allow stakeholders to foster a more equitable environment that advances women's rights and involvement in all areas of society, ultimately supporting sustainable development in Temanggung.

3.1.2 The Asian Infrastructure Investment Bank (AIIB) is committed to promoting strong, mandatory, and self-sufficient gender policies. Under AIIB's Environmental and Social Framework, the identification of gender-specific risks and opportunities that could be harmful is expected to be explored. Therefore, the implementation of a Gender Action Plan aims to support this vision

3.2 Legal and Policy Framework Relevant to Gender

3.2.1 The Temanggung government has demonstrated a strong commitment to gender equity. It has enacted regulations such as the Peraturan Daerah Kabupaten Temanggung No. 14 Tahun 2020 about empowering and protecting women, and Peraturan Daerah Kabupaten Temanggung No. 19 Tahun 2020 about fulfilling children's right

3.2.2 The applicable regulation to temanggung is as follow

- Law Number 7 of 1984 concerning the Ratification of the Convention on the Elimination of All Forms of Discrimination against Women
- Law Number 39 of 1999 concerning Human Rights
- Law Number 35 of 2014 concerning Amendments to Law Number 23 of 2002 on Child Protection
- Law Number 13 of 2006 concerning the Protection of Witnesses and Victims
- Law Number 21 of 2007 concerning the Eradication of Human Trafficking Crimes
- Law Number 11 of 2009 concerning Social Welfare
- Law Number 23 of 2014 concerning Regional Government
- Ministerial Regulation Number 2 of 2008 concerning the Implementation of Women's Protection
- Ministerial Regulation Number 3 of 2008 concerning the Implementation of Child Protection
- Ministerial Regulation Number 1 of 2010 concerning Minimum Service Standards for Integrated Services for Women and Children Victims of Violence
- Ministerial Regulation Number 2 of 2011 concerning the Empowerment of Women Victims of Violence
- Ministerial Regulation Number 19 of 2011 concerning the Empowerment of Women Victims of Violence

- Ministerial Regulation Number 68 of 2013 concerning the Obligation of Health Service Providers to Provide Information on Acts of Violence against Children
- Ministerial Regulation Number 4 of 2018 concerning Guidelines for the Establishment of Regional Technical Implementation Units for the Protection of Women and Children
- Presidential Instruction Number 9 of 2000 concerning Gender Mainstreaming in Development
- Presidential Instruction Number 5 of 2014 concerning the National Movement to Address Sexual Violence against Children
- Minister of Public Works Decree Number 165/KPTS/M/2013 concerning the Establishment of a Gender Mainstreaming Team at the Ministry of Public Works

3.3 Gender Context of Waste Facilities

3.3.1 Non-inclusive waste services can exacerbate existing social and economic inequalities in vulnerable groups, such as poor families, people with disabilities, and indigenous communities, often live in areas with minimal infrastructure, including poor waste facilities. Gender-sensitive and socially inclusive waste management can help mitigate these negative impacts by providing equal and accessible facilities for all, as well as creating opportunities for economic participation through recycling and waste management programs.

3.3.2 Adopting a gender and social inclusion perspective in waste management in waste facilities opens opportunities to empower women and other vulnerable groups. Training programs, community participation, and involvement in the circular economy can improve their well-being and quality of life. This aligns with AIIB policies. To achieve this goal, inclusive and gender-responsive waste management must be an integral part of development policies and programs in Temanggung.

3.4 Gender Context of the Project Area of Temanggung

3.4.1 The importance of a gender action plan in Temanggung is highlighted by evidence showing a significant disparity in women's participation in professional roles. In Temanggung Regency, Indonesia, women's workforce participation remains below 50%, with the majority engaged in the informal sector and facing limited access to advanced technology. Key barriers to women's empowerment in micro-economic enterprises include funding challenges, limited market access, inadequate human resources, and poor coordination between regional institutions. Internal obstacles such as limited entrepreneurial knowledge and cultural factors also hinder progress.

3.4.2 The gender action plan aligns with the Grand Design of Gender Mainstreaming (PUG) in Temanggung, which aims to achieve gender equality and justice through comprehensive planning and budgeting processes. The implementation of PPRG (Gender Responsive Planning and Budgeting) in Temanggung has been recognized, with the regency being nominated for the Anugerah Parahita Ekapraya (APE) award for its commitment to gender mainstreaming, as highlighted by the Provincial Government of Jawa Tengah. The regional government has also established policies and regulations to support gender mainstreaming, such as Peraturan Daerah Kabupaten Temanggung Nomor 14 Tahun 2020 about women's empowerment and protection, and Peraturan Bupati Temanggung Nomor 25 Tahun 2018 about the implementation of gender mainstreaming in the regency

3.5 Gender Action Plan Matrix

3.5.1 The Gender Action Plan offers a framework for integrating gender considerations across project sectors, featuring 14 strategic recommendations meant to guide rather than mandate action. Implementation should be flexible, adapting to specific contexts and effectiveness. Adherence to the plan's principles is encouraged. Approaches that align with overall goals and demonstrate effectiveness is deemed to be beneficial. Key highlights of the recommendations include:

- Socialize the Development Plan for the Sanggrahan TPST Facility with Community Involvement.
- Address Gender Wage Gaps, Lack of Social Security, and Unsafe Working Conditions for Female Workers.
- Prevent Gender-Based Violence and Sexual Exploitation.
- Protect the Livelihoods of Women Waste Pickers and Other Affected Persons, Including Disabled Individuals and Elderly.
- Mitigate Exposure of Women to Toxic Waste and Hazardous Chemicals at RDF Mills to Safeguard Their Health.
- Improve Air, Water, and Environmental Quality to Protect Women and Communities Near the RDF Plant and Landfill.
- Preserve the 1 Suro Traditional Ceremony and Other Cultural Practices Significant to Women.
- Create a Flexible Work Environment for Women Wastepickers, Accommodating Their Household Chores and Additional Labor Roles.
- Promote Women's Economic Empowerment to Strengthen Overall Economic Growth and Stability.
- Utilize the TPST as an Educational Waste Tourism Site Focusing on Women's Economic Role
- Address Odor Complaints from Agricultural Areas 5 km Downwind of the Landfill Impacting Women Farmers.
- Implement Gender-Responsive Facility Management and Design to Accommodate Different Gender Needs
- Ensure Participatory Monitoring and Evaluation with a Focus on Women’s Perspectives.
- Establish an Inclusive and Accessible Complaint Mechanism for Women and Other Vulnerable Groups.

Table 3-1 Gender Action Plan Matrix

Objective	Activity	Output	Success Indicators	Time	Person responsible
Socialize the Development Plan for the Sanggrahan TPST Facility with Community Involvement					
1. Disseminate the TPST development plan widely to the community and stakeholders.	• Conducting public meetings and focus group discussions (FGDs) with communities and stakeholders, including representatives of vulnerable groups and all gender Vulnerable groups include People with Disabilities, senior citizens, and low-income community. • Disseminating information through local print, online and social media to be distributed to all parts of impacted community	The community and stakeholders receive information regarding the Sanggrahan TPST development plan.	The number of public meetings and FGDs held, as well as the scope of information distribution through the media used.	3-6 months	Consultant, Local Government, Temanggung Environmental Service
2. Increasing public understanding of the benefits and impacts of TPST Sanggrahan	• Holding workshops or seminars on waste management and the impact of TPST on the environment. • Distribution of educational leaflets or brochures to the surrounding community.	Communities have a better understanding of the benefits and impacts of TPST development.	The amount of community participation in workshops and seminars, as well as the level of measurable community understanding.	3-6 months	Consultants, Environmental Services, NGOs, Community Leaders
3. Identify and respond to community concerns or input regarding TPST	• Opening channels for complaints and input for the community regarding TPST development plans. • Hold special meetings to respond to community concerns.	Documented reports of input and complaints from the public and responses from the government	The number of inputs or complaints responded to by the government and public satisfaction with these responses.	3-6 months	Consultants, Local Government, Environmental Services, Communication Team
4. Involving local communities in the TPST socialization and development process	• Forming community working groups to assist in the process of socialization and citizen involvement. • Involving community leaders in the decision-making process related to TPST.	Community working groups actively assist in the socialization and development of TPST.	The number of local communities involved in socialization and the level of participation of community leaders.	6 months	Consultants, Environmental Services, Local Government, NGOs
5. Providing transparent information about TPST development plans	• Create an online information portal that provides details about the TPST development plan. • Distribute project progress reports periodically.	Publicly accessible online information portal and published progress reports.	Number of visitors to the information portal and distribution of project progress reports to the public.	6-12 months	Consultant, Environmental Service, Local Government IT Team
Address Gender Wage Gaps, Lack of Social Security, and Unsafe Working Conditions for Female Workers.					

Objective	Activity	Output	Success Indicators	Time	Person responsible
1. Increase the wages of female workers	• Negotiations with contractor management regarding wage adjustments for female workers. • Create a collective work agreement that takes into account wage equality	Equal pay adjustment for female workers	There is a revision of the policy regarding equal and increased wages for female workers.	6-12 months	Consultant Local Government, Contractors
2. Increasing access of female workers to social security	• Counseling on the importance of social security for female workers. • Registration of female workers in the BPJS Employment and BPJS Health programs	Increasing the number of female workers registered with BPJS Employment and Health.	All female workers in the RDF and TPA factories are registered under the social security program.	6-12 months	Contractors, Local Government / Department of Manpower, BPJS
3. Improving occupational safety and health (OH&S) for women	• Occupational safety audit and evaluation in RDF and TPA factory areas. • Provision of personal protective equipment (PPE) specifically for female workers according to safety standards • Customization of OH&S trainings to include element specified for women	OH&S audit reports and provision of adequate PPE as well as the implementation of OH&S training for female workers.	Reduction in the number of work accidents in RDF and TPA factories and increased participation of women in training.	6-18 months	Department of Manpower, Contractors, Trade Unions
4. Empowering female workers through skills training	• Technical and non-technical training related to waste management, RDF technology and recycling for women workers. • Capacity building through entrepreneurship training in the field of waste management.	Female workers are more skilled and empowered in the areas of waste management and RDF technology.	Increasing the number of skilled female workers and getting better jobs or businesses.	6-24 months	NGOs, Local Governments, Contractors
5. Prevent discrimination in wages and employment opportunities	• Development of anti-discrimination policies in RDF factory and landfill environments. • Formation of a monitoring team to ensure the policy is implemented properly	Anti-discrimination policies on wages and employment opportunities are implemented in RDF and TPA factories.	There were no reports of discrimination in wages or job opportunities against female workers.	6 months - 1 year	Contractors, Manpower Department, related NGOs

Objective	Activity	Output	Success Indicators	Time	Person responsible
6. Increase women participation in work force with Gender-responsive hiring	• Develop a woman participatory program in workforce in project cycle • Develop a hiring mechanism that commits to non-discrimination, equal opportunity and fair treatment of all candidates. This includes developing HR policies and code of conduct that adhere to the commitments.	• Anti-discrimination hiring policies and code of conduct • Increase of woman participation in the sub-project	There's a provision of HR policies adhering to the commitment, compliment with programs that endorse women's partnership in the cycle	6-12 months	Contractors, Department of Manpower
Prevent Gender-Based Violence and Sexual Exploitation.					
1. Preventing gender-based violence (GBV), exploitation and sexual harassment (EPS) in the work environment	• Develop and implement a clear anti-GBV and SEAH policy with strict sanctions for perpetrators. • Conducts regular socialization and training sessions on anti-GBV and SEAH policies for all workers. • Ensure that the policies, guidelines and facilities comply with the international standards recognized standards and guidelines (e.g. ILO Convention No. 190 - Violence and Harassment Convention, 2019, UN SDG 5: Gender Equality and Women's Empowerment, and WHO guidelines. • Integrate ILO and WHO standards into labor camp and worker accommodation management. •	• Official anti-GBV and SEAH policy document. • Training materials (posters, modules, videos, etc.). • Reports on training and awareness sessions conducted.	• At least 90% of workers complete anti-GBV and SEAH training. • Pre- and post-training surveys show increased awareness of policies and sanctions. • Annual review and monitoring reports show adherence to anti-GBV and SEAH policies. 4. Establishment of a grievance mechanism with accessible reporting channels.	3-6 months	Contractor, Department of Manpower
2. Building awareness and knowledge about prevention of GBV and SEAH	• Regular training to all workers on preventing gender-based violence and sexual harassment. • Installation of visual educational materials (posters, leaflets) in the workplace.	Regular training for all workers and educational materials posted in the work area.	The number of trainings held, the level of worker participation, and their understanding of GBV and SEAH issues.	6-12 months	Contractors, Gender NGOs, Department of Manpower

Objective	Activity	Output	Success Indicators	Time	Person responsible
3. Providing a safe and confidential complaint channel for victims of GBV and SEAH	• Creation of a special and safe complaint channel (online and offline) for victims of GBV and SEAH. • Provision of counseling and psychological support for victims.	Safe channels for complaints and psychological counseling are available to victims.	The number of complaints filed through special channels, as well as the number of victims who received psychological assistance.	3-6 months	Contractors, NGOs, Women's Empowerment Service
4. Reducing the risk of GBV and SEAH in the workplace	• Implementing an internal security patrol system and installing CCTV in vulnerable work areas. • Provide adequate lighting throughout the factory and landfill areas.	Better security systems through patrols and CCTV as well as adequate lighting in the workplace.	Reducing the number of GBV and SEAH incidents in the work area and increasing the sense of security for female workers.	6-12 months	Contractors, Security Team
5. Developing emergency response mechanisms for GBV and SEAH cases	• Form a rapid response team to handle GBV and SEAH cases in the workplace. • Developing fast and safe handling procedures for GBV and SEAH victims.	A rapid response team ready to handle GBV and SEAH cases and clear handling procedures.	Fast response time to GBV and SEAH reports and the level of victim satisfaction with case handling.	3-6 months	Contractor, Women's Empowerment Service
6. Conduct periodic evaluation and monitoring of anti-GBV and SEAH policies	• Conduct periodic evaluations of the implementation of anti-GBV and SEAH policies. • Involve workers in monitoring and evaluating policy implementation.	Periodic evaluation and monitoring reports regarding the implementation of anti-GBV and SEAH policies.	There are regular reports and continuous improvements based on evaluation results.	Every 6 months	Contractors, Manpower Department, NGOs
Protect the Livelihoods of Women Waste Pickers and Other Affected Persons, Including Disabled Individuals.					
1. Reducing the impact of loss of livelihood for women waste pickers including the elderly	• Identification and data collection of affected Wastepickers. • New skills training and livelihood diversification for waste pickers (e.g., recycling, waste management).	• Complete data collection of affected Wastepickers and new skills training programs as part of employment of the impacted actors	Reduction in the number of affected Wastepickers who lost their livelihoods and transformation of loss of livelihood to new employment opportunities.	6-12 months	Local Government, NGOs, Contractors

Objective	Activity	Output	Success Indicators	Time	Person responsible
	• Employment of informal workers that are impacted with loss of livelihood to be part of project cycle	• Programs for employing impacted people with loss of livelihood			
2. Supporting small women owned or women led business (e.g. junk shops, kiosks)	• Counseling on modern recycling business management. • Facilitate access to microcredit for small business diversification.	Increasing the capacity of small business owners to manage recycling businesses or new businesses.	The number of small businesses that are able to survive or grow through business diversification and access to credit.	6-18 months	Local Government, Local Banks, NGOs
3. Mitigating the impact on garbage truck drivers and transportation workers	• Development of re-skilling and up-skilling programs for garbage truck drivers. • Provision of alternative work programs in RDF factories or logistics related fields.	New training and job placement program for garbage truck drivers.	The number of truck drivers who have successfully found new jobs in the logistics or waste management sectors.	6-12 months	Department of Manpower, Contractor
4. Providing solutions for affected entities (junk shops, kiosks, commercial establishments)	• Facilitate cooperation between affected entities and RDF plants in recycling and waste management processes. • Support for small businesses through business incubation.	New business collaboration between affected entities and RDF mills.	The number of affected entities that successfully established business partnerships or accessed business incubation programs.	1-2 years	Local Government, Contractors, NGOs
5. Managing impacts on women owned or women led local land and resource	• Establishing consultation forums with local communities regarding land and resource use.	Community consultation forums are underway and environmental rehabilitation programs are being implemented.	The level of community participation in consultation forums and the success of environmental rehabilitation programs.	1-2 years	Local Government, Contractors, related NGOs
6. Providing adjusted compensation for women based on their caretaking role	• Establishment of fair compensation mechanisms for affected groups. • Socialization and distribution of compensation funds.	A transparent and targeted compensation scheme for affected parties.	Number of affected parties who received fair and timely compensation.	6-12 months	Local Government, Contractors
Mitigate Exposure of Women to Toxic Waste and Hazardous Chemicals at RDF Mills to Safeguard Their Health.					
1. Protecting women's health from exposure to toxic waste and	• Procurement of environmental audits and identification of sources of toxic waste at RDF plants.	Environmental audit report and implementation of hazardous waste management system according to OH&S standards.	Reducing the levels of hazardous waste in the RDF factory work environment.	6-12 months	Local government/Health Department, Environmental

Objective	Activity	Output	Success Indicators	Time	Person responsible
hazardous chemicals	• Implementation of a hazardous waste management system that complies with OH&S (Occupational Safety and Health) standards.				Department, Contractors
2. Preventing direct exposure of women to hazardous chemicals	• Provision of Personal Protective Equipment (PPE) specifically for female workers. • Improved standard operating procedures (SOPs) to reduce the risk of chemical exposure.	Provision of PPE and special SOPs for the protection of female workers in the RDF factory environment.	All female workers are equipped with adequate PPE and SOPs are implemented with discipline.	3-6 months	Contractor, Health Department
3. Raising awareness of reproductive and long-term health risks	• Education and outreach programs regarding reproductive and long-term health risks due to exposure to chemicals.	Increasing knowledge of working women regarding reproductive health risks and how to prevent them.	Increasing participation of female workers in health risk awareness and socialization programs.	6-12 months	Health Department, Reproductive Health NGOs, Contractors
4. Providing access to special health services for working women and elderly group	• Provision of routine health checks for exposure to chemicals for female workers. • Provision of reproductive health consultation services.	Routine health check-up programs and reproductive health consultation services are accessed by workers.	Increasing the number of working women undergoing routine health checks and reproductive consultations.	6-18 months	Health Department, Health Clinic, Contractor
5. Monitoring and reducing long-term health impacts on working women	• long-term health monitoring program through collaboration with local clinics or hospitals. • Compilation of a health database for female workers.	Documented health database of working women and long-term health monitoring program.	Health data of female workers is documented and there is a regular health monitoring mechanism.	1-2 years	Health Department, Contractors, Hospitals
Improve Air, Water, and Environmental Quality to Protect Women and Communities Near the RDF Plant and Landfill.					
1. Improving air quality around RDF plants and landfills within impacted area of women led household and house mothers.	• Installation of air quality monitoring equipment around factories and landfills. • Planting trees in the surrounding area to absorb air pollutants. • Use of environmentally friendly technology in the RDF production process.	Real-time data on air quality and green areas around the factory. Implementation of low emission technology.	Reduction in air pollution levels (PM2.5, CO2, NOx) based on environmental monitoring and audit results.	6-12 months	Department of Environment, Contractor

Objective	Activity	Output	Success Indicators	Time	Person responsible
2. Maintaining water quality in the areas around factories and landfills within impacted area of women led household and house mothers.	• Installation of liquid waste treatment system (water treatment) in RDF and TPA factories. • Regular monitoring of ground and surface water quality. • Cleaning and maintenance of water channels.	Water quality reports obtained from periodic monitoring and the functioning of the wastewater treatment system.	Improving water quality based on water quality standard parameters (pH, BOD, COD, TDS).	6-18 months	Department of Environment, Contractor
3. Reducing the negative impact on the surrounding environment within impacted area of women led household and house mothers	• Implementation of ISO 14001 based environmental management system in RDF factory. • Rehabilitation of land around the RDF factory and landfill damaged by operational activities.	ISO 14001 certification for RDF plants and rehabilitated land with suitable crops	The RDF plant obtained ISO 14001 certification and the degraded land experienced increased vegetation and biodiversity.	1-2 years	Contractor, Environmental Service
4. Reducing greenhouse gas emissions from RDF mill activities within impacted area of women led household and house mothers	• Implementation of more efficient and low-emission waste management technologies (for example, anaerobic digestion or pyrolysis technology). • Use of renewable energy in RDF plants.	Low emission technology implemented and use of renewable energy in RDF plant	Reduction of greenhouse gas emissions from factory activities based on environmental audit reports and use of renewable energy.	1-2 years	Contractors, Local Government, NGOs
5. Involving the community in environmental conservation within impacted area of women led household and house mothers	• Environmental socialization and education to the surrounding community about the importance of maintaining air and water quality. • Greening and environmental conservation programs that involve the community.	Active community participation in greening programs and increasing environmental awareness.	The number of people participating in environmental programs and increasing green areas around the factory.	6-12 months	Environmental NGOs, Environmental Services, Contractors
Preserve the 1 Suro Traditional Ceremony and Other Cultural Practices Significant to Women.					

Objective	Activity	Output	Success Indicators	Time	Person responsible
1. Ensuring that the 1 Suro ceremony and other traditional ceremonies continue to take place at the RDF and TPA project locations without disruption.	• Conducting dialogue with community leaders and traditional leaders regarding the implementation of the 1 Suro ceremony and other traditional ceremonies in the project area. • Drafting a joint agreement between the project party and the indigenous community regarding the implementation of ceremonies at the project location.	Joint agreement between project management and indigenous communities regarding the implementation of the 1 Suro ceremony and other traditional ceremonies.	The number of dialogue meetings held and written agreements reached on the ceremony.	3 months before 1 Suro	Contractors, Traditional Leaders, Local Government
2. Maintaining local customary and cultural spaces during project construction	• Provide a special space in the project area for holding ceremonies. • Ensure project activities do not interfere with the preparation and implementation of the ceremony.	A special area for ceremonies is available at the project site, and project operations are arranged to respect customary activities.	A special room was prepared, and project activities were temporarily suspended during the ceremony.	1 month before the ceremony	Contractor, Project Operations Team
3. Involving local communities in carrying out the 1 Suro ceremony and other traditional ceremonies	• Inviting local community participation in the preparation and implementation of the ceremony. • Holding joint cooperation between the project and the community in order to prepare for the ceremony.	Active community participation in the 1 Suro ceremony and other traditional ceremonies at the project location.	The amount of community participation in ceremonies and mutual cooperation activities.	2 weeks before the ceremony	Contractors, Community Leaders, Project Teams
4. Promoting local cultural values to project workers	• Conducting outreach to project workers about the importance of the 1 Suro ceremony and other traditional ceremonies for the local community. • Disseminating information about customs through internal project media.	Project workers understand and respect local cultural values, including the 1 Suro ceremony and other traditional ceremonies.	The level of understanding of project workers regarding local cultural values and the absence of disturbance during the implementation of the ceremony.	1 month before the ceremony	Consultant, Contractor, HRD, Traditional Leader
5. Reducing the operational impact of the project during the ceremony	• Prepare a project operational schedule that is adjusted to the implementation of the ceremony. • Reduce activities that cause noise or disturbance during the ceremony.	The project schedule was adjusted and project activities were stopped during the ceremony.	There were no complaints from the public regarding project disruptions during the ceremony and the ceremony ran smoothly.	The day of the ceremony	Contractor, Project Operations Team

Objective	Activity	Output	Success Indicators	Time	Person responsible
6. Conduct documentation and reporting on the 1 Suro ceremony and other traditional ceremonies	• Documenting the implementation of ceremonies for project and community archive purposes. • 2. Make a report on the ceremony activities as part of the project's social report.	Documentation of the ceremony is available and activity reports are published as part of the project's CSR.	Availability of documentation and activity reports that can be accessed by the public and stakeholders.	After the ceremony	Contractor, Project CSR Team, Local Media
Create a Flexible Work Environment for Women Wastepickers, Accommodating Their Household Chores and Additional Labor Roles.					
1. Protecting the rights of female Wastepickers from Sanggrahan Village, especially in working on RDF and TPA projects	• Holding dialogues with representatives of waste pickers to listen to their needs and complaints. • Create protection policies for female waste pickers in RDF and TPA projects.	Policy for the protection of female Wastepickers in the project and increasing access to resources and employment opportunities.	Formulation of policies to protect female Wastepickers and reduction in cases of discrimination or harassment.	3 months	Consultants, Contractors, Manpower Department, Local NGOs
2. Improving safe and decent working conditions for women waste pickers	• Provide adequate working facilities, such as clean and safe shelter. • Providing occupational safety training for Wastepickers.	Adequate work facilities and occupational safety training programs for female Wastepickers.	Percentage of female Wastepickers who participated in training and improved work safety conditions in the field.	6 months	Consultants, Contractors, Manpower Department, NGOs, Contractors
3. Improving the economic welfare of female Wastepickers	• Providing access to vocational training programs to increase alternative incomes. • Facilitating access to social security programs.	Skills training programs implemented and social security access available to Wastepickers.	The number of Wastepickers who participated in skills training and received social security.	6-12 months	Department of Social Services, Department of Manpower, Local NGOs
4. Reducing the double workload for female Wastepickers who also work as farm laborers or porters	• Providing flexible working hours and a fair rotation system for female waste pickers. • Providing support services such as childcare and health facilities.	Flexible work schedules and support services are available for women waste pickers.	The level of satisfaction of female Wastepickers with work flexibility and supporting facilities provided.	3-6 months	Consultants, Contractors, NGOs, Local Governments
5. Ensuring participation of female waste pickers in project decision making	• Involve female waste picker representatives in the project's environmental committee.	Active participation of female waste pickers in decision making and meetings with project management.	The number of female waste pickers involved in the committee and the frequency of meetings held.	Every 3 months	Consultants, Contractors, NGOs, Environmental Services

Objective	Activity	Output	Success Indicators	Time	Person responsible
	• Holding regular meetings to convey their aspirations regarding the RDF and TPA projects.				
6. Protecting female waste pickers from the risk of harassment and violence in the workplace	• Develop anti-harassment and workplace violence policies. • Providing a safe and confidential complaint mechanism for women waste pickers.	An active and secure anti-harassment policy and complaint mechanism.	Reduction in the number of reported cases of harassment and violence and satisfaction with complaint handling.	6 months	Consultants, Contractors, Manpower Office, NGOs, HRD
7. Ensuring the sustainability of women Wastepickers' jobs post-RDF and TPA projects	• Develop local entrepreneurship programs or other employment opportunities outside of RDF and TPA projects. • Facilitating access to business capital and entrepreneurship training	Entrepreneurship programs and capital access for female Wastepickers for job sustainability	The number of Wastepickers who switch to entrepreneurship or other sustainable jobs.	12-18 months	Cooperatives Department, Local NGOs, Banks or Financial Institutions
Promote Women's Economic Empowerment to Strengthen Overall Economic Growth and Stability.					
1. Increasing the participation of women and disadvantaged groups in project economic activities	• Allocate special job quotas for women and disadvantaged groups in projects. • Conduct skills training to prepare them for project related work.	Number of women and disadvantaged groups getting jobs in the project	Percentage increase in target group participation in the project workforce.	3-6 months	Consultants, Contractors, Manpower Office, NGOs, HRD
2. Increasing access of disadvantaged groups to project-related business opportunities	• Providing access to micro-business credit to support local business development. • Providing entrepreneurship training for women and disadvantaged groups.	Access to micro-credit and entrepreneurship training programs for women and disadvantaged groups	Number of micro-enterprises formed and level of participation in entrepreneurship training	6-12 months	Cooperatives Department, Social Services Department, Local NGOs, Government Banks
3. Supporting women's economy with safer and more stable jobs	• Develop safer alternative employment programs for women, such as craft production or waste processing. • Providing technical support and capital for sustainable businesses	Safer new businesses for women with capital support and technical training.	The number of women turning to safer and more stable alternative jobs.	6 months	Cooperatives Department, NGOs, Local Government, Financial Institutions
4. Increasing local income and economic well-	• Involving local business groups in the project supply chain (providers of goods and services).	Business agreements between RDF projects and local	The number of local business groups involved in the project	6 months	Consultants, Contractors, Industry

Objective	Activity	Output	Success Indicators	Time	Person responsible
being through involvement in the project supply chain	• Prioritize products and services from women's business groups and disadvantaged communities.	goods/services providers, especially from women's groups.	supply chain and increasing local incomes.		and Trade Department, NGOs
5. Improving access of disadvantaged groups to social security and worker protection	• Facilitate the registration of Wastepickers and informal workers in the national social security program (BPJS). • Conducting outreach on workers' rights and access to social security.	Wastepickers and informal workers are registered in social security programs and have access to worker protection.	The number of workers registered with BPJS and a decrease in the number of workers without social protection.	3-6 months	Department of Manpower, BPJS, NGO, Project Management
6. Reducing the economic dependence of disadvantaged groups on informal and precarious work	• Building market-oriented education and skills training programs. • Facilitating access to employment opportunities in the formal sector.	Training programs and access to more stable formal employment for disadvantaged groups	The number of participants who successfully obtained employment in the formal or semi-formal sector.	12 months	Department of Education, Department of Manpower, NGOs, Project Management
Utilize the TPST as an Educational Waste Tourism Site Focusing on Women's Economic Role					
1. Making TPST an educational tourist spot about waste and garbage management and role of women in the process	• Designing an educational tourism concept based on waste management and RDF. • Building interactive educational facilities at TPST, such as a waste processing area that can be accessed by visitors, a small museum about waste management, and educational tours.	The concept of educational waste tourism at TPST is clear and the educational facilities are complete and interactive.	Number of visitors and educational institutions participating in educational visits to TPST.	6-12 months	Consultants, Contractors, Environmental Services, Education Team
2. Increasing public awareness about the importance of waste management through educational tourism	• Conducting educational tour programs and workshops related to waste management and RDF for schools, universities, and communities. • Conduct recycling and waste management training programs for local communities.	Educational tour and workshop programs related to waste management for various community groups.	The number of educational tours, workshops held, and increasing public knowledge about waste management.	6-12 months	Consultants, Contractors, Education Departments, NGOs, Schools

Objective	Activity	Output	Success Indicators	Time	Person responsible
3. Building supporting infrastructure for educational tourism at TPST	• Building public facilities, such as showrooms, visitor reception areas, and workshop areas. • Bulding supporting facilities, such as toilets, rest areas, and accessibility for people with disabilities.	Public facilities and supporting infrastructure for educational tourism that are suitable and comfortable for visitors.	Level of visitor satisfaction with facilities and services at TPST.	6 months	Consultant, Contractor, Tourism Office, Contractor
4. Providing educational materials and information media related to waste management	• Conducting educational tour programs and workshops related to waste management and RDF for schools, universities, and communities. • Conducting recycling and waste management training programs for local communities	Educational tour and workshop programs related to waste management for various community groups.	The number of educational tours, workshops held, and increasing public knowledge about waste management.	6-12 months	Consultants, Contractors, Education Departments, NGOs, Schools
5. Providing educational materials and information media related to waste management	• Develop educational materials such as brochures, videos, information boards, and interactive applications to support the visitor educational experience. • Providing tour guides with experts or trained guides.	Interactive educational materials that support waste education tourism programs.	The amount of educational materials provided and the level of visitor satisfaction with guidance and information.	6 months	Consultants, Contractors, Environmental Services, NGOs, Education Teams
6. Introducing the concept of circular economy and waste management to the community through TPST	• Providing an exhibition area that shows real examples of circular economy in waste management. • Hold regular information sessions on how the community can participate in waste management.	Permanent exhibitions and information sessions related to the concept of circular economy and the role of communities in waste management.	Number of information sessions held and level of community participation in TPST activities	12 months	Consultants, Contractors, Environmental Services, Education Services
7. Increasing local community involvement in educational tourism activities	• Involving local communities as tour guides, workshop facilitators, and producers of recycled goods sold at the TPST. • Conduct training for local communities to support the development of educational tourism at TPST.	Involvement of local communities in various roles in the development and operation of educational tourism at TPST.	The number of local communities involved in TPST programs and activities and increasing local income.	6-12 months	Consultants, Contractors, NGOs, Cooperatives Department, Tourism Department

Objective	Activity	Output	Success Indicators	Time	Person responsible
8. Ensuring TPST functions as a sustainable educational tourism destination	• Forming a professional educational tourism management team. • Create a long-term work program to maintain the sustainability of educational tourism at TPST.	Educational tourism management team at TPST and long-term work plan for educational tourism program.	Sustainability of educational tourism programs and increasing the number of visits each year.	12 months	Consultants, Contractors, Tourism Offices, NGOs
Address Odor Complaints from Agricultural Areas 5 km Downwind of the Landfill Impacting Women.					
1. Reducing odors from RDF and landfill plant activities within impacted area of women led household and house mothers	• Use of modern waste processing technologies that reduce odor production (for example, biofilter systems or covering disposal areas with geomembranes). • Installation of odor capture and filter devices in the disposal area.	Modern waste processing technology and installation of effective odor capture devices in RDF plants.	Decreased odor intensity in agricultural areas and Kayee Kunyet village according to air quality measurements and community complaints.	6-12 months	Contractor, Environmental Service
2. Monitoring air quality and odor intensity in the agricultural area and Kayee Kunyet village	• Installation of air quality and odor monitoring devices at several strategic points, including agricultural areas and Kayee Kunyet village. • Conduct regular odor intensity measurements, especially during the rainy season.	Measured and documented air quality and odor intensity data in the surrounding area	Air quality monitoring reports show a significant reduction in odor intensity.	6-12 months	Department of Environment, Contractor
3. Reducing odor impacts through better waste management integrated to household level	• Improved management of waste processing and rapidly decomposing wet waste to prevent rotting which causes odor. • Additional waste collection schedule during the rainy season to reduce waste piles.	Better waste management system with more regular collection frequency	The number of odor-related complaints was significantly reduced and wastewater treatment conditions were more controlled.	3-6 months	Contractors, Local Government
4. Monitoring wind and weather conditions for Odor management within impacted area of women led	• Collaboration with BMKG to monitor wind direction and weather conditions to predict when and where the odor will be strongest. • Implementation of a waste processing operating schedule that is more adaptive to weather conditions.	Early warning system and operational schedule adjusted to weather and wind conditions	The decrease in odor intensity as the wind carries the aroma from the landfill to the agricultural area and Kayee Kunyet village.	3-6 months	Contractors, BMKG, Environmental Service

Objective	Activity	Output	Success Indicators	Time	Person responsible
household and house mothers					
5. Improving the quality of life of communities affected by odor within impacted area of women led household and house mothers	• Providing compensation or subsidies for communities affected by odor to purchase air purifiers or plants that help reduce the impact of odor. • Providing incentives for farmers who experience losses due to decreased quality of agricultural products due to odor.	Compensation program for communities affected by odor and incentives for affected farmers	The number of affected communities receiving compensation and incentives, as well as improving the quality of life of residents	6-12 months	Local Government, Contractors
Implement Gender-Responsive Facility Management and Design to Accommodate Different Gender Needs.					
1. Creating gender-friendly and responsive facilities	• Conducting gender audits of existing facilities at RDF factories and landfills. • Involve gender experts in the design of new facilities.	Gender audit report and gender responsive facility design plan.	There is a facility plan that covers the specific needs of women, men and vulnerable groups.	3-6 months	Contractors, Gender NGOs, Consultants
2. Providing special rest rooms and breastfeeding rooms for female workers	• Construction or renovation of women-only rest rooms with breastfeeding areas. • Provision of adequate and private sanitation facilities for women workers.	Safe and appropriate rest and breastfeeding spaces. Adequate and separate sanitation facilities.	The availability of comfortable and standard space for working women, including for breastfeeding purposes.	6-12 months	Contractor
3. Improving the safety and comfort of the work environment for women and vulnerable group	• Implementation of anti-violence and sexual harassment policies in the workplace. • Provision of lighting and safe access to public facilities, such as toilets and rest areas. • Designated area for elderly, including provision of special seating areas designated to prioritize elders	Implemented anti-sexual violence policies and safe and friendly facilities for women.	Reducing incidents of violence or sexual harassment in the workplace and increasing the sense of security of female workers	6-12 months	Contractor, Department of Manpower
4. Accommodating the needs of male and female workers equally	• Provision of separate sanitation facilities for male and female workers. • Improved public facilities such as changing rooms and inclusive recreation areas.	Separate sanitation facilities and inclusive changing rooms.	Satisfaction of male and female workers with equal and comfortable facilities in the work environment	6-12 months	Contractor, Facility Consultant

Objective	Activity	Output	Success Indicators	Time	Person responsible
5. Providing special health facilities for working women and vulnerable group	• Construction of a health clinic that provides reproductive health services specifically for women. • Providing easy access to routine health checks.	Health clinic with specific services for working women and easier access to health care.	Number of working women using health services and improving reproductive health among workers.	6-18 months	Contractor, Health Department
6. Ensuring women's involvement in the facility design process	• Holding consultation forums that involve women workers in decision-making regarding facility design. • Involving women leaders in facility design teams.	Input from female workers in the facility design process.	The number of suggestions from female workers implemented in facility design.	3-6 months	Contractor, Gende NGO
7. Promoting safety of workers, especially those with physical constrains (elderly and PwD)	• Provision of working tools and gear to accommodate physical contains, preferably ergonomically designed • Developing new system and SOP's for wastepicker that involve usage of appropriate tools and PPE	Wastepickers to be equipped with PPE and Working tools that will help carry large amounts of waste and to pick waste without bending	The numbers of wastepickers equipped with tools and adhering to SOP	Monthly check	
Ensure Participatory Monitoring and Evaluation with a Focus on Women's Perspectives.					
1. Encourage community and worker involvement in project monitoring	• Socialization and participatory training for communities and workers on project monitoring. • Formation of a monitoring team consisting of workers, the community and the government.	A participatory monitoring team was formed and is active.	The number of communities and workers involved in the monitoring team, as well as active participation in monitoring.	3-6 months	Contractors, NGOs, Local Governments
2. Collect data periodically on the social and environmental impacts of the project.	• Conduct surveys and interviews with communities and workers regarding project impacts. • Using technology (e.g., apps) for real-time data monitoring.	Survey results reports and real-time monitoring data related to the project's social and environmental impacts.	Availability of detailed periodic data on social and environmental impacts and the number of complaints recorded.	6-12 months	Participatory Monitoring Team, Contractor
3. Evaluate the effectiveness of project implementation based on community feedback	• Conduct focus group discussions (FGDs) with communities, workers, and other stakeholders to evaluate the project. • Create a project evaluation report based on FGD results.	Evaluation report reflecting feedback from the community and workers regarding project implementation.	Number of recommendations from the community and workers implemented in project improvements.	6-12 months	Participatory Monitoring Team, Contractor

Objective	Activity	Output	Success Indicators	Time	Person responsible
4. Providing easily accessible complaint channels for the public and workers	• Creation of a complaint platform (online and offline) that is easily accessible to the public and workers. • Socialization of complaint mechanisms and conflict resolution.	A complaint platform that functions and is easily accessible to the public and workers.	The number of complaints received and handled in a timely manner and public satisfaction with the resolution of complaints	3-6 months	Contractors, Local Government
5. Ensuring transparency in the monitoring and evaluation process	• Publication of monitoring and evaluation results periodically to the public and stakeholders through print and online media. • Holding an open forum to discuss evaluation results	Monitoring and evaluation reports are published transparently and discussion forums are held.	The level of transparency recognized by the public and workers, as well as the number of discussion forums held.	6-12 months	Participatory Monitoring Team, Contractor
6. Improving policies based on the results of participatory evaluations	• Revise project operational policies based on participatory evaluation recommendations. • Develop an action plan for improvement involving the community and workers.	Revised operational policies and action plans for project improvement.	There is a revision of operational policies based on the results of participatory evaluation and community involvement.	6-18 months	Contractors, Local Government, Monitoring Team
Establish an Inclusive and Accessible Complaint Mechanism for Women and Other Vulnerable Group					
1. Providing inclusive and accessible complaint channels for all communities and workers	• Creation of multiplatform (online and offline) complaint channels that are friendly to various groups (including the elderly, disabled, women and children). • Procurement of physical complaint boxes in strategic locations around factories and landfills.	Functional online and offline complaint channels that are accessible to all members of the public and workers.	The number of complaints received from various community groups and workers and the ease of access to the complaint platform.	3-6 months	Contractors, Local Government
2. Ensuring the complaints process is transparent and responsive	• Develop clear SOPs for handling complaints with firm response time limits. • Provide regular reports on follow-up to complaints to the public and workers.	Documented complaint SOPs and periodic complaint reports published to the public.	The number of complaints resolved in a timely manner and the level of public and worker satisfaction with complaint handling.	6-12 months	Contractors, Complaints Team, Local Government
3. Educating the public and workers about complaint mechanisms	• Conduct periodic outreach to the community and workers regarding complaint procedures. • Hold regular workshops or meetings to explain how to file a complaint.	Level of public and worker awareness regarding complaint mechanisms.	Level of participation in workshops and number of complaints submitted through proper channels.	3-6 months	Contractors, NGOs, Local Governments

Objective	Activity	Output	Success Indicators	Time	Person responsible
4. Accommodating the needs of vulnerable groups in the complaints process	• Providing special access for complaints from vulnerable groups (e.g., special hotlines for women or people with disabilities). • Provide training for complaint handling officers on sensitivity to vulnerable groups.	Active dedicated complaint channels for vulnerable groups and training for complaint officers	The number of complaints from vulnerable groups processed and the level of satisfaction of vulnerable groups with complaint services.	6-12 months	Contractors, NGOs, Local Governments
5. Provides a reporting system that can be accessed in real-time	• Develop an online application or platform that allows real-time tracking of complaint status. • Install a complaint dashboard in a public area for complaint transparency.	An online complaint application or platform that allows the public to track the status of their complaints.	The level of use of complaint applications and real-time complaint tracking by the public and workers.	6-12 months	IT Team, Contractors, Local Government
6. Conduct periodic evaluations of the complaints system	• Conducting an evaluation of the complaint system every 6 months by involving the community and workers. • Holding an open discussion forum to get input from the public regarding the complaint system.	Report on the results of the evaluation of the complaint system and recommendations for improvement approved by the community.	The number of recommendations for improvement implemented in the complaint system based on evaluation results.	Every 6 months	Contractors, Local Government, NGOs

3.6 Estimated Budget of Gender Action Plan

3.6.1 The estimated budget to implement the SEP from planning to operation, including the GRM and GAP related activities can see **Appendix 3** for the detailed breakdown by program.

4 GRIEVANCE REDRESS MECHANISM

4.1 Introduction

4.1.1 The Grievance Redress Mechanism (GRM) plays a critical role in ensuring that all complaints from stakeholders, whether they are internal or external to the project, are promptly and appropriately addressed. This mechanism is designed to be responsive, transparent, and proactive, involving all relevant stakeholders in the process. As part of the grievance handling procedure, thorough records and documentation of each complaint are maintained to ensure accountability. The Grievance Redress Unit (GRU) regularly monitors this process, ensuring that no issues or complaints remain unresolved, which could otherwise pose potential risks to the smooth operation of the project.

4.1.2 This Grievance Redress Mechanism helps the sub-project to fulfil the requirements of:

- Environmental and Social Impact Assessment (ESIA) and AMDAL/UKL-UPL/Permitting process;
- AIIB Environmental and Social Framework;
- GOI Regulations

4.1.3 This Grievance Redress Mechanism also provides a guideline for the sub-project to align with international best practice in Stakeholder Engagement.

4.2 Purpose

4.2.1 The objectives of this Grievance Redress Mechanism are to:

- Ensure that grievances from Affected Communities and other external stakeholders are addressed and handled transparently and promptly.
- Create a system for addressing complaints in a manner that is empathetic, transparent, and culturally sensitive.
- Establish a complaint procedure that is accessible, transparent, and efficient for those involved or affected.
- Promote effective dialogue and maintain open communication channels with the public.
- Manage expectations and mitigate negative perceptions.
- Set up a process for investigating, responding to, and resolving complaints quickly.
- Enhance the project's social performance by using feedback from complaints to take corrective or preventive actions or develop responsive initiatives.
- Comply with international best practice.

4.3 Scope

4.3.1 The Grievance Redress Mechanism is designed to address issues faced by stakeholders involved in project activities and applies to all complaints arising from these activities. This mechanism provides a dedicated system for handling complaints from the general public, but it does not replace Indonesian legal procedures, existing employee grievance systems, standard business-to-business communication, or other established stakeholder management and communication procedures. Stakeholders are free to raise any issues

through this procedure. However, if a complaint is more appropriately addressed by other specific project processes (such as those related to labor issues or business integrity), it will be redirected to avoid duplication of efforts. All complaints submitted through this procedure will be tracked until resolution, regardless of the process used to address them.

4.3.2 This grievance redress mechanism is established to anticipate and address grievances of affected people and other stakeholders related to project impacts, including but not limited to the following associated project's impacts:

- Community health, safety and security concerns
- Reduction in water quantity/quality
- Noise, vibration and dust issues
- Land acquisition and resettlement (including economic displacement)
- Access restrictions
- Environmental quality parameters
- Employment or recruitment issues
- Risk of accidents and fatalities for road users
- Behaviour of staff/contractors/suppliers - Gender-based violence and violence against children.

4.4 Regulatory

4.4.1 Regulations related to the grievance redress mechanism are provided in this section:

- Law No. 32 of 2009 concerning Environmental Protection and Management;
- Law No. 25 of 2009 concerning Public Services;
- Law No. 14 of 2008 concerning Public Information Disclosure;
- Government Regulation No. 22 of 2021 concerning Implementation, Protection and Management of the Environment;
- Government Regulation No. 61 of 2010 concerning Public Services;
- Presidential Regulation No. 76 of 2012 concerning Public Service Grievance Management;
- Decree of Ministry of Environment No. SK 24/MENHUT-11/2015 concerning Team Handling Environmental and Forest Case Complaints;
- Regulation of the Ministry of Environment and Forestry P.22 / Menlhk / Setjen / Set.1 / 3/2017 concerning Procedures for the Management of Suspected Pollution Complaints and/or Environmental Damage and/or Forest Destruction;
- Presidential Regulations No. 62 of 2018 concerning Social Impact Management in procurement of land for National Development Projects; and
- Presidential Regulation No. 71 of 2012 concerning Management of Land Procurement for Development Public Interest

4.5 Summary of Existing GRM

4.5.1 The DPRKPLH of Temanggung Regency has established a dedicated complaint channel for waste management services in the region. Complaints can be submitted via WhatsApp at 0852-2956-5657, email at dprkplh.temanggungkab@gmail.com, or by phone at (0293) 4901569. These contact details have been made public through the DPRKPLH website and social media platforms (such as Instagram, Facebook, and Twitter). However, formal procedures related to the GRM are not yet available. Furthermore, documentation of complaints received by DPRKPLH Temanggung is also unavailable. A specific procedure needs to be designed to ensure that all stakeholder issues are systematically documented, addressed, and resolved in a transparent and timely manner.

4.6 Roles and Responsibilities

4.6.1 This section outlines the recommended roles and responsibilities related to the grievance redress mechanism, including the division of responsibilities among the grievance handling team. Please refer to the table below for a detailed description of the roles and responsibilities related to the grievance redress mechanism.

Table 4-1 Proposed Role and Responsibilities in the GRM

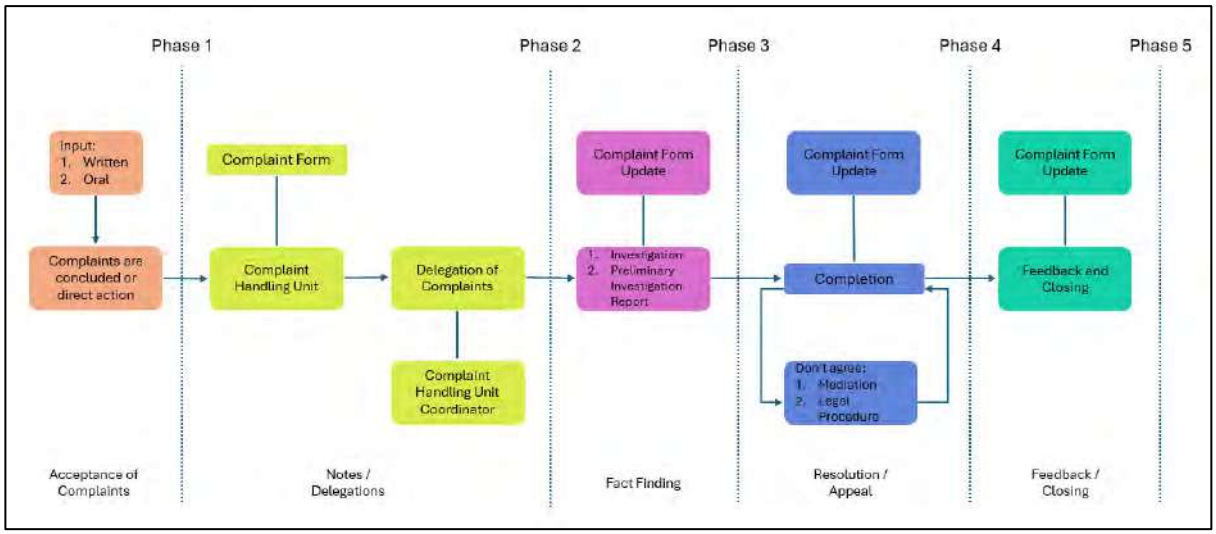
Proposed Role	*Position in Project*	*Description of The Responsibilities*
Grievance Redress Unit Manager (Grievance Coordinator)	To be determined (TBD) by local government/project proponent	The GRU Manager (Grievance Coordinator) is responsible for allocating the necessary resources to ensure that the grievance mechanism is implemented in accordance with the guidelines. The GRU Manager also serves as the main point of contact for the resolution of community complaints and grievances, and oversees the overall processing of grievances, including: The GRU Manager is responsible for the following: • Dissemination or publicising of the Grievance Mechanism • Logging and acknowledging receipt of grievances • Delegating responsibility for redress • Coordinating the GRU field team fact-finding mission • Facilitating decisions on resolution actions with aggrieved parties • Closing out grievances • Tracking and monitoring of all grievances • Generating reports of grievance activities • Coordinating with the designated institution responsible for handling sensitive grievances, particularly Gender-Based Violence and Harassment (GBVH) complaints, ensuring confidentiality and survivor-centered approaches. The Women's Empowerment and Child Protection Agency (Dinas Pemberdayaan Perempuan dan Perlindungan Anak/DP3A) or relevant unit within the Ministry of Social Affairs will handle and address GBVH complaints in collaboration with GRU
GRU Field Team/Officer (Grievance Contact)	To be determined (TBD) by local government/project proponent	GRU Field Officers and Grievance Contacts serve as the primary points of contact between the project and external stakeholders. They report to the GRU Manager. The GRU Field Officers are responsible for: • Publicise the Grievance Mechanism in project-affected communities and communicate its purpose and how to use it. • Attempt to mitigate grievances before they become formal complaints/disputes. • Obtain contextual data about a grievance from the aggrieved parties, community members, and through first-hand observational data (fact finding). • Receive grievances directly from stakeholders. • Log grievances in the Grievance Log or database. • Assisting the GRU Manager in evaluating grievances;

Proposed Role	*Position in Project*	*Description of The Responsibilities*
		• Assisting in identifying appropriate corrective action; • Communicating with stakeholders who have lodged grievances, advising them on status and eventually informing them of the decision taken; • Assisting in tracking the status of all grievances; and • Maintaining dialogue with external stakeholders on grievances received and how these are being resolved. • Referring GBVH-related grievances to the designated institution (e.g., DP3A or relevant social protection agencies) while ensuring survivor confidentiality and safety
GRU Database Administrator	To be determined (TBD) by local government/project proponent	The GRU Database Administrator shall ensure the quality of all log entries into the GM database and assist the GRU Manager in tracking dates and deadlines for grievance redress actions. The administrator shall also ensure that GBVH-related grievances are categorized and handled with strict confidentiality, with access limited to authorized personnel only.
Informal Grievance Recipient	To be determined (TBD) by local government/project proponent	• All project personnel, including direct employees, contractors, and subcontractors, are required to be aware of the Grievance Mechanism. If approached by community members with a grievance, they are obligated to report it to the GRU Field Officer or Manager promptly. • Project personnel must report GBVH-related grievances immediately to the designated GBVH response team or agency (e.g., DP3A, social protection units, or local women's organizations) following survivor-centered principles. • Ensuring confidentiality and non-retaliation for individuals reporting GBVH complaints
Third Party Appointed Grievance Recipient	To be determined (TBD) by local government/project proponent	• The Local Government/Project Proponent may appoint a third-party individual or organization to receive complaints from external stakeholders. • The assigned third-party recipient will record grievances and complaints and convey them to the GRU Field Officer (Grievance Contact) or GRU Manager for further processing. • For GBVH-related complaints, the third-party recipient must immediately refer cases to the designated authority (e.g., DP3A, police's Women and Children Protection Unit, or relevant social services agency) for survivor-centered handling

4.7 Grievance Mechanism Procedure

4.7.1 The procedures should be disseminated to stakeholders, including affected parties, in a language that is easily understood by the public, without imposing any fees or sanctions on those who report. The project GRU will regularly inform the complainant about the progress of the complaint handling and provide feedback.

Figure 4-1: Grievance Mechanism Flow Chart



4.7.2 **Figure 4-1** illustrates the flowchart of the Grievance Mechanism. There are five phases in the complaint handling mechanism:

- Phase 1: Acceptance of Complaints;
- Phase 2: Notes/Delegations;
- Phase 3: Fact Finding;
- Phase 4: Resolution/Appeal; and
- Phase 5: Feedback/Closing.

Table 4-2 Summary of Stages of grievance Process

Stage	Description	Responsibility	Timeline
Stage 1 : Acceptance of Complaints	1. Comments and Questions (verbal and/or in writing) are received, analyzed and registered as part of the standard feedback process. 2. All communication are subject to the feedback process, which ensure that feedback is documented incorporated and responded to as needed 3. When a grievance is identified, stage 2 of the grievance procedure is initiated	GRU Field Team/officer	-
Stage 2 : Notes/Delegations	1. When a grievance is identified, it is officially registered in a grievance log (see Appendix 12 for template of grievance log) and given a unique identification number. 2. It is categorized based on the type of complaint and its severity. Grievances are categorized into two (2) categories a. Low significance grievance, with the following characteristics : • It involves individual affected people only; • One-off grievance, less probability it will attract media attention; • Does not require immediate intervention from managerial level. b. High significance grievance, indicated by the following characteristics: • The complaint involves a large group of affected people; • The complaint has not been resolved during the time specified in this mechanism; • Recurring and potentially affecting the project activities schedule; • Potentially attracting media attention; • Requiring immediate intervention from managerial level. 3. An initial response is sent to the person who raised the grievance within six working days, acknowledging their feedback and describing the next stSEAH in the grievance process, time estimates for these stSEAH and a contact person. 4. The issue will be delegated to relevant unit/department to be follow up.	GRU Field Team/officer or GRU Database Administration GRU Manager (Grievance Mechanism Coordinator) for high significance grievance	Three days after receipts of grievance
Stage 3 : Fact Finding	1. The project will investigate grievance and their surrounding in a timely manner. Investigation may include photographs and other evidence, witness statements, interviews with affected stakeholders and other parties, review of site register and other information gathering activities	GRU Field Team/officer	Six days

Stage	Description	Responsibility	Timeline
	2. The results of the investigation will be reviewed and a resolution will be proposed. The development of the resolution may involve consultation with the person involved. The proposed resolution will then be formally communicated to all parties		
Stage 4 : Resolution/Appeal	1. If the resolution is accepted by all parties, it will be documented, implemented and the grievance is closed. 2. If the resolution is not accepted, it will be reconsidered and the following resolution may be proposed : a. If complainant is not satisfied with the proposed resolution either party resorts to a mediator/arbitrator b. Mediator/arbitrator then review the grievance and seeks resolution; c. Mediator/arbitrator proposes resolution d. If both parties are satisfied with the proposed resolution it will be documented. Implemented and the grievance is closed 3. If both parties are not satisfied with the proposed resolution, then the complainant or project will resort to the courts.	GRU Manager (Grievance Mechanism Coordinator) GRU Field Team/officer	Six days
Stage 5 : Feedback/Closing	After the accepted resolution has been implemented, it will be monitored and its effectiveness will be evaluated. All parties will be notified that the resolution has been implemented and will have the opportunity to provide feedback on the grievance process and its implementation	GRU Manager (Grievance Mechanism Coordinator) GRU Field Team/officer	Ten days

4.8 Training and Capacity Development

4.8.1 Training is required for personnel involved in the team that documents and manages external stakeholder complaints. The training participants consist of the grievance team including both field officers and managers, all Environment Agency project staff including contractors, and the community affected by the project. The goal of the training is for the participants to understand the grievance mechanism and be able to implement them effectively. The initial training required, and its participants are presented in **Table 4-3**.

Table 4-3: Training for Complaint Handling Unit, Environment Agency Project Staff, and PAPs

Participant	Training	Timing
Grievance Redress unit field officers and manager	• How to deal with grievances and how to manage grievance mechanism and processes. • Training of Trainers (ToT) to provide training about grievance procedures to any staff at any facility, supply chain, contractors, and community. • Data entry to database.	At the beginning of the position assignment or two months after assignment and first training has been attended.
All project staff including contractor	Learn about the grievance procedure	At induction and regularly
Project affected communities	Learn about the grievance procedure	When updated or new and then yearly/half yearly

4.9 Public Announcement and Disclosure GRM

4.9.1 The "Doing Better Business Through Effective Public Consultation and Disclosure: International Finance Corporation A Good Practice Manual" highlights the importance of public meetings as a key method for informing stakeholders about the results of the Environmental and Social Impact Assessment (ESIA) and gathering their feedback. These meetings should be held throughout both the construction and operational phases of a project, in line with the stakeholder engagement program detailed in Chapter 9 of the manual. To communicate project information effectively, various methods such as brochures, presentations, leaflets, posters, and discussions can be employed. However, it is crucial to handle issues related to Gender-Based Violence (GBV) and Violence Against Children (VAC) with the utmost confidentiality.

4.9.2 The project proponent or local government will use their existing website to publish project-related documents, including those on environmental and social performance, in both Indonesian and English. A dedicated web page for the project will be created, where all future environmental and social monitoring reports will be available. Updates, such as news on construction activities and relevant environmental and social data, will also be posted on the website's homepage. A user-friendly guide to environmental and social terminology, as well as information brochures and flyers, will be included. The website will feature details of the project's grievance redressal mechanism, along with an electronic complaints form. Contact information for the Community Liaison Team, including headquarters and local community officers, will also be provided. The project proponent will be responsible for regularly updating and maintaining the website.

4.9.3 Alongside utilizing the website and various communication platforms, the Project proponent will also distribute information via posters at the project site. These posters will prominently display the procedures for the GRM, ensuring that the affected community can easily comprehend and access the necessary information.

4.10 Estimated Budget of GRM

The estimated budget to implement the GRM from planning to operation, including the SEP and GAP related activities can see in **Appendix 3** for the detailed breakdown by program.

5 Emergency Response Plan

5.1 Introduction

5.1.1 Preparing for disasters and catastrophic events is essential, it is not a luxury but a necessity, as disasters often raise the question of "not if, but when" they will occur. This emergency response plan outlines strategies that community members can implement to support one another during both large-scale catastrophes and smaller emergencies. The top priorities in any emergency are personal safety, the well-being of family members, and the care of neighbors. Establishing effective communication channels among community members is crucial for sharing important information, while regular training and drills can enhance preparedness.

5.1.2 In addition to general preparedness, specific responses to emergencies such as fire and erosion are critical. In the event of a fire, community members should be trained in fire safety measures, including the use of fire extinguishers and evacuation routes. Quick reporting to emergency services and maintaining clear access for fire response teams are essential actions. For erosion-related emergencies, communities must identify high-risk areas and implement preventive measures, such as vegetation management and proper drainage systems.

5.1.3 By addressing these specific threats, the community can further empower itself to sustain its members until County services or external aid can be mobilized. Regular assessments and community education on these risks can mitigate damage and enhance response effectiveness.

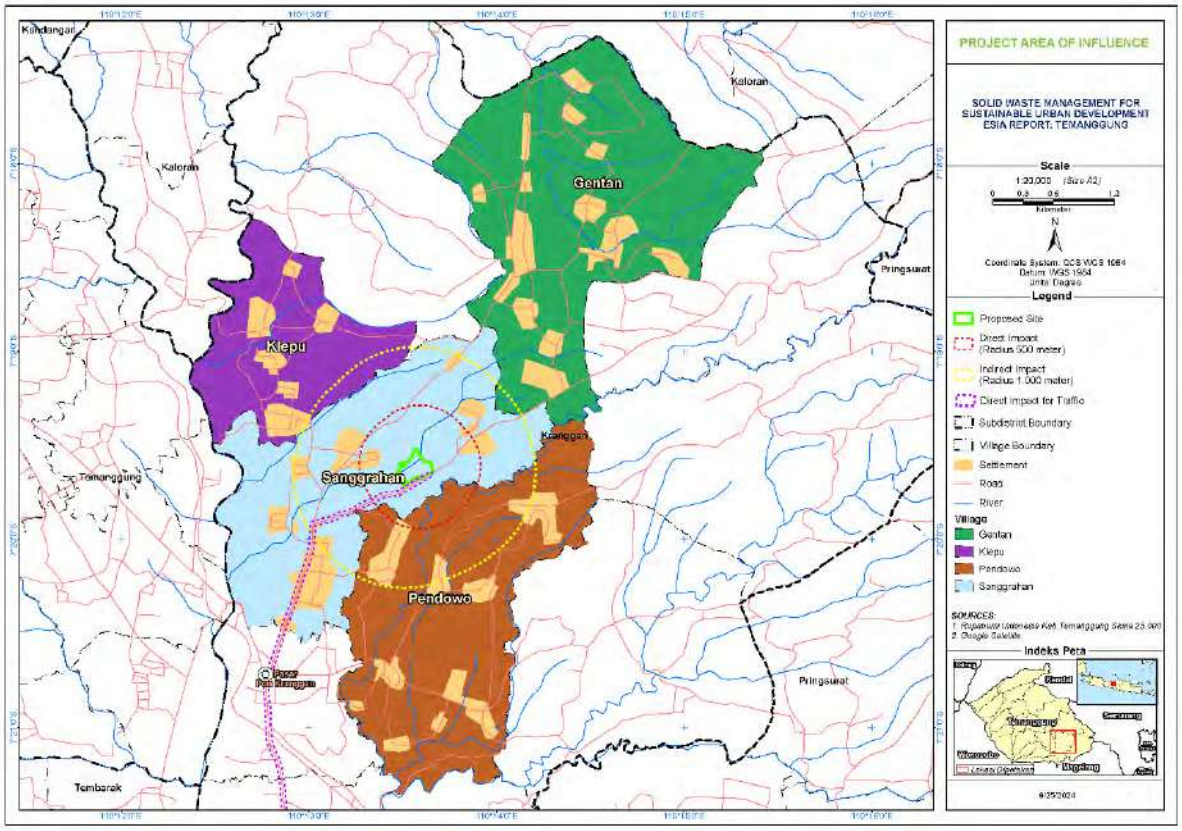
5.2 Neighbourhood

5.2.1 It is understood that the TPST is located in Desa Sanggrahan, with four (4) surrounding villages that may be impacted by its operational activities (**Figure 5-1**). The details of the settlement area are presented in **Table 5-1**.

Table 5-1: Surrounding Villages Estimated To Be Impacted

Direction	Village Name	Distance to Settlement Area
North	Klepu Village	More than 1,000 meters
East	Sanggarahan Village	Less than 500 meters
	Pendowo Village	Less than 1,000 meters
	Gentan Village	More than 1,000 meters
South	Pendowo Village	Less than 500 meters
West	Sanggrahan Village	Less than 500 meters

Figure 5-1 Project AoI Map



5.2.2 Based on the impact assessment, the operational activities at the TPST pose several risks to the surrounding community, which include fire, odour, vector-borne diseases, erosion, and groundwater cross-contamination. The following section outlines the emergency response strategies to mitigate and manage these risks:

Table 5-2: Selected Hazard and Mitigation Plans

Risks	Assessment Descriptions	Mitigation Plans
Fire	Fires can result from waste processing activities, posing a significant threat to both the TPST and surrounding villages.	Establish fire prevention measures, such as maintaining proper waste segregation and removing flammable materials.
		Equip the TPST site with fire extinguishers and hydrants at key points, ensuring all workers are trained in fire response.
		In case of fire, the Fire and Rescue team from the Emergency Response Team (ERT) will immediately intervene, and community members will be notified to evacuate via predetermined routes.
		Local fire departments should be contacted for additional support if the fire escalates.

Risks	Assessment Descriptions	Mitigation Plans
Odour	The decomposition of organic waste can produce unpleasant odours, affecting the quality of life in nearby villages.	Implement odour control measures such as covering organic waste and ensuring proper ventilation in the waste processing area.
		Regular maintenance and cleaning of waste collection points to prevent odour build-up.
		Community members will be informed about high-odour periods and advised to take appropriate measures such as closing windows and staying indoors.
Vector-Borne Diseases	The accumulation of waste can attract pests like rodents and insects, which may spread diseases.	Regular disinfection of waste collection points to reduce the presence of disease vectors.
		Install traps or barriers to prevent pests from entering populated areas.
		Conduct awareness campaigns within the community on how to manage waste and prevent the spread of vector-borne diseases.
Erosion	The TPST site may face risks of erosion, especially during heavy rains, which could destabilize the land and affect nearby properties.	Implement proper drainage systems and reinforce soil structures around the TPST to prevent erosion.
		Monitor erosion-prone areas regularly and make necessary improvements.
		In the event of severe erosion, the Evacuation team from the ERT will coordinate the relocation of affected residents to safer areas.
Groundwater Cross-Contamination	Improper waste management may lead to the contamination of groundwater, affecting the local water supply.	Ensure proper containment of waste to prevent leachate from seeping into the ground.
		Regular testing of groundwater around the TPST site to detect any signs of contamination.
		In case contamination is detected, the community will be advised to switch to alternative water sources until the issue is resolved.

5.3 Emergency Response

5.3.1 It is understood that the TPST currently does not have a dedicated person for safety and health at the location. All activities at the TPST site are monitored directly by the UPTD TPA-IPLT Sanggrahan, Kranggan, Temanggung, led by Zaenal Abidin, A.Md. However, to prevent

miscommunication and miscoordination in responding to emergencies, an emergency team will be established.

Emergency Response Team

5.3.2 It is proposed that the organization of the emergency response team (ERT) at the TPST site must consist of the following responsibilities:

- ERT Leader: the leader of the emergency response.
- Fire and Rescue: to save work crew and workplace at the scene and assess health and safety needs
- First Aider: responsible for providing first aid to stabilize the victim prior to getting medical treatment as required to save the victim of the emergency case.
- Evacuation: in the case where evacuation is required, this element will be activated to lead the people to escape to the safe place.

5.3.3 This structure is intended for low-level emergencies only, such as minor incidents that can be managed effectively within the site without external assistance. Examples include small fires, minor injuries, or equipment malfunctions that do not pose an immediate threat to life or property. In these situations, the emergency response team (ERT) is equipped to handle the incident swiftly and safely.

5.3.4 However, if the level of the disaster escalates, such as in the case of a significant fire, severe injury, or other emergencies that exceed the capabilities of the on-site team, immediate communication with external parties should be initiated. This includes contacting local emergency services, medical personnel, neighboring communities, or other relevant authorities to ensure that appropriate resources and assistance are dispatched quickly. Establishing a clear communication protocol for escalating emergencies is vital to ensure a coordinated and efficient response, minimizing risk and ensuring the safety of all personnel involved.

Emergency Location and Number

5.3.5 There are several important emergency locations near the TPST that should be considered in case of emergencies:

- Fire Department (7°17'50.10"S, 110°10'57.73")

  Jl. Ring Road Utara, Sawah & Hutan, Maron, Kec. Kandangan, Kabupaten Temanggung, Jawa Tengah 56281.

- Hospital (7°18'33.46"S, 110°10'36.58"E)

  Jl. Gajah Mada No.1A, Brojolan Barat, Temanggung I, Kec. Temanggung, Kabupaten Temanggung, Jawa Tengah 56213.

- Police (7°20'10.38"S, 110°12'17.28"E)

  Jl. Suwandi Suwardi, Projo, Madureso, Kec. Temanggung, Kabupaten Temanggung, Jawa Tengah 56229.

5.3.6 There are several important emergency numbers that can be contacted in case of emergencies:

Table 5-3: National and Local Emergency Number

National		Local	
• Police	110	• Temanggung Sectoral Police Station	(+62 293) 491110
• Fire Department	113	• Kranggan Sectoral Police Station	(+62 293) 492110
• Ambulance	118	• Temanggung District Hospital	(+62 293) 491119
• Search and Rescue	111, 115, 151	• Temanggung District Fire Department	(+62 293) 4901790
• Emergency Situation	112	• Electricity	(+62 293) 491104
• Electricity	123	• Search and Rescue	(+62 293) 493772

5.4 Emergency Training

5.4.1 To ensure compliance with national regulations and emergency preparedness, it is proposed that training sessions be conducted every six (6) months. The training will cover a variety of themes, aligned with the operational activities of the TPST and potential natural disasters. The selected themes include:

- Waste Handling
- Fire and Explosion
- Flood
- Erosion
- Hijacking and Terrorism
- Traffic Management
- PPE Use
- Electrical Safety
- Leachate Management
- Landfill Gas Control
- Heavy Equipment Safety
- Vector and Pest Control
- Groundwater Contamination Prevention
- Other related to waste-operation potential disaster risks

5.4.2 It is mandatory for representatives from the affected communities and relevant extension parties to attend these training sessions. Their participation is crucial to ensure that all stakeholders are equipped with the necessary knowledge and skills to respond effectively in case of an emergency. By attending the training, community members and extension parties will be better prepared to handle situations related to waste management, natural disasters, and potential hazards that may arise from TPST operations. This collaborative approach will enhance cooperation between the TPST team, the local population, and external partners, fostering a safer and more resilient environment for everyone involved.

5.5 Communication Flow

5.5.1 The ERT Leader plays a crucial role in managing emergency situations at the survey site. They are responsible for receiving information about any emergencies or incidents and

communicating this information to relevant team members, including Fire and Rescue, First Aiders, and Evacuation personnel. The ERT Leader also provides instructions and guidance on appropriate response actions and protocols, ensuring effective coordination of the overall emergency response efforts.

5.5.2 Fire and Rescue personnel, First Aiders, and Evacuation team members receive information about the emergency from the ERT Leader. Each member implements necessary actions based on their specific roles and responsibilities. They communicate with one another to coordinate their efforts and ensure a cohesive response, while also reporting progress, challenges, and any updates back to the ERT Leader.

5.5.3 The TPST Workers are informed about emergency-related instructions and updates from the ERT Leader. They are expected to follow the communicated protocols for their respective roles in emergency response and report any observed emergency situations or incidents to the ERT Leader or designated emergency personnel.

5.5.4 The Project Stakeholders (Local Agency) receive regular updates from the ERT Leader regarding the emergency situation and ongoing response efforts. Their role includes providing necessary support and resources for effective emergency response while maintaining open communication with the ERT Leader to address any issues or concerns related to emergency preparedness.

5.5.5 In cases of severe emergencies that require external assistance, the ERT Leader or designated personnel will establish communication with appropriate external agencies or authorities. This involves providing necessary information about the emergency situation and coordinating efforts with these external entities as required

Appendix 1: Record of Meetings, Consultations and Surveys

Daftar Hadir
Workshop Stakeholder Engagement Plan
Dalam Rangka Penyusunan Dokumen ESIA TPST Sanggrahan
Temanggung, 7 Agustus 2024

No	Nama	Instansi	Tanda Tangan
1	Prakoso	Kl. DPRKPLH	
2	Anggit Dewanto	DPRKPLH	
3	Bustanul	DPRKPLH	
4	Arif Mirza Nurhidayat	DPRKPLH	
5	TOGUH	UPT TPA	
6			
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14			
15			
16			
17			

Daftar Hadir
Forum Group Discussion Kelompok Perempuan
Dalam Rangka Penyusunan Dokumen ESIA TPST Sanggrahan
Temanggung, 8 Agustus 2024

No	Nama	Alamat	Posisi/Jabatan	Tanda Tangan
1	Sulistyowati	Tegalsari, Sidorejo	Kader	
2	Sari Kurniandari	Warungi Bantan	Tok. Perang-	
3				
4				
5				
6				
7				
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9				
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12				
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14				
15				
16				
17				

Daftar Hadir
Forum Group Discussion Kelompok Laki-Laki
Dalam Rangka Penyusunan Dokumen ESIA TPST Sanggrahan
Temanggung, 8 Agustus 2024

No	Nama	Alamat	Posisi/Jabatan	Tanda Tangan
1	SABAR	Losari, Sanggrahan	Ketua RT	
2	SUPOYO	Losari, Sanggrahan	Masyarakat	
3	RITANTO	TAMBARSARI	KEPALA DESA TAMBARSARI	
4	SARDI	LOSARI SANGGRAHAN	MASYARAKAT	
5	"Sarana	Tegalsari/Sanggrah	T. Masyarakat	
6	PARDI	Gemawang/Sang	KEPALA DESA GEMAWANG	
7	GIMAN	Losari, Sanggrahan	T. Masy.	
8	Jumadi	Kalimanyun, Sanden		
9	Bejo TWI R.	Kalimanda, Sidoha	TOMAS	
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Appendix 2: Grievance Recording Form and Log

GRIEVANCE RECORDING FORM

This form is provided to convey your concerns regarding our work. You can fill out this form anonymously. However, the more information you provide, including contact details, the easier it will be for us to follow up. This process is free for you. Participation in this process does not affect your right to take action under Indonesian law.

A	Grievance Identification Number	
B	Contact Information of Complaint	
1	Anonymous (Y/N)	
2	Gender	
3	Age	
4	Phone	
5	Email	
6	Address	
C	Details of Complaint	
1	What is the issue	
2	When it occurred	
3	Where it occurred	
4	How it occurred and who was involved	
5	Complaint's story and expectation	
6	Date grievance was recorded	
7	Place/method grievance was received	
D	Complaint Accepted (Y/N)	
D.1	Complaint Not Accepted	
1	Action taken	• Clearly not related to the operations of the organization – rejected • Labor related grievance – transfer to human resources • Commercial disputes – transfer to commercial dispute resolution mechanisms or civil court

		• Related to governmental policy and institutions – transfer to authorities • Other
2	Complainant notified (Y/N)	
3	Method of notification	
4	Date of disclosure	
D.2	Complaint Accepted	
1	Category of complaint	• Particulate emission to air • Odor • Noise • Effluent • Company vehicles • Influx of migrant workers • Security personnel • Land acquisition • Resettlement • Economic displacement • Other
2	Photos and documentary evidence of legitimacy	
3	Resolution	• Internal – Responsible people/division: • Multi stakeholder oversight • Independent mediation
4	Resolution/corrective action taken	
5	Complainant notified (Y/N)	
6	Method of notification	
7	Complainant(s) satisfied or appealed	
8	Photos and documentary evidence of closure	
9	Resources spent	

10	Date of closure	
11	Number of days from complaint to closure	
E	Post Closure Monitoring Required (Y/N)	
1	Method and frequency of monitoring required	
F	Preventive Measures to Avoid Reoccurrence of Similar Grievances	
1	Suggested preventive actions	

Acknowledgement of Receipt	By checking this box, I acknowledge that my grievance has been received by JMI and that I am aware of the grievance resolution process

Signature (Claimant) Date (dd/mm/yyyy)

Signature (GRM Team) Date (dd/mm/yyyy)

For Official Use Only	
Grievance Involves ☐ Human Rights	☐ Property Damage

□ Injury	□ Environmental Concern
□ Impact to Livelihood / Income	□ Other:

GRIEVANCE LOG

Reference Number	Date	Complainant (name, address and phone number)	Recipient (name & position)	Complaint Report: a. Face to face b. Phone call c. Message (WA/SMS) d. Letter e. others	Complaint code: a. Social b. Environment c. Economic d. Health e. Education f. Security g. Infrastructure h. others	Explanation of the specific nature of the complaint	Evidence a. Picture b. Video c. Recorder d. Document e. Letter f. Others	Complaint Status a. open b. ongoing c. Closed	Detailed explanation of the progress of the complaint	Person in Charge	Evidence of the progress of the complaint a. image b. letter of cooperation agreement c. others	Notes
001	19/08/2023	Sidqy Yusuf, Sanggrahan Village, 082211223344	Alfi, field officer	A	A	Waste spilled from a waste truck in front of the house	A	C	Scattered rubbish is cleaned up by TPA officers	Ali	A	-

Appendix 3: Estimated Budget of Social Program

ESTIMATED BUDGET FOR SOCIAL PROGRAM

No	Program	Phase	Engagement Strategy	Estimated Cost (IDR)	PIC/Unit
1	Informing Project scope and rationale; Project E&S principles; and Grievance mechanism process.	Pre-construction	• Meetings • Workshop • Invitation to public meeting • Training on GRM for designed team members with general orientation for project	30.000.000	Stakeholder Engagement Manager/ Stakeholder Engagement Officer
2	Grievance mechanism Implementing Arrangement (including GAP)	• Construction • Operation	• Meetings • Workshop • Invitation to public meeting • Training on GRM for designed team members with general orientation for project	30.000.000	Stakeholder Engagement Manager/ Stakeholder Engagement Officer
3	Capacity building amongst facilitators on GAP/social impact assessment awareness and reporting protocols	• Construction • Operation	• Public Meetings • Separate meeting for women	30.000.000	Stakeholder Engagement Manager/ Stakeholder Engagement Officer
4	Recruitment of local workers (for construction & operation)	• Construction • Operation	• Open vacancies, Recruitment, selection local worker • Permitting procedures • Official correspondence and meeting	10.000.000	Project HR Department/ Stakeholder Engagement Officer
5	Identification of business development for local community	• Construction • Operation	Announcement of opportunity for local business to supply equipment, material and basic needs during consultation (using pamphlet etc)	5.000.000	Stakeholder Engagement Officer/ Livelihood Restoration Unit
6	Economic Empowerment Program	• Construction • Operation	• Training • workshop	20.000.000	Livelihood Restoration Unit/ Stakeholder Engagement Manager
7	Women's knowledge enhancement program	• Construction • Operation	Training	20.000.000	Stakeholder Engagement Officer

8	Social programme: approximately 40 vulnerable wastepicker households, including women and elderly individuals, are expected to receive targeted support to help them earn a liveable income. The project proponent will develop and provide the program's detailed design and implementation plan	• Operation	Social Program	200.0000.000	Livelihood Restoration Unit
Total				**345.000.000**	

Appendix D List of Documents Available for Temanggung

No	Document Group	Document Name	Date of Upload
1	Komitmen	Pengantar Bupati TPA	4 January 2024
2	Komitmen	Surat Pernyataan Minat Kepala Daerah	4 January 2024
3	Komitmen	Surat Pernyataan Kesanggupan Menerima Hibah Barang Milik Negara	4 January 2024
4	Komitmen	Surat Pernyataan Kepala Daerah Alokasi Biaya Operasional	4 January 2024
5	Komitmen	Surat Pernyataan Dukungan Ketua DPRD	4 January 2024
6	Komitmen	MoU Kesepakatan Bersama Antara Pemerintah Kab. Temanggung dan PT Solusi Bangun Indonesia	4 January 2024
7	Komitmen	MoU Pemda dengan Offtaker - MoU Koperasi Produsen Tawon Sindoro Sumbing Pembelian Hasil Olahan Sampah Kompos Organik - MoU PT Greenprosa Adikara Nusa Pembelian produk Maggot BSF - MoU PT Indotex Lasindo Jaya Pembelian Hasil Olahan Sampah RDF	22 July 2024
8	Komitmen	Izin Operasional TPA Sanggrahan	3 March 2025
9	Lahan	HP No. 131 Tanah TPA Sanggrahan	11 January 2023
10	Lahan	HP No. 132 Tanah TPA Sanggarahan	11 January 2023
11	Lahan	HP No. 133 Tanah TPA Sanggrahan	11 January 2023
12	Lahan	HP No. 134 Tanah TPA Sanggrahan	11 January 2023
13	Lahan	HP No. 135 Tanah TPA Sanggrahan	11 January 2023
14	Lahan	HP No. 136 Tanah TPA Sanggrahan	11 January 2023
15	Lahan	BA Tukar Tanah	21 February 2023
16	Lahan	Surat Penetapan Lokasi	4 January 2024
17	Lahan	KKPR TPA Sanggrahan	10 January 2024
18	Lahan	Pertimbangan Teknis Pertanahan (TPA Sanggrahan)	10 January 2024
19	Lahan	HP No. 144 Tanah TPA Sanggrahan	10 January 2024
20	Lahan	HP No. 145 Tanah TPA Sanggrahan	10 January 2024
21	Lahan	HP No. 146 Tanah TPA Sanggrahan	10 January 2024
22	Lahan	RTRW Kab. Temanggung	27 February 2024
23	Lahan	Rekomendasi LSD TPA (ATR)	15 March 2024
24	Safeguard	Andalalin TPA TTD	16 August 2023
25	Safeguard	Rintek B3 TPA Sanggrahan 75%	31 August 2023
26	Safeguard	Stantek TPA TPST Sanggrahan 70%	31 August 2023
27	Safeguard	Dokumen Pengamanan Lingkungan dan Sosial SWMSUD TPA Sanggrahan	4 January 2024
28	Safeguard	UKL-UPL Penataan TPA Eksisting dan Pembangunan TPST Pesanggrahan	6 March 2024
29	Safeguard	ESMPF	3 March 2025
30	Safeguard	ESIA Temanggung	3 March 2025
31	Perencanaan	Dokumen Perencanaan Temanggung_TA 2020 - Gambar Rencana TPA Sanggrahan - Rencana Anggaran Biaya TPA Sanggrahan - Bill of Quantity TPA Sanggrahan	4 January 2024

No	Document Group	Document Name	Date of Upload
		- Spesifikasi Teknis TPA Sanggrahan - Laporan Antara TPA Sanggrahan - Laporan Akhir TPA Sanggrahan	
32	Perencanaan	Dokumen Peranakan Temanggung_TA 2023 - Album gambar - Komitmen K3 Konstruksi - Laporan Akhir - Laporan Pendahuluan - Laporan Pengujian Tanah - Nota Desain - Rencana Anggaran Biaya - SOP TPA Sanggrahan - Spesifikasi Teknis - Survey Topografi	4 January 2024
33	Perencanaan	Dokumen Rencana Induk Pengelolaan Sampah Kabupaten Temanggung Tahun 2023-2033	4 January 2024
34	Perencanaan	Studi Kelayakan TPST Sanggrahan Kabupaten Temanggung 2023	4 January 2024
35	Perencanaan	EIA23.1065-J.01_AEPW SWM SUD FS_Temanggung_R1_20241212	3 March 2025
36	RC Lainnya	Perbup No. 17 Tahun 2022 Tentang Tusi DPRKPLH	12 April 2023
37	RC Lainnya	Perbup Penyelenggaraan Pengelolaan Sampah Desa	20 September 2023
38	RC Lainnya	Perbup Peran Serta Masyarakat Dalam Pengelolaan Sampah	20 September 2023
39	RC Lainnya	PKPLH TPST Sanggrahan	28 February 2024
40	RC Lainnya	Surat Pernyataan Kesiapan Lahan yang Bersertifikat dan Tidak dalam Sengketa	19 August 2024
41	RC Lainnya	Surat Pernyataan Kesiapan Menyediakan Lahan TPA Sementara	19 August 2024
42	Dokumen DED Temanggung	Album Gambar	12 June 2023
43	Dokumen DED Temanggung	Pengujian Tanah TPA Sanggrahan	21 June 2023
44	Dokumen DED Temanggung	Komitmen Manajemen Resiko Temanggung	3 July 2023
45	Dokumen DED Temanggung	Cover LAPDA Temanggung	28 August 2023
46	Dokumen DED Temanggung	Hasil Uji Kalor	4 September 2023
47	Dokumen DED Temanggung	Laporan KI	19 October 2023
48	Dokumen DED Temanggung	LHP 209 Lengkap (Hasil Uji Lindi)	29 November 2023
49	Dokumen DED Temanggung	Survey Topografi TPA Sanggrahan	21 June 2024
50	Dokumen DED Temanggung	Laporan Pendahuluan TPA Sanggrahan	26 July 2024

No	Document Group	Document Name	Date of Upload
51	Dokumen DED Temanggung	RAB TPA Sanggrahan	13 August 2024
52	Dokumen DED Temanggung	Biaya OM Temanggung	5 September 2024
53	Dokumen DED Temanggung	Greenposa - RAB Pengelolaan Sampah Kab. Temanggung - Rekomendasi Mesin dan Peralatan Temanggung - FS Cashflow Organic Temanggung 1st Year - FS COGS Projection Temanggung - FS Organic Temanggung Multiyear 1-5 Year	6 December 2024
54	Dokumen DED Temanggung	Layout Plan Tahap 1 Edit (Greenposa)	3 February 2025
55	Dokumen DED Temanggung	Biaya OM TPST Sanggrahan	21 February 2025
56	Dokumen DED Temanggung	Laporan Akhir DED Temanggung	21 February 2025
57	Dokumen DED Temanggung	Memo Design TPA Kab. Temanggung	21 February 2025
58	Dokumen DED Temanggung	SOP TPA Sanggrahan Kabupaten Temanggung	21 February 2025
59	Dokumen DED Temanggung	Spesifikasi Teknis TPA Temanggung	21 February 2025
60	Dokumen RC Bappenas_Temanggung	Teknis Operasional - Detail Teknis Spesifikasi Offtaker - Ketersediaan Jumlah Sarpras Persampahan - Deleniasi Wilayah Pelayanan TPST - Timbulan dan Presentasi Sampah Terkumpul - Ketersediaan Alur/Diagram Neraca Sampah - Kesiapan Lahan - Kesanggupan Menyediakan Alat Angkut Terpilah - SDM Operator Persampahan - Kesanggupan Memenuhi Aspek Sosial	27 March 2024
61	Dokumen RC Bappenas_Temanggung	Kebijakan dan Regulasi - Perda Retribusi Persampahan - Perda Tata Kelola Persampahan - Regulasi Pembentukan Operator Sampah - Rencana Induk Pengelolaan Sampah	28 March 2024
62	Dokumen RC Bappenas_Temanggung	Kelembagaan - Operator Pengelola Persampahan - Perjanjian Kerjasama dengan Offtaker	28 March 2024
63	Dokumen RC Bappenas_Temanggung	Kesiapan Masyarakat - Kesiapan Masyarakat untuk Terlayani Persampahan dan untuk Membayar Retribusi - Pendampingan dan Pelaksanaan Pemicuan STBM Pilar Ke-4	28 March 2024
64	Dokumen RC Bappenas_Temanggung	Pendanaan - Data Alokasi APBD untuk Persampahan	28 March 2024

No	Document Group	Document Name	Date of Upload
		- Komitmen DPRD Biaya Operasional	
65	Other	Identifikasi RC Kab Temanggung SWMSUD Tahap 1	25 January 2023

Appendix E List of Associate Reports or Plans (Environmental Management Plan)

1 INTRODUCTION

1.1.1 The Environmental Management Plan (EMP) has been developed as a comprehensive framework to manage the environmental risks associated with the operation and expansion of TPA Sanggrahan in Temanggung. This EMP is based on the Detailed Engineering Design (DED) Standard Operating Procedures (SOP) and the Environmental and Social Management Plan Framework (ESMPF). It provides detailed mitigation strategies for the potential environmental impacts of the project during both the construction and operational phases, ensuring full compliance with Indonesia's environmental regulations and international standards.

1.1.2 During the construction phase of the TPST and TPA Sanggrahan expansion, a Temporary Landfill will be established to manage waste disposal until the main landfill facilities are fully operational. The Temporary Landfill Management Plan provides detailed procedures to ensure that the temporary landfill is operated in an environmentally responsible manner.

1.1.3 The Landfill Operation Plan for TPA Sanggrahan outlines the systematic approach to managing daily waste disposal activities to minimize environmental impacts. This plan includes the controlled layering of waste, daily covering of disposed materials to prevent odor and pest issues, and the compaction of waste to maximize landfill space.

1.1.4 The EMP incorporates the Traffic Management Plan, focusing on the construction and operation impact to the local traffic. This section will be based on the existing Traffic Management Plan on UKL UPL 2021.

2 TEMPORARY LANDFILL MANAGEMENT PLAN

2.1 Introduction

2.1.1 The temporary landfill at TPA Sanggrahan is designed to manage the storage of waste and materials during the construction and rehabilitation phase of the permanent landfill. The objective of this plan is to minimize environmental and social impacts, ensure compliance with local and national regulations, and safeguard the surrounding communities and environment. The objectives of this management plan is:

- To manage waste and materials during the construction of the permanent landfill.
- To prevent negative environmental impacts such as leachate contamination, odor, and dust emissions.
- To ensure social harmony by engaging local communities and providing mitigation for potential disruptions.
- To comply with legal and environmental obligations, minimizing harm to surrounding ecosystems and communities.

2.1.2 The temporary landfill will be built inside the TPA Sanggrahan area, specifically near the Leachate Treatment Plant. The new access road will also be built for the temporary landfill operation. This will allow easy transportation both for waste disposal service and for the construction activity.

2.2 Applicable Standards

2.2.1 At present, Indonesia does not have specific national standards that directly govern the design and operation of temporary landfills. However, in the development and management of the temporary landfill in Temanggung Regency, two important references can be applied to minimize environmental and social impacts as below:

- **Ministry of Public Works Regulation No. 3 of 2013 (PermenPU 3/2013)** – This regulation outlines the design, operation, and management of sanitary landfills, addressing waste handling, environmental safeguards, and operational standards. While it primarily focuses on permanent landfills, its provisions, particularly on leachate control, drainage, and environmental monitoring, can be adapted for the temporary landfill to align with national requirements.
- **World Bank Environmental, Health, and Safety (EHS) Guidelines for Solid Waste Management** – These international guidelines provide detailed standards for the management of solid waste facilities, including landfills, with a strong focus on minimizing environmental risks such as leachate pollution, air emissions, and noise disturbances.

2.3 Temporary Landfill Management Procedures

2.3.1 The management of the temporary landfill in Temanggung follows a systematic process that spans the pre-construction, construction, operation, and post-operation phases. This process ensures the minimization of environmental and social impacts while complying with all regulatory requirements. The detailed procedures for each phase are outlined below.

Pre-Construction

2.3.2 The pre-construction phases involves essential activities to ensure comprehensive planning and collaboration with relevant stakeholders and authorities. The critical steps include:

- **Permitting:** In compliance with Temanggung Regency Regional Regulation No. 29 of 2011 on Waste Management, all waste management activities must obtain a permit from the Regent of Temanggung. The project must coordinate with local authorities to secure the necessary permits for the operation of the temporary landfill, ensuring adherence to legal and regulatory obligations.
- **Stakeholder Engagement:** coordination with the local community. Engagement will focus on addressing concerns about potential environmental and social impacts, including noise, dust, and traffic, during the landfill's construction and operation phases.
- **Coordination with the Temanggung Regency Transportation Agency (Dinas Perhubungan):** Given that the landfill will require waste transportation via provincial roads, it is essential to work with the Temanggung Regency Transportation Agency to obtain traffic recommendations. This coordination will help manage traffic flow, reduce congestion, and ensure public safety during the transportation of waste.
- **Environmental Baseline Study:** Before construction begins, an environmental baseline study must be conducted, covering aspects such as air quality, surface and groundwater quality, noise levels, and soil conditions. This data can be drawn from existing Environmental Quality Index (DIKPLHD) samples or UKL-UPL (Environmental Management and Monitoring Plans) reports. The baseline data will serve as a benchmark for monitoring activities during the construction and operational phases of the temporary landfill.

Construction Phase

2.3.3 The construction phase will focus on site preparation, material and equipment mobilization, and the construction of the temporary landfill. Key activities include:

- **Site Preparation**: Land clearing, leveling, and grading of the site will be carried out to ensure it can handle the anticipated waste loads throughout its operation. Access roads will also be reinforced to facilitate the smooth movement of vehicles during waste transportation and landfill operations.
- **Mobilization of Materials and Heavy Equipment**: The necessary materials and heavy equipment, such as trucks, excavators, and machinery for landfill construction, will be mobilized and staged at the site to ensure efficient progress in the construction of the temporary landfill.
- **Construction of the Temporary Landfill:** The temporary landfill will be built to handle 110 to 120 tons of waste per day. It will include drainage systems to collect leachate. To prevent groundwater and soil contamination, a geosynthetic liner will be installed at the base of the landfill. This impermeable barrier will prevent leachate from seeping into the soil or groundwater, thereby reducing the risk of environmental contamination.

Operation Phase

2.3.4 The operational phase will concentrate on the day-to-day activities of the temporary landfill, including waste management and leachate control.

- **Operation of the Temporary Landfill:** Waste will be received and disposed of daily at the temporary landfill. Regular inspections and monitoring will be conducted to ensure that no hazardous waste is deposited. The operation of the temporary landfill will adhere to the Standard Operating Procedures (SOP) for landfills.
- **Leachate Management:** Although a fixed plan has not yet been established, it is recommended that leachate generated during landfill operations be managed through a dedicated Leachate Treatment Plant (LTP) to ensure on-site treatment.

2.3.5 **Table 2-1** provides the management and monitoring of the temporary landfill in Temanggung Regency.

Table 2-1 Temporary Landfill Management and Monitoring

Potential Impact and Impact Source	Management Measures	Monitoring Activities	Performance Indicators	Frequency	Responsible Person(s)
Permitting - Land allocation and permits for the temporary landfill site	Obtain necessary permits from the Regent of Temanggung as per Temanggung Regency Regional Regulation No. 29 of 2011. Engage with local authorities such as Bappeda and Dinas Perhubungan for land use and traffic permissions.	Review the status of permits, liaise with authorities, and ensure all necessary documentation is finalized.	All permits are secured; consultations with the Regent and related authorities are completed.	Before the start of construction	Local Project Management Unit (LPMU)
Community Engagement – Concerns about landfill impacts	Proactively engage with nearby communities (Sanggrahan Village) to explain the project scope and address potential impacts, including traffic and environmental risks.	Document discussions and feedback from stakeholders; maintain open communication channels.	Stakeholder engagement is successfully conducted; concerns are addressed prior to construction.	Before construction, ongoing	LPMU
Loss of Income for Wastepickers – Due to landfill closure	Engage early with wastepickers to offer alternative income opportunities.	Monitor the employment status of wastepickers and ensure they have access to alternative options.	No income loss for wastepickers; alternative employment or compensation is provided.	Before and during construction	LPMU
Environmental Baseline Study – Lack of environmental data for the site	Conduct baseline studies for air, water, and soil quality, using existing data from DIKPLHD and UKL-UPL monitoring reports where applicable.	Analyze baseline data collected from samples and reports.	A complete baseline study for air, water, soil, and noise quality is available.	Prior to construction	LPMU
Traffic Disruptions – Increased traffic during construction and operation	Collaborate with Dinas Perhubungan to obtain traffic management recommendations; reinforce access roads for smooth transportation.	Monitor road conditions and traffic flow during peak hours; track progress on road improvements.	Proper road access is maintained; road surfaces are reinforced; minimal traffic disruptions.	Weekly during construction and operation	LPMU
Groundwater and Soil Contamination – Leachate runoff from the landfill	Install a geosynthetic liner to prevent leachate from contaminating groundwater and soil.	Inspect the installation and functioning of the geosynthetic liner.	The liner is installed correctly; no evidence of groundwater or soil contamination.	Before construction; ongoing	LPMU

Potential Impact and Impact Source	Management Measures	Monitoring Activities	Performance Indicators	Frequency	Responsible Person(s)
Surface Water Contamination – Runoff and leachate management	Construct a drainage system; establish a dedicated Leachate Treatment Plant (LTP).	Monitor the drainage system and leachate treatment.	Proper drainage systems are in place; leachate is treated.	Bi-weekly during construction and operation	LPMU
Noise and Vibration – From machinery and proximity to sensitive areas	Limit vehicle speed; restrict night operations unless necessary.	Monitor noise and vibration levels to ensure alignment with the plan.	Noise and vibration are within acceptable levels; minimal complaints from the community.	During construction and operation phases	LPMU
Air Quality and Dust – Due to vehicle movement and construction activities	Use water spraying on unpaved roads; ensure vehicles comply with emission standards; cover trucks with tarpaulins.	Monitor dust levels in nearby areas and project sites.	Dust levels remain within allowable limits; no dust-related complaints.	Daily during construction and operation	LPMU
Odor Emissions – From waste accumulation	Regularly cover waste with soil; manage leachate effectively; monitor odor levels.	Measure odor levels and gather community feedback.	Odor levels are within permissible limits; no odor-related complaints.	Weekly during operation	LPMU
Hazardous Waste Management – Hazardous waste delivered to the landfill	Conduct random inspections of waste trucks; collaborate with local healthcare providers for hazardous waste storage.	Inspect trucks for hazardous waste and ensure proper storage and disposal.	No hazardous waste is accepted; proper storage protocols are in place for household hazardous waste.	Weekly, random inspections during operations	LPMU

2.4 Budget

2.4.1 The estimated budget for managing the temporary landfill includes:

- Permitting and Baseline Studies: Costs for environmental assessments, permits, and initial site preparation.
- Containment and Infrastructure: Installation of impermeable liners, stormwater management systems, and dust control measures.
- Leachate Treatment Plan Coordination and approval of transport routes, vehicle operation, and fuel.
- Monitoring and Reporting: Daily monitoring costs for environmental and social impacts, as well as reporting systems.
- Waste Removal and Site Restoration: Final cleanup, waste removal, and site rehabilitation after construction is complete.

Tabel 2-2 Estimated Budget

Activity	Estimated Cost	Remarks
Site Selection, Permitting, and Environmental Baseline Study	Rp100,000,000	CAPEX
Temporary Landfill Construction (0.7 Ha)	Rp5,000,000,000	CAPEX, estimated budget per Ha waste cell IDR 5-7 billion/ha
Leachate Treatment Plan (0.2 Ha)	Rp2,000,000,000	CAPEX, estimated budget per Ha LTP IDR 8-10 billion/ha
Social Engagement and Grievance Redress	Rp20,000,000	OPEX, per month
Operational Temporary Landfill	Rp1,300,000,000	OPEX, per year
Final Site Cleanup and Restoration	Rp100,000,000	CAPEX

3 LANDFILL OPERATION MANAGEMENT PLAN

3.1 Background

3.1.1 This Landfill Operation Management Plan is designed to ensure the efficient operation of the landfill and minimize environmental and social impacts. It covers waste tracking, waste burial operations, temporary and final cover management, landfill gas management, and Leachate Treatment Plant (LTP) operation. These procedures are essential to protect the environment, ensure regulatory compliance, and safeguard the health and safety of the community and landfill workers.

3.2 Waste Tracking Procedures

3.2.1 The waste reception activities at the landfill (TPA) must be carried out properly to ensure efficient operations and maintain the quality of waste as specified. The waste recording is conducted mechanically using a weighbridge.

3.2.2 Purpose: To document the waste entering the landfill so that the waste handling burden at the landfill can be measured accurately.

3.2.3 Operators/Executors:

- Waste recording staff
- Traffic control staff at the landfill

3.2.4 Equipment and Materials:

- Recording station
- Recording staff
- Logbook or weighbridge system with computer equipment

3.2.5 Waste Entry Recording Operational Procedures:

- Arrival of waste trucks
- Recording of truck identification
- Documentation of the waste source
- Weighing the incoming waste using a weighbridge
- Daily recording of waste entering the landfill

3.2.6 Steps of the Procedure:

- The truck enters the weighbridge/recording station.
- The driver of the waste transport vehicle must report to the recording staff at the recording station, providing either an assignment letter or permission letter from the issuing institution.
- Identify the waste transport truck with the following requirements:
  - The truck must have a valid license plate number.
  - The truck must be registered in the local waste truck list.
  - The truck must carry a Waste Disposal Permit to the landfill (especially for private carriers).
- Trucks that do not meet the above requirements are not allowed to dispose of waste at the landfill. If the waste truck's identification meets the requirements, proceed to record the truck's details by filling out the Waste Control Card, which includes:

  - Truck license plate number
  - Driver's name
  - Time of arrival at the landfill
- Record the incoming waste by filling in the following details on the Waste Control Card:
  - Source of waste/service area
  - Weight of waste (as measured by the weighbridge)
- Conduct random inspections of the trucks, both in terms of time and type, to check if any prohibited waste is being brought to the landfill by:
  - Opening the truck cover
  - Inspecting and checking for the presence of prohibited waste such as hazardous (B3) hospital or industrial waste
  - If hazardous waste is found, the truck is not allowed to enter the landfill.
- If household hazardous waste is found (in sorted condition), it must be placed in a temporary storage facility for household hazardous waste.
- Direct the waste transport truck to the disposal area.
- After unloading, the truck returns to the weighbridge to measure its empty weight.
- Record the time the truck exits the landfill.

3.2.7 Note: Record the amount of waste entering the landfill in volume (m^3) per day or in weight (tons) per day. Convert from volume to weight or vice versa by multiplying or dividing by the compacted waste density in the truck (approximately 300 kg/m^3).

Incoming Waste Control Card Sheet

NO	License Plate	Driver's Name	Source of Waste	Arrival Time		Truck Weight (TON)		Waste Volume		Remarks
				In	Out	Loaded/	Empty Weight	Ton	M3	

3.3 Hazardous Waste Identification

3.3.1 In order to ensure compliance with environmental regulations and prevention of unauthorized disposal of hazardous waste (Limbah B3), the following measures will be implemented at the Landfill:

- Conduct random inspections of trucks: Periodic inspections will be carried out randomly in terms of both time and type of waste to ensure that no prohibited waste is being delivered to the landfill. These inspections will include the following actions:
  - Opening the truck cover: All arriving trucks must have their covers opened for inspection before unloading waste.
  - Inspecting and checking for the presence of prohibited waste: Inspectors will visually check for hazardous materials such as medical waste (from hospitals) or industrial

waste, including any other classified hazardous (B3) waste that is prohibited from entering the landfill.
  - Prohibited waste action: If any hazardous waste is discovered during the inspection, the truck will be denied entry into the landfill. Drivers will be instructed to take the waste to an appropriate treatment or disposal facility that can manage hazardous waste in compliance with regulations.
- Handling of household hazardous waste: In the event that household hazardous waste (e.g., batteries, chemicals, or electronic waste) is found mixed with general waste, it must be separated and stored in a designated temporary storage facility for household hazardous waste.
  - If there is no temporary facility for household hazardous waste currently available at the landfill, the landfill management must coordinate with the nearby organizations, such as the local Puskesmas (Community Health Center) or hospital, to temporarily store the hazardous waste in their certified hazardous waste storage facilities. This coordination will ensure that hazardous waste is handled according to proper safety and environmental standards while minimizing risks to the public and environment.
- Records and Reporting: All findings of hazardous waste during inspections will be recorded and reported to the landfill management and environmental authorities for further action. This documentation will help improve future waste sorting practices and enforce waste delivery regulations.
- Coordination with Waste Generators: Continuous engagement with waste generators (municipalities, industries, hospitals) will be conducted to educate them on the types of prohibited hazardous waste and ensure proper pre-sorting before delivery to the landfill. This will help reduce the risk of hazardous waste entering the landfill undetected.
- Training for Inspection Teams: The personnel involved in truck inspections will undergo regular training to stay updated on hazardous waste types, identification techniques, and appropriate safety measures to ensure thorough and accurate inspections.

3.3.2 The identification of hazardous waste at Landfill must strictly adhere to the Appendix IX of Government Regulation (GR) No. 22/2021. This regulation provides a detailed classification of hazardous waste (B3) and outlines several tables that list the types of hazardous waste that may be encountered. It is essential that all inspections and waste management activities refer to these tables for accurate identification and classification of hazardous materials. Chapter VII of Government Regulation (GR) No. 22/2021 also regulates the handling of hazardous waste in Indonesia. Additionally, for the hazardous waste type and classification specifically sourced from household, it could refer to Ministry of Environment and Forestry (MOEF) Regulation No 9 of 2024 on Management of Waste Contained Hazardous Materials and Hazardous Waste.

3.4 Waste Operations and Disposal

3.4.1 Purpose:

- To carry out waste disposal operations in accordance with established standards.
- To ensure waste disposal is concentrated in the designated cells.
- To understand the method of waste spreading and leveling.
- To perform waste compaction as per the prescribed guidelines.

3.4.2 Operators/Executors:

- Waste truck drivers
- Waste disposal staff/traffic control staff at the landfill (TPA)
- Heavy equipment operators

3.4.3 Equipment and Materials:

- Markers for daily waste cell boundaries
- Leveling stakes for waste cells
- Heavy equipment
- Workwear, including boots, gloves, hats, and masks

3.4.4 The waste disposal activities in the active work area involve the following steps in sequence:

- Designation of active sub-zones, determined based on the daily waste load in relation to the active zone's capacity (see calculation example in the appendix).
- Designation of active work areas, daily waste cells, and waste unloading points.
- Waste unloading is conducted at the designated unloading point with vehicle control by waste disposal staff and traffic control staff within the active work area.
- Waste leveling using heavy equipment is done layer by layer to achieve the desired level of compaction.
- Waste compaction by heavy equipment ensures that the waste is dense enough to support subsequent layers.

3.4.5 Steps of the Procedure:

- Preparation:
- Preparations that must be completed before the waste disposal operation include:
  - Initial briefing.
  - Determining the active work area, starting from the location closest to the leachate treatment plant (LTP) and at the lowest contour.
  - Designating the waste unloading point within the active work area, starting from one end of the daily cell.
  - Designating daily cells within the active work area, starting from the lowest point, and organizing them sequentially to ease operations. The size of the daily cells is determined by calculation (example in the appendix).
  - Organizing the route for the waste trucks.
  - All stages of the landfill operation are guided by operational signs or markers placed at:
  - The entrance
  - The active sub-zone
  - The active work area
  - The boundaries of the daily cells (at least 4 markers that must be movable)
  - Direction signs guiding waste trucks from the recording station to the active work area
  - The waste unloading point
  - Preparing operational roads within the active zone leading to the active work area (for new landfills).
- Waste Unloading:
  - Organize the queue of vehicles.
  - Waste unloading is done at the designated unloading point.
  - Trucks should reverse into the unloading point for easier maneuvering.
  - If wastepickers are present, allow time for them to collect recyclable materials before spreading the waste.
  - Continue unloading the waste within the daily cell, aligning the unloading point with previous dumps.

- Note:
  - The waste truck driver must follow the signals from the traffic control and waste disposal staff on-site.
  - Waste trucks may enter the unloading area only after receiving signals from traffic control or disposal operators.
  - Trucks unload waste as instructed by the waste disposal operator.
- Waste Leveling and Compaction:
  - Heavy equipment should be prepared at the designated daily cells according to the plan, without obstructing the truck traffic within the daily cells.
  - The cell width should be between 2-3 meters, or equivalent to the width of the heavy equipment blade, for efficiency.
  - The cell thickness should be between 1-1.5 meters. A thickness greater than this can complicate the covering stage and increase fuel consumption.
  - Compact the waste using heavy equipment with 4-6 passes.
  - Spread the waste in layers, each 50 cm thick. For those using landfill compactors, the waste spreading is done after reaching a minimum thickness of 1 meter.
  - The cell length is calculated based on the compacted waste volume divided by the width and thickness of the cell.
- Note: The heavy equipment operator should keep the cell boundaries in mind to avoid spreading waste outside the designated cell (pay attention to boundary markers).
  - After leveling, compact the waste lengthwise on the leveled waste layer.
  - For controlled landfills, compact by rolling the waste 4-6 times along the same path (forward and backward) until the waste thickness decreases.
  - The rolling is done with the heavy equipment's front end facing the same direction (the machine should not need to turn around).
  - Observe the tracks on the heavy equipment; compacting continues until the tracks are level with the waste surface.
  - Once an area within a daily cell is fully compacted, the equipment moves to another area ready for compaction.
  - Repeat the leveling and compacting process for subsequent waste dumps, spreading the waste over the entire surface of the cell at a thickness of 50 cm. Compact the waste following the same procedure (step 4).
  - The final height of the compacted waste cell is 2 meters, with a flat top and side slopes at a 1:4 ratio, or a maximum of 1:1 (45-degree angle).
  - Note: Once the leveling of one cell is complete, subsequent waste is leveled over the first layer with the same thickness and compaction until a uniform thickness of 2 meters is achieved across the cell.

3.4.6 Appendix - Example of Daily Cell Calculation:

- The daily cell size is calculated based on the average daily waste load (daily waste generation) obtained from waste entry records.
- Determine the daily waste volume (m3/day), for example, 700 m3/day.
- Set the daily cell height, approximately 1 meter (in accordance with the daily cell plan in the design drawings).
- Set the maximum cell width to 10 meters (1.5 – 3 times the width of a bulldozer blade).
- Set the compaction density to 700 kg/m3 (compaction factor 0.3 – 0.5).

3.4.7 Example Calculation:

- Daily waste load = 700 m3/day
- Compaction factor = 0.4
- Planned cell width = 8 meters
- Daily cell size = 600 x 0.4 / 8 = 30 m^2/ha.

3.5 Waste Cell Closure

3.5.1 Purpose:

- To ensure proper waste cell closure operations, preventing disease vectors from forming due to waste decomposition, especially flies.
- To maintain the aesthetic quality of the landfill environment by preventing uncovered waste from spreading.

3.5.2 Operators/Executors:

- Waste covering staff
- Heavy equipment drivers
- Drivers of vehicles transporting cover material (soil) for waste cells

3.5.3 Equipment and Materials:

- a. Cover soil that meets the required specifications or biodegradable plastic material
- b. Heavy machinery

3.5.4 In the controlled landfill method, daily cover is not applied. Instead, intermediate cover is applied when the waste reaches a height of 1 meter or after a maximum of 5 days to prevent disease vectors. Intermediate cover is a layer of soil placed between daily waste lifts.

3.5.5 Steps of the Procedure:

- Inspection of Cover Material:
  - Weekly checks on the cover material should be conducted (in controlled landfill operations), including:
  - For soil cover, ensure that dump trucks or vehicles carrying the cover soil are ready for operation.
  - Ensure the presence of truck drivers.
  - Recalculate the required cover material considering:
  - The height of the intermediate cover after compaction.
  - The height of the final cover after compaction.
  - The compaction factor of the cover material.
- Intermediate Cover:
  - When three waste lifts have formed, or the height has reached 5 meters, prepare to apply intermediate cover immediately.
  - As soon as three waste lifts have formed, with a height of 5 meters, intermediate cover operations must be promptly carried out.
  - The waste disposal operator must ensure that the intermediate cover soil is ready in the transport vehicle, ready to be unloaded on top of the waste lift.
  - Upon receiving a signal, the soil truck unloads the soil at the designated unloading point.
  - The bulldozer spreads the soil over the waste lift until the soil reaches a thickness of 20 cm.
  - The bulldozer compacts the soil with 2-3 passes until the thickness of the soil reaches 20 cm.
  - When sealing the top of the lift, install a gas ventilation pipe (1 piece, 4 meters) before covering with soil, without compacting it with heavy equipment (to avoid breaking the pipe due to high pressure). This section should be compacted manually by landfill staff by stepping on it.

- New waste and new lifts will be deposited on top of the compacted waste within the lift structure.
- If the waste disposal is carried out using the area method, terraces 3-5 meters wide should be created between two lifts to stabilize the waste structure.

3.5.6 Note:

- In some intermediate cover cases, an additional layer, such as gravel, is applied to act as a horizontal gas trap and connected to the vertical gas pipe. The steps are as follows:
- When the waste lift is ready, gravel (30-100 mm in size) is spread evenly, with a thickness of 300 mm.
- The intermediate cover soil is then spread over the gravel according to the procedure above.

3.5.7 Final Cover:

- Once a waste pile reaches a height of 15 meters, the final cover operation must be carried out immediately.
- The waste disposal operator ensures that the final cover soil is ready in the transport vehicle, prepared to be unloaded on top of the waste lift to be sealed.
- Upon receiving a signal, the soil truck unloads the soil at the designated unloading point.
- The bulldozer spreads the soil over the waste lift until the soil reaches a thickness of 20 cm. The bulldozer compacts the soil with 2-3 passes until the thickness of the soil reaches 20 cm.
- After compaction, the soil is covered with a 20 cm layer of impermeable clay.
- Finally, the impermeable clay is covered with a 60 cm layer of fertile soil.

3.5.8 Maintenance of Cover Material:

- Check the condition of the waste cover soil weekly and after rain.
- If there are any parts of the cover that protrude or sag, smooth it out, paying attention to slopes directing towards drainage channels.
- If cracks form on the surface of the cover soil, immediately fill them with similar soil to prevent gas from escaping from the waste and to prevent water from seeping in during rain.

3.6 Landfill Gas Management

3.6.1 Landfills continuously produce methane (CH_4), carbon dioxide (CO_2), and other gases in smaller quantities, such as hydrogen sulfide (H_2S) and ammonia (NH_3). Methane is odorless and highly flammable when its concentration is between 5% and 15% by volume. Because of its flammability, methane can be used as an energy source if its concentration exceeds 45% v/v. For gas flaring, the concentration must be above 25% v/v, and it is vented through a chimney. Therefore, methane must be controlled by installing ventilation pipes at specific points.

3.6.2 Methane emissions in landfills range between 0.12 - 0.45 m^3/kg of waste, but only about 25% can be captured. Methane generation is influenced by the characteristics of the waste and the landfill conditions. Some estimates suggest 0.0025 m^3/kg of waste per year.

3.6.3 Purpose:

- To manage gas emissions from the waste cells, ensuring that it can be vented out of the disposal area to prevent fire hazards (explosions) and/or be used as an energy source.

3.6.4 Operators:

- Monitoring Staff

3.6.5 Equipment and Materials:

- Gas pipes
- Gravels
- Pipe cutters and accessories

3.6.6 Preparation of Vertical Gas Ventilation Unit (Old Landfill)

- Procedure:
  - Cover the waste pile with soil (follow the land closure process).
  - Then, dig a pit (well) 1-2 meters deep with a diameter of 1-1.5 meters.
  - Install an HDPE pipe with a diameter of 100-150 mm and perforate it in the well to collect the gas. Fill the well with gravel 5-10 cm in diameter.
  - Vent the captured gas to the air through the ventilation pipe to prevent accumulation and potential explosion hazards. It is recommended that the gas be flared or utilized.
- Notes:
  - Design criteria for vertical biogas pipes: HDPE pipe: 100-150 mm Perforation hole diameter: 8-12 mm Distance between vertical ventilation points: 50-70 mm

3.6.7 Preparation of Vertical Gas Ventilation Unit (New Landfill)

- In new landfills, the vertical gas ventilation units are installed progressively as the waste layer height increases.
- Procedure:
  - Prepare perforated pipes and fittings from the landfill storage.
  - Connect the gas pipe to the leachate pipe that has been installed earlier.
  - Install the pipes by connecting them to the prepared fittings. The distance between the gas pipes should be 50-70 meters.
  - Adjust the pipe height according to the height of the waste cell plus 50 cm.
  - Fill the surrounding area with 40 cm diameter stones and gravel (5-10 cm).
  - Install a metal pipe (100-150 mm diameter) 50 cm at the end of the waste pile. The gas emitted from the end of this metal pipe can be flared or utilized for energy.
  - Place a flag near the additional vertical pipe to prevent it from being damaged by bulldozers.

3.6.8 Placement of Vertical Gas Pipes

- Procedure:
  - The installation points for vertical gas pipes must refer to the detailed engineering design (DED).
  - If there is no DED, install the gas pipes at intervals of 50-70 meters.
  - Place vertical gas pipes at the intersection points between lateral pipes and main pipes, branching points of leachate pipes, and at the end points of leachate pipes.

- Use HDPE pipes with a diameter of 100-150 mm.

3.6.9 Installation Technique for Vertical Gas Pipes

- Procedure:
  - At the beginning of the waste deposition process, first install a well. The well installation is preceded by the installation of casing. The well consists of a perforated HDPE pipe surrounded by gravel.
  - Prepare a saw or pipe cutter, fittings, and pipe adhesive.
  - Connect the perforated pipe to the gas pipe that was previously installed.
  - Gas pipes are installed progressively upwards as the waste height increases.
  - Align the perforated pipe within the casing.
  - Gravel casing can be created using a used drum (80 cm diameter) with perforations (5 cm diameter), spaced 15-20 cm apart. Bamboo or used tires can also be used, installed permanently according to the waste height. If using tires, they should be supported between each tire as a substitute for perforation holes.
  - Once biogas formation in the active landfill is confirmed, install a plug connected to a metal (GIP) or brass pipe (1" diameter) for gas flaring. The pipe should extend 1.5 meters above the top layer of the waste. The gas from the metal pipe will be flared.

3.6.10 Methane Gas Monitoring

- Biogas Checking
- Tools and materials: reducer, inner tube, stopwatch, bucket, blower, gas analyzer.
  - Procedure:
  - Select several gas pipe ends to check gas generation.
  - Install a reducer at the gas pipe end.
  - Attach a plastic bag with a known volume, secure it tightly, and ensure there is no leakage.
  - Insert the gas pipe end into the plastic bag and wait to see if gas is generated.
  - Monitor gas generation regularly by observing the plastic bag. If the bag inflates, it indicates gas is being produced.
  - Perform the same check on other gas pipes.
  - Once biogas is detected, proceed with flaring.
  - Note: Gas usually begins to form one year after the waste is deposited.
  - Measuring volume and biogas flow rate
  - To determine the volume of gas, measure the dimensions of the inflated plastic bag.
  - To calculate the gas flow rate:
  - Measure the volume of the gas bag.
  - Record the time it takes to fill the bag.
  - Flow rate = volume ÷ time.
- Methane Composition Measurement
  - Procedure:
  - Prepare the Landfill Gas Analyzer.
  - Connect the blower to the gas pipe and link it to the analyzer.
  - Activate the analyzer and record the readings.
  - The analyzer will display methane and carbon dioxide concentrations as a percentage by volume.

3.6.11 Vertical Gas Pipe Maintenance

- Procedure:
  - Check the gas pipes to ensure they are all straight (vertical).

- Inspect the gravel surface in the vertical pipe casing to ensure it is free of waste, especially plastic.
- Check the casing, and remove any waste blocking it.

3.6.12 Methane Gas Utilization

- Procedure:
  - Install and prepare the gas pumping system, including gas collection pipes (wells), gas pumps, and combustion equipment.
  - Inspect the gas pipes connected to the flaring system.
  - Monitor the flaring to ensure methane is still being produced in the waste cells.
  - Analyze gas samples from the gas pipes; the gas quality must meet the required specifications (methane > 45% v/v).
  - Prepare:
  - Horizontal and vertical pipelines for gas transport
  - Blowers for gas extraction
  - Storage facilities for gas collection
  - Gas purification systems.
  - The collected gas will be distributed to combustion equipment through the pumping station.
  - The pumping facilities are placed on the landfill surface and connected by pipes to the collection system.
  - Install blowers with a minimum pressure of 25 cm (10 inches) of water column.

3.7 Operation and Maintenance of Leachate Treatment Plant (LTP)

3.7.1 Based on research at several Leachate Treatment Plants (LTPs), it has been concluded that the appropriate treatment method for leachate in Indonesia involves stabilization units (a combination of aerobic and anaerobic processes) with 60-80% efficiency. If higher efficiency is required, physical-chemical treatment processes such as coagulation, flocculation, sedimentation, and filtration should be applied. To enhance waste decomposition, leachate can be recirculated back into the waste cells. Leachate contains many types of pollutants in high concentrations, which can contaminate groundwater and surface water. The knowledge, skills, and work attitude of the operators also determine the success of leachate treatment at the LTP.

3.7.2 The LTP operational procedures include:

- Bacterial seeding
- LTP operation
- LTP maintenance

3.7.3 Procedures for bacterial seeding in the UASB Unit are explained below.

- Bacterial seeding is the initial stage to prepare the biological treatment unit in the UASB (Upflow Anaerobic Sludge Blanket) so that it can function properly. There are two important stages in the start-up of an LTP: seeding and acclimatization. Seeding is the process of bacterial cultivation. Bacteria can be sourced from leachate, then cultivated or purchased from suppliers. Acclimatization is the process of adapting bacteria to the environment in the biological treatment unit.
- Tools and Materials:
- 20-liter jerry can/bucket
- Sieve

- Stirring rod
- 1000 ml measuring cup
- pH paper/digital meter
- Mercury/digital thermometer
- Leachate
- Nutrients/enzymes
- Quicklime
- Operator:
- One LTP operator
- Personal Protective Equipment (PPE):
- Mask
- Rubber gloves
- Boots
- Work helmet
- Procedures:
- Seeding:
- Collect 15 liters of leachate using a jerry can, then sieve it into a 20-liter bucket to remove sand and debris.
- Let the sludge (biomass) settle for 2 hours, discard the water, and use the sludge as the bacterial source.
- Put 2.5 liters of biomass and 2.5 liters of nutrients/enzymes into a 5-liter bucket to promote bacterial growth. Nitrogen and phosphate are already present in the leachate.
- Add 25 ml of nutrients/enzymes daily for 14 days.
- Note:
  Prepare 5 seeding containers for future use. Bacterial sources can also be purchased from local suppliers, who usually offer start-up or restart-up support when using their products.
- Acclimatization:
- Fill the UASB tank with clean water (50% of the tank's volume) from a well or another source. If using treated water, remove chlorine by adding 10 liters of leachate per cubic meter of water and leave it in the UASB tank for three days.
- Add 100 mg/liter (100 grams/cubic meter) of bacteria from the seeding process daily for five days. For a UASB tank with a flow rate of 29 cubic meters/day, add 2.9 kg/day of bacteria. Start the recirculation pump to ensure uniform distribution. Check the COD levels.
- On the 6th day, raise the leachate level to 60% of the tank’s effective height.
- On the 7th day, raise the leachate level to 70% of the tank’s effective height.
- On the 8th day, raise the leachate level to 80% of the tank’s effective height.
- On the 9th day, raise the leachate level to 90% of the tank’s effective height.
- On the 10th day, fill the tank to 100% capacity. Check the COD levels.
- From the 11th to the 30th day, add 10 mg/l (10 grams/cubic meter) of bacteria daily, equivalent to 300 grams/day. Check the COD every five days.
- On the 31st day, flow 50% of the total leachate volume into the tank for five days, adjusting the flow rate using the inlet valve. The remaining leachate can be directed to another tank or storage.
- Continue with 75% flow for another five days.
- Finally, direct the full flow of leachate into the tank, marking the operational phase of the LTP. Starting on the third day, check the COD levels at the inlet and outlet. A minimum of 10% COD reduction over five days indicates good performance in the

anaerobic tank. If the reduction is less than 10%, extend the seeding period as outlined above.

- During the start-up process, do not dispose of the water or sludge; recirculate it from the outlet back to the inlet using the pump.
- c. Parameters to Monitor During Start-Up:
- pH: Maintain the tank's liquid pH between 7 and 9. If it falls below 7, add quicklime until the pH exceeds 7. To determine the quicklime dose, perform a jar test:
- Prepare a 10% quicklime solution (100 grams of quicklime powder in 900 ml of water).
- Collect a 1000 ml leachate sample in a beaker.
- Measure the sample's pH before titrating with the 10% quicklime solution.
- Titrate until the sample pH reaches 9-10.
- Record the volume of quicklime solution used.
- Calculate the quicklime dose = titration volume/sample volume.
- Calculate the total quicklime requirement = dose x tank volume.
- Temperature: Maintain the liquid temperature between 25°C and 35°C.
- COD: Check COD every five days.

3.7.4 Procedures for LTP Operation are listed below.

- Equalization Tank:
  - Daily Flow Measurement:
    - Tools and Materials:
      - 10-liter marked bucket
      - Stopwatch
      - Paper
      - Pen
      - Hook stick
    - Procedure:
      - Prepare the 10-liter bucket.
      - Collect leachate in the bucket up to the marked line while timing the process.
      - Calculate the flow rate using the formula: Flow (Q) = 10 liters/time recorded.
      - Example: If the bucket fills to 10 liters in 30 seconds, the flow rate is: Q = (10/30) x 86.4 = 28.8 m^3/day.
      - It is recommended to perform the measurement twice to obtain an average daily flow rate.
  - Parameter Checking:
    - Types of Parameters:
      - Daily parameters: pH and temperature.
      - Weekly parameters: COD.
    - Tools and Materials:
      - pH paper/digital meter
      - Mercury/digital thermometer
      - 500 ml plastic sample bottle
      - Measuring cup
      - Marker
    - Procedure:
      - pH Check:
        - Take a 1-liter sample using the measuring cup.
        - Dip the pH paper/digital meter into the sample for 3-5 seconds.
        - Record the pH value as indicated by the color scale on the pH paper or the digital meter.

        - Maintain the pH between 7 and 9. If the pH is below 7, add quicklime as outlined in the start-up procedure. Stir the tank with the recirculation pump for 5-10 minutes after adding the quicklime.
      - Temperature Check:
        - Dip the mercury thermometer into the sample for 3-5 seconds or aim the digital thermometer at the sample surface for 5 seconds.
        - Record the temperature displayed.
        - Maintain a temperature between 28°C and 35°C. If the temperature exceeds 35°C, recirculate the liquid using the pump.
    - Tank Cleaning:
      - Use a net stick to clean debris around the tank surface and near the inlet-outlet pipes.
- UASB Tank:
  - Parameter Monitoring:
    - Take a 500 ml sample with the measuring cup.
    - Check the pH (7-8) and temperature (28-35°C).
    - Smell the gas from the vent pipe. Normal bacterial performance is indicated by a slight ammonia odor.
    - Observe the bubbles rising to the UASB surface. Numerous bubbles indicate active bacteria.
    - Add 5-7 kg of nutrients each morning.
- Facultative Tank:
  - Take a 500 ml sample with the measuring cup.
  - Check the pH and temperature. pH should be 7-8, and the temperature 28-35°C.
  - Clean debris around the tank surface and near the inlet-outlet pipes.
- Maturation Tank:
  - Take a 500 ml sample with the measuring cup.
  - Check the pH and temperature. pH should be 7-8, and the temperature 28-35°C.
  - Clean debris around the tank surface and near the inlet-outlet pipes.
- Constructed Wetlands Tank:
  - Take a 500 ml sample with the measuring cup.
  - Check the pH and temperature. pH should be 7-8, and the temperature 28-35°C.
- Constructed Wetlands Tank (Second Unit):
  - Take a 500 ml sample with the measuring cup.
  - Check the pH and temperature. pH should be between 7-8, and the temperature should be 28-35°C.
  - Clean any debris around the surface of the pond.
- Control Tank:
  - COD and TSS Monitoring:
    - COD (Chemical Oxygen Demand) testing should be performed weekly by taking samples to the nearest environmental laboratory.
  - Procedure:
    - Take a 500 ml sample and place it in a sample bottle, sealing it tightly.
    - Label the sample bottle with the date of collection using a permanent marker.
    - Send the sample to a certified environmental laboratory for analysis.
  - Environmental Quality Standards Monitoring:
    - Conduct a monthly self-assessment (Swapantau Baku Mutu Lingkungan) between the 1st and 10th of every month. Take a 2-liter sample and send it to a laboratory accredited by the National Accreditation Committee (KAN) for testing.
- LTP Effluent:
  - E. Coli Monitoring:

- Check E. coli levels in the monitoring well every two weeks.
- If E. coli levels exceed the environmental quality standards, add 15% liquid chlorine (calculated based on jar test results) to the LTP during operation.

- Procedure:
  - Observe whether there is any leachate flow from the inlet pipe. If present, this indicates that leachate from the waste cells is flowing smoothly. Note: Ideally, leachate flow should be distributed to multiple points along the inlet side, or vertical flow should be used to prevent short-circuiting by installing vertical barriers.
  - If there is no leachate flow, check the leachate pipes.
  - Open the manhole in the leachate pipes or junctions between lateral and main pipes to identify any blockages.
  - If there are blockages in the leachate pipes, flush the pipes with water using a hose. Water can be sourced from wells, rivers, water utilities (PDAM), or recirculated leachate. Remove any debris causing the blockage.
  - If flushing is ineffective, excavate the landfill cell, repair the blocked pipe, or install a new pipe.

3.7.5 Procedures of LTP Maintenance are listed below.

- LTP maintenance involves regular activities to ensure the system operates efficiently. Maintenance can be classified as weekly, monthly, and yearly tasks.
- Weekly Maintenance:
- Leachate Flow Inspection:
- Check the leachate flow at the outlet of the leachate pipes from the landfill.
- If there is a blockage, flush the pipes with water using a hose. Remove any debris blocking the pipe.
- If flushing does not resolve the issue, excavate the landfill cell, repair the pipe, or install a new one.
- Routine pipe maintenance should be carried out every two weeks.
- Monthly Maintenance:
- Pump Maintenance:
- Regular maintenance of circulation and drainage pumps includes cleaning the inside of the pumps and checking the impeller every 1-2 months.
- Wetland Vegetation Thinning:
- Perform thinning of wetland vegetation.
- The timing of vegetation thinning can be scheduled when the LTP is in operation.
- Yearly Maintenance:
- Sludge Removal in UASB, Facultative, and Maturation Tanks:
- Regularly remove accumulated sludge using drainage pumps. Sludge removal should be conducted when the sludge layer reaches 20% of the tank depth.
- The timing and duration of sludge removal will be determined once the landfill and LTP are operational.
- Replacement of Wetland Vegetation:
- Replace wetland vegetation every 3-4 years.
- Replacement of Wetland Media:
- Replace the wetland media (gravel, sand, and soil) every 3 years due to clogging.

3.8 Handling Special Conditions at The Landfill

3.8.1 Objective:

- To handle special conditions at the landfill to ensure optimal operational performance.

3.8.2 Operators/Personnel Involved:

- Heavy equipment operators
- Leachate treatment plant (LTP) operators
- Landfill gas installation and environmental monitoring operators

3.8.3 Equipment and Materials:

- Heavy equipment
- Leachate samples
- pH meter
- Alkaline (lime)

3.8.4 Procedures for operating the landfill during rainy weather are shown below.

- Work Steps:
  - When the operational road becomes muddy during rain and trucks cannot enter the waste cells, create an alternative route for truck management and unloading points, which will differ from operations during dry weather.
  - Due to the rain, heavy equipment operations may be delayed or postponed until after the rain subsides. If the rain continues until late afternoon, no waste disposal activities will occur.
  - If operations are delayed, extend operational hours once the rain stops to make up for lost time.

3.8.5 Procedures for operating the landfill during excessive waste arrivals (shock loading) are shown below.

- Objective:
  - To maintain optimal landfill operations when incoming waste exceeds normal volume (shock loading).
- Work Steps:
  - Manage the incoming waste trucks based on the readiness of the working area.
  - Park the waste trucks in an empty or temporary parking area.
  - Arrange the queue of waste trucks to avoid blocking access roads to the waste cells.
  - Deposit the excess waste in the active zone or an unused area. If the existing equipment cannot handle the excessive load, rent additional heavy equipment.
  - Adjust the above activities flexibly on-site according to the conditions at the landfill.

3.8.6 Procedures if there is a landslides in the waste disposal zone are shown below.

- Objective:
  - To restore the landslide area in the waste cell back to its original condition.
- Work Steps:
  - Isolate the work area where the landslide occurred, and extend the isolation to the neighboring cell.
  - Construct an earth embankment along the edge of the collapsed cell for safety.
  - Prepare an excavator and track loader to lift and move the waste.

3.8.7 Procedures for emergency conditions at the leachate treatment plant (LTP) are shown below.

- Objective:
  - To ensure the LTP continues operating during an emergency and prevents any negative environmental impacts.
- Work Steps:
  - To keep the LTP system operational, use pumps to maintain the water level in each pond according to the design elevation. The pumped water can be recirculated back to the landfill cells.
  - Immediately prevent leachate from flowing into the surrounding environment.

3.8.8 Procedures to apply occupational health and safety at the landfill are shown below.

- Work Steps:
  - Check the availability of Personal Protective Equipment (PPE) and Safety Equipment (SE), including:
  - Safety helmet
  - Gloves
  - Safety shoes
  - Masks
  - Safety glasses
  - Use proper safety equipment during operations.
  - Operate equipment following the designated steps and operational pathways.
  - Immediately report any irregularities during field operations.
  - Comply with all rules and signage applicable at the landfill.
  - Heavy equipment must not be left at the worksite after operations are completed.
  - Clean the equipment after each use.

4 TRAFFIC MANAGEMENT PLAN

4.1 Introduction

4.1.1 This Traffic Management Plan outlines the strategies and procedures for ensuring safe and efficient traffic flow during construction activities. It is aligned with the recommendations outlined in the UKL-UPL (Environmental Management and Monitoring Plan) 2021 for managing traffic around construction zones, minimizing disruption, and ensuring the safety of workers and road users.

4.2 Recommendations

No	Activity	Recommendations
1	**Mobilization and Demobilization of Heavy Equipment**	• **Early Warning Zone**: Install warning signs at strategic locations before the work zone.
		• **Signage**: Erect appropriate traffic signs to inform road users about work zones and detours.
2	**Earthworks**	• **Transition Guidance Zone**: Set up clear transition zones with directional signs.
		• **Safe Signage Installation**: All signs must be mounted on breakaway posts that reduce harm in case of vehicle impact. The posts should be adaptable to different construction situations.
		• **Work Zone Safety Barriers**: Install safety barriers to prevent unauthorized entry into the work zone.
		• **Warning Signs**: Use cautionary signs (e.g., “Roadworks Ahead”).
		• **Prohibition Signs**: Install signs to restrict certain actions (e.g., “No Entry”).
		• **Mandatory Signs**: Ensure all instructions (e.g., “Slow Down”) are clearly displayed.
		• **Direction Signs**: Include guidance for alternative routes.
3	**Concrete Works**	• **Transition Guidance Zone**: Use guide posts and signs to indicate transitions.
		• **Safe Signage Installation**: Mount all signs on flexible, non-hazardous posts.
		• **Work Zone Safety Barriers**: Place safety barriers around work areas.
		• **Warning, Prohibition, Mandatory, and Direction Signs**: Same as for earthworks.

No	Activity	Recommendations
4	**Foundation Works**	• **Transition Guidance Zone**: Properly define transition areas using clear signage.
		• **Safe Signage Installation**: As in other phases, signs should be installed on non-hazardous posts.
		• **Work Zone Safety Barriers**: Install sturdy barriers around the work zone.
		• **Warning, Prohibition, Mandatory, and Direction Signs**: Ensure proper sign placements in the affected areas.
5	**Architectural Works**	• **Transition Guidance Zone**: Clearly mark transition areas with signs.
		• **Safe Signage Installation**: Follow safety guidelines for signposts to ensure minimal impact risk.
		• **Work Zone Safety Barriers**: Erect barriers around ongoing construction activities.
		• **Warning, Prohibition, Mandatory, and Direction Signs**: Apply as required.
6	**Mechanical and Electrical Works**	• **Transition Guidance Zone**: Provide transition markings to ensure a smooth flow of traffic.
		• **Safe Signage Installation**: All signs should be installed on safe and flexible posts.
		• **Work Zone Safety Barriers**: Place barriers to protect workers and road users.
		• **Warning, Prohibition, Mandatory, and Direction Signs**: Follow similar guidelines for signage placement.
7	**Operation Phase**	• Providing officers to regulate the entry and exit of vehicles at the TPA Sanggrahan. • Installing flash lamps at the entrance to the TPA (Jl. Temanggung-Blora)

4.3 Roles and Responsibilities

4.3.1 Implementing Agencies:

- Environmental Office (DLH) of Temanggung Regency – Waste Management Division:
  - Responsible for overseeing and ensuring the execution of traffic management activities, including mobilization and demobilization of equipment, and maintaining smooth traffic flow during construction phases.

- Supported by the contractor, who will implement traffic control measures, signage installation, and ensure adherence to safety protocols as outlined in the Traffic Management Plan (TMP).

4.3.2 Supervisory Agency:

- Environmental Office (DLH) of Temanggung Regency:
  - Monitors the performance and compliance of the TMP.
  - Ensures that traffic management activities are executed in accordance with the stipulated guidelines, regulations, and safety standards.
  - Oversees the contractor's activities to ensure proper installation of traffic signage, safety barriers, and coordination with relevant stakeholders.

4.3.3 Report Recipients:

- Environmental Office (DLH) of Temanggung Regency:
  - Acts as the primary recipient of reports regarding traffic management activities and any incidents or issues encountered during project execution.
  - Reviews and assesses the effectiveness of the TMP and ensures corrective actions are implemented where necessary.

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Abbreviations

AIIB	:	Asian Infrastructure Investment Bank
ATR/BPN	:	*Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional* (Agrarian and Spatial Planning/Head of the National Land Agency
Bappeda	:	*Badan Perencanaan Pembangunan Daerah*/Regional Development Planning Agency
Bappenas	:	*Badan Perencanaan Pembangunan Nasional*/National Development Planning Agency
BPD	:	*Badan Permusyawaratan Desa*/Village Consultative Body
BPN	:	*Badan Pertanahan Nasional*/National Land Agency
BPPKAD	:	*Badan Pendapatan, Pengelolaan Keuangan dan Aset Daerah*/Regional Financial and Asset Management Agency
CAP	:	Corrective Action Plan
Dinpermades	:	*Dinas Pemberdayaan Masyarakat dan Desa*/Village Community Empowerment Agency
Dintanpangan	:	*Dinas Pertanian dan Ketahanan Pangan*/Agriculture and Food Security Agency
DLH	:	*Dinas Lingkungan Hidup*/Environmental Agency
DPRKPLH	:	*Dinas Perumahan Rakyat, Kawasan Permukiman dan Lingkungan Hidup*/ Department of Public Housing, Settlement Areas and the Environment
		Environment and Social
DPUPKP	:	*Dinas Pekerjaan Umum, Perumahan, dan Kawasan Permukiman*/Public Works, Housing, and Spatial Planning Agency
ESC	:	EnviroSolutions & Consulting
ESF	:	Environmental and Social Framework
ESS	:	Environmental and Social Standard
GRM	:	Grievance Redress Mechanism
KJPP	:	*Kantor Jasa Penilai Publik*/ Public Appraisal Firm
KJPP-MBPRU	:	Public Appraisal Office — Muttaqin Bambang Purwanto Rozak Uswatun
KKPR	:	*Kesesuaian Kegiatan Pemanfaatan Ruang*/ Spatial Utilization Suitability Approval
KLHK	:	*Kementerian Lingkungan Hidup dan Kehutanan*/Ministry of Environment and Foerstry
LAA	:	Land Acquisition Audit
LARP	:	Land Acquisition and Resettlement Plan
LARPF	:	Land Acquisition and Resettlement Policy Framework
LP2B	:	*Lahan Pertanian Pangan Berkelanjutan*/ Sustainable Food Crop Land
LSD	:	*Lahan Sawah yang Dilindungi*/Protected Rice Field Land

PAP	:	Project Affected People
PUPR	:	*Kementerian Pekerjaan Umum dan Perumahan Rakyat*/Ministry of Public Works and Housing
RTRW	:	*Rencana Tata Ruang Wilayah*/Spatial Planning
SEP	:	Stakeholder Engagement Plan
SHP	:	*Sertifikat Hak Pakai*/Right Use Certificate
SMP	:	*Sekolah Menengah Pertama*/Junior High School
SWM-SUD	:	Solid Waste Management for Sustainable Urban Development
TPA	:	*Tempat Pembuangan Akhir*/Final Disposal Site
TPST	:	*Tempat Pengelolaan Sampah Terpadu*/Integrated Waste Processing Site

Executive Summary

Introduction

The Land Acquisition Audit (LAA) report examines the land acquisition process undertaken for the rehabilitation and development of the Sanggrahan Landfill sub-project in Temanggung Regency, Central Java. The sub-project is part of the broader Solid Waste Management for Sustainable Urban Development (SWM-SUD) initiative, which is supported by a government-guaranteed loan from the Asian Infrastructure Investment Bank (AIIB) to the Republic of Indonesia.

The primary objective of the audit is to assess whether the land acquisition process was carried out in accordance with Indonesian laws and in line with the AIIB's Environmental and Social Framework (ESF), in particular Environmental and Social Standard 2 (ESS 2) on Involuntary Resettlement. The audit assesses the voluntariness, transparency, fairness and procedural integrity of the acquisition, in particular the absence of physical or economic displacement.

The audit methodology included a desk review of documents, field verification and stakeholder consultations, covering land title records, evidence of transactions, minutes of community meetings and relevant official communications. The scope of this audit is limited to land acquisition activities related solely to the landfill expansion and does not assess broader environmental, social or technical aspects of the project.

Key audit objectives include:

- Verifying the completeness and accuracy of relevant documents;
- Assessing whether the land acquisition followed a negotiated, willing buyer/willing seller approach;
- Identifying any gaps, legacy issues or potential risks in the acquisition process;
- Recommending corrective actions through a Corrective Action Plan (CAP) where necessary.

The audit was subject to several limitations, including incomplete documentation, limited access to historical records, time constraints and the absence of a formal complaint tracking system. Therefore, while every reasonable effort has been made to evaluate the process objectively, the findings should be interpreted within these limitations. This review does not constitute a legal opinion and should not be used as a substitute for legal due diligence.

Project Description/land Acquisition Process Summary

The Sanggrahan Landfill (TPA Sanggrahan) will be developed on a total area of approximately 60,278 m^2 in Sanggrahan Village, Temanggung Regency, in accordance with the Land Use Permit (KKPR) issued in 2023. The development aims to improve regional solid waste management.

To support this initiative, the Temanggung Regency Government required an additional ±12,697m^2 of land, which was obtained through a land swap agreement with the Sanggrahan Village Government. The exchanged land, formerly village-owned agricultural land (*tanah bengkok*), was used by four village officials. In return, ±8,181 m^2 of replacement land was provided in Dusun Krajan, within the same village boundaries.

The land exchange process was participatory, transparent and based on valuations by an independent licensed valuer (KJPP), ensuring that the replacement land was of equal or greater value and

productivity. There was no physical displacement or conflict, and the process was completed between 2020 and 2023.

Approach

The methodology used by ESC to conduct the land acquisition audit for the TPA Sanggrahan project. The audit was informed by document reviews, field visits, stakeholder consultations, and alignment with relevant legal and policy frameworks.

A compliance framework was established based on Indonesian national legislation and the AIIB Environmental and Social Standards, in particular ESS2 on land acquisition and involuntary resettlement. A risk ranking system - categorised as low, medium, high or insufficient information - was applied to assess the adequacy of current practices and guide the development of the Corrective Action Plan (CAP).

The audit process included a thorough review of documents and two site visits (in May and August 2024), which included interviews with government agencies and observations at the project site. These activities supported a robust understanding of the land acquisition process and informed the subsequent risk assessments and CAP recommendations.

Environmental and Social Compliance Review

The Project has been reviewed for compliance with relevant national regulations on land acquisition and the AIIB Environmental and Social Standards (ESS). Nationally, the project aligns with key legal frameworks, including Law No. 2/2012 on Land Acquisition for Development in the Public Interest and its implementing regulations. A land swap process with the village government for an area of 12,697 m^2 has been completed in line with applicable laws, with supporting documentation such as land certificates and official minutes. In terms of AIIB standards, the Project triggers ESS 1 due to its site-specific environmental and social risks, and ESS 2 as it involves economic displacement affecting four informal land users and approximately 67 waste pickers, though no physical displacement is expected, the Project is categorized as Category B, and the preparation of an Abbreviated Land Acquisition and Resettlement Plan (LARP) is deemed sufficient to address the requirements under ESS 2

Gap Evaluation

The table below provides a summary of the assessment of the gap between current project conditions and the requirements of AIIB Environmental and Social Standard (ESS) 2 on Land Acquisition and Involuntary Resettlement. Each entry outlines key findings, associated risks, and recommended mitigation measures.

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
Environmental and Social Standard 2: Land Acquisition and Involuntary Resettlement			
Land Acquisition and Resettlement Plan	The available document consists of a land appraisal report, which includes the valuation of the land subject to the land swap scheme. The land appraisal report is provided in **Appendix I**. a. Based on field observations, the following groups of potentially affected persons (PAPs) have been identified: Four land users (village officials) whose *bengkok* land was subject to the land swap scheme; b. Sixty-seven waste pickers and three waste collectors operating within the existing TPA area. The land swap process was completed in 2023, with compensation to the village officials provided in the form of replacement *bengkok* land located elsewhere. However, there is currently no compensation plan or livelihood restoration programme in place for the waste pickers and waste collectors.	**Medium**	• Land Acquisition Audit
Land Acquisition and Resettlement Planning Framework	Based on the secondary data obtained, no Land Acquisition and Resettlement Policy Framework (LARPF) developed by the local government was identified. The only available document at present is the land appraisal report, which covers the land to be acquired for the project and the corresponding replacement land.	**Medium**	• Conduct Social Baseline Study • Conduct Economic livelihood assessment
Project Level Grievance Redress Mechanism	Based on the available documentation of the land swap consultation process, there were no recorded grievances related to the planned land swap arrangement. Although there is no formal grievance mechanism established by the project, the land users are familiar with the informal channels to raise their concerns and expectations regarding the project. Typically, land users would directly contact the Head of Sanggrahan Village, who would then forward the concerns to the Environmental Agency (DLH). The project implementer and/or local government are advised to maintain and disclose a formal grievance mechanism to ensure that any potential complaints arising from the land	**Medium**	• Develop Grievance Redress Mechanism

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
	acquisition process or the temporary relocation of waste pickers (if applicable) can be appropriately recorded, addressed, and resolved.		
Compensation and Entitlements for Displaced Persons (including social support, livelihood restoration, resettlement assistance)	Compensation was provided in the form of replacement land with a total area of 8,181 m² located in Dusun Krajan. The determination of replacement land was based on the principle of equivalent value, considering factors such as land legality, location, physical condition, and soil fertility. However, based on the interview results, one of the village officials (as a land user) expressed concern that the size of the replacement land was not equivalent to the previous land area. In addition, there is currently no social compensation plan or livelihood restoration program designed for the waste pickers and collectors (*pengepul*) who are operating within the existing landfill area.	**Medium**	• Conduct Social Baseline Study • Conduct Economic livelihood assessment • Develop Livelihood Restoration Plan
Economic Displacement	The reduction in the size of land received by the land users may potentially affect their agricultural income when compared to the previous land. However, further assessment is required to understand the extent of the impact on the land users' income. The proposed development of the Sanggrahan landfill (TPA) is likely to affect the activities of waste pickers and collectors operating within the site. Any restrictions on their activities are expected to have an impact primarily on the income of the waste pickers. Based on observations and interviews conducted during the scoping, it was identified that, in general, the waste pickers rely solely on economic activities within the Sanggrahan landfill for their livelihoods.	**Medium**	• Conduct Social Baseline Study • Conduct Economic livelihood assessment
Persons without Title or Legal Rights	On the land acquired by the project, 4 land users were affected, all of whom were village officials. They do not have legal rights to the land. The use of the land will be lost if they are no longer serving as village officials. On the existing land, there are 67 scavengers who have economic activities at the Sanggrahan TPA, with details of 28 male scavengers and 39 female scavengers. Based on the survey, it is known that there are 47 HH who work as scavengers. Most of the scavengers come from Losari Hamlet, Sanggrahan Village. Based on interviews during scoping, the average income of scavengers is IDR 200,000/week.	**Medium**	• Conduct Baseline Study for PAP • Develop Livelihood Impact Analysis

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
Information Disclosure	Consultations related to the land swap activity plan have been carried out four times. The following is a record of consultations that have been carried out during the land swap process: 1. Socialization of the Temanggung Regency land acquisition committee in the context of land acquisition for the expansion of the Sanggrahan TPA (November 16, 2020) 2. Research and inventory of the legal status of the land acquisition committee of Temanggung Regency in the context of land acquisition for the expansion of the Sanggrahan TPA, Temanggung Regency (November 18, 2020) 3. Approval of the location and form of land compensation between the Temanggung Regency land acquisition committee in the context of land acquisition for the expansion of the Sanggrahan TPA, Temanggung Regency (November 20, 2020) 4. Exchange of the Temanggung Regency land acquisition committee in the context of land acquisition for the expansion of the Sanggrahan TPA, Temanggung Regency (November 23, 2020) However, detailed information regarding the Sanggrahan TPA development plan has not been carried out. Consultations have only focused on land acquisition for limited stakeholders.	**Medium**	• Conduct Public Consultation • Develop Grievance Redress Mechanism • Develop stakeholder engagement plan
Supervision and Monitoring	Based on information from the Temanggung Regency DPRKPLH, it is known that there were no supervision and monitoring activities after the land swap activity.	**Medium**	• Develop livelihood restoration programs. • Monitor income levels.

Correction Action Plan

The following table outlines the Corrective Action Plan (CAP) to address the identified gaps. It includes proposed actions, timelines and responsible parties to ensure alignment with AIIB standards.

No	ISSUES/FINDINGS	CORRECTIVE ACTION	TIMELINE	RESPONSIBLE PARTY
Environmental and Social Standard 2: Land Acquisition and Involuntary Resettlement				
1	Absence of a Land Acquisition and Resettlement Plan (LARP) and Land Acquisition and Resettlement Planning Framework (LARPF)	Land Acquisition Audit Conduct Social Baseline Study Conduct Economic livelihood assessment	Before construction phase	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
2	Grievance Redress Mechanism (GRM) has not been established	Develop and establish a Grievance Redress Mechanism (GRM) tailored for land-related and resettlement concerns	Before construction phase	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
3	Potential disruption to economic activities and livelihoods of land users, waste pickers, and collectors	Conduct Social Baseline Study Conduct Economic livelihood assessment Identify and assess potential livelihood restoration options	Before construction phase	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
4	Limited stakeholder consultation on the proposed Sanggrahan Landfill development	Conduct meaningful Public Consultation Develop Grievance Redress Mechanism (GRM) Develop a Stakeholder Engagement Plan (SEP)	Before and during project implementation	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
5	Lack of supervision and monitoring of land acquisition activities and associated project impact	Establish a monitoring framework for land acquisition and project impacts Define monitoring targets, frequency, and responsible units	Throughout project implementation	DLH) Temanggung/ project proponent

Ringkasan Eksekutif

Pendahuluan

Laporan Audit Akuisisi Lahan (LAA) meneliti proses pengadaan tanah yang dilakukan untuk rehabilitasi dan pembangunan sub proyek Tempat Pembuangan Akhir (TPA) Sanggrahan di Kabupaten Temanggung, Jawa Tengah. Sub proyek tersebut merupakan bagian dari inisiatif Pengelolaan Sampah Padat untuk Pembangunan Perkotaan Berkelanjutan (SWM-SUD) yang lebih luas, yang didukung oleh pinjaman yang dijamin pemerintah dari Asian Infrastructure Investment Bank (AIIB) kepada Republik Indonesia.

Tujuan utama audit ini adalah untuk menilai apakah proses pengadaan tanah telah dilakukan sesuai dengan hukum Indonesia dan sejalan dengan Kerangka Lingkungan dan Sosial (ESF) AIIB, khususnya Standar Lingkungan dan Sosial 2 (ESS 2) tentang Pemukiman Kembali Tidak Sukarela. Audit ini menilai kesukarelaan, transparansi, keadilan, dan integritas prosedural pengadaan tanah, khususnya tidak adanya pemindahan fisik atau ekonomi.

Metodologi audit mencakup tinjauan dokumen, verifikasi lapangan, dan konsultasi pemangku kepentingan, yang mencakup catatan kepemilikan tanah, bukti transaksi, risalah rapat masyarakat, dan komunikasi resmi yang relevan. Ruang lingkup audit ini terbatas pada aktivitas akuisisi lahan yang terkait dengan perluasan TPA dan tidak menilai aspek lingkungan, sosial, atau teknis yang lebih luas dari proyek tersebut.

Tujuan audit utama meliputi:

- Memverifikasi kelengkapan dan keakuratan dokumen yang relevan;
- Menilai apakah akuisisi lahan mengikuti pendekatan pembeli/penjual yang bersedia yang dinegosiasikan;
- Mengidentifikasi kesenjangan, masalah lama, atau risiko potensial dalam proses akuisisi;
- Merekomendasikan tindakan perbaikan melalui Rencana Tindakan Perbaikan (CAP) jika diperlukan.

Audit tersebut tunduk pada beberapa batasan, termasuk dokumentasi yang tidak lengkap, akses terbatas ke catatan historis, kendala waktu, dan tidak adanya sistem pelacakan pengaduan formal. Oleh karena itu, meskipun setiap upaya yang wajar telah dilakukan untuk mengevaluasi proses secara objektif, temuan harus ditafsirkan dalam batasan ini. Tinjauan ini bukan merupakan opini hukum dan tidak boleh digunakan sebagai pengganti uji tuntas hukum.

Deskripsi Proyek/Ringkasan Proses Akuisisi Lahan

Tempat Pembuangan Akhir (TPA) Sanggrahan akan dibangun di atas lahan seluas kurang lebih 60.278 m^2 di Desa Sanggrahan, Kabupaten Temanggung, sesuai dengan Izin Usaha Pemanfaatan Tanah (KKPR) yang diterbitkan pada tahun 2023. Pembangunan ini bertujuan untuk meningkatkan pengelolaan sampah regional.

Untuk mendukung inisiatif ini, Pemerintah Kabupaten Temanggung membutuhkan tambahan lahan seluas ±12.697 m^2 yang diperoleh melalui perjanjian tukar-menukar lahan dengan Pemerintah Desa Sanggrahan. Lahan yang ditukar tersebut, yang sebelumnya merupakan lahan pertanian milik desa

(tanah bengkok), digunakan oleh empat perangkat desa. Sebagai gantinya, disediakan lahan pengganti seluas ±8.181 m² di Dusun Krajan, dalam batas desa yang sama.

Proses tukar-menukar lahan dilakukan secara partisipatif, transparan, dan berdasarkan penilaian oleh Penilai Independen Berlisensi (KJPP), yang memastikan bahwa lahan pengganti tersebut memiliki nilai dan produktivitas yang sama atau lebih tinggi. Tidak ada pengungsian fisik atau konflik, dan prosesnya selesai antara tahun 2020 dan 2023.

Pendekatan

Metodologi yang digunakan oleh ESC untuk melakukan audit pengadaan tanah untuk proyek TPA Sanggrahan. Audit ini diinformasikan melalui telaah dokumen, kunjungan lapangan, konsultasi pemangku kepentingan, dan penyelarasan dengan kerangka hukum dan kebijakan yang relevan.

Kerangka kepatuhan ditetapkan berdasarkan undang-undang nasional Indonesia dan Standar Lingkungan dan Sosial AIIB, khususnya ESS2 tentang pengadaan tanah dan pemukiman kembali tidak sukarela. Sistem pemeringkatan risiko - dikategorikan sebagai informasi rendah, sedang, tinggi atau tidak memadai - diterapkan untuk menilai kecukupan praktik saat ini dan memandu pengembangan Rencana Aksi Perbaikan (CAP).

Proses audit mencakup telaah dokumen secara menyeluruh dan dua kunjungan lapangan (pada bulan Mei dan Agustus 2024), yang mencakup wawancara dengan lembaga pemerintah dan pengamatan di lokasi proyek. Kegiatan-kegiatan ini mendukung pemahaman yang kuat tentang proses pengadaan tanah dan menginformasikan penilaian risiko dan rekomendasi CAP berikutnya.

Tinjauan Kepatuhan Lingkungan dan Sosial

Proyek ini telah ditinjau untuk memastikan kepatuhannya terhadap peraturan nasional yang relevan terkait pengadaan tanah serta Standar Lingkungan dan Sosial (ESS) dari AIIB. Secara nasional, proyek ini sejalan dengan kerangka hukum utama, termasuk Undang-Undang Nomor 2 Tahun 2012 tentang Pengadaan Tanah bagi Pembangunan untuk Kepentingan Umum beserta peraturan pelaksananya. Proses tukar-menukar tanah dengan pemerintah desa untuk lahan seluas 12.697 m² telah diselesaikan sesuai ketentuan hukum yang berlaku, disertai dokumentasi pendukung seperti sertifikat tanah dan berita acara resmi. Dalam konteks standar AIIB, proyek ini memicu ESS 1 karena adanya risiko lingkungan dan sosial yang bersifat spesifik lokasi, serta ESS 2 karena melibatkan pemindahan ekonomi yang berdampak pada empat pengguna lahan informal dan sekitar 67 pemulung, meskipun tidak terdapat pemindahan fisik. Berdasarkan karakteristik dampaknya yang terbatas dan dapat dikelola, proyek ini dikategorikan sebagai Kategori B, dan penyusunan Rencana Pengadaan Tanah dan Pemukiman Kembali yang Disingkat (LARP) dinilai memadai untuk memenuhi persyaratan sesuai ESS 2.

Evaluasi Gap

Tabel di bawah ini memberikan ringkasan penilaian kesenjangan antara kondisi proyek saat ini dan persyaratan Standar Lingkungan dan Sosial (ESS) 2 AIIB tentang Pengadaan Lahan dan Pemukiman Kembali Secara Tidak Sukarela. Setiap entri menguraikan temuan utama, risiko terkait, dan langkah mitigasi yang direkomendasikan.

Persyaratan dan Referensi AIIB	Status dan Observasi Pengadaan Lahan (per 24 Januari 2025)	Risiko	Mitigasi yang Direkomendasikan
Environmental and Social Standard 2: Land Acquisition and Involuntary Resettlement			
Rencana Pengadaan Lahan dan Pemukiman Kembali	Dokumen yang tersedia terdiri dari laporan penilaian tanah, yang mencakup penilaian tanah yang menjadi subjek skema tukar-menukar tanah. Laporan penilaian tanah disediakan dalam **Lampiran I**. a. Berdasarkan pengamatan lapangan, kelompok orang yang berpotensi terkena dampak (PAP) berikut telah diidentifikasi: Empat pengguna tanah (aparat desa) yang tanah bengkoknya menjadi subjek skema tukar-menukar tanah; b. Enam puluh tujuh pemulung dan tigas pemulung yang beroperasi di dalam area TPA yang ada. Proses tukar-menukar tanah selesai pada tahun 2023, dengan kompensasi kepada aparat desa diberikan dalam bentuk tanah bengkok pengganti yang berlokasi di tempat lain. Namun, saat ini tidak ada rencana kompensasi atau program pemulihan mata pencaharian bagi para pemulung dan pemulung.	**Sedang**	• Audit Akuisisi Lahan
Kerangka Perencanaan Pengadaan Lahan dan Pemukiman Kembali	Berdasarkan data sekunder yang diperoleh, belum ditemukan Kerangka Kebijakan Pengadaan Tanah dan Pemukiman Kembali (LARPF) yang disusun oleh pemerintah daerah. Saat ini, dokumen yang tersedia hanyalah laporan penilaian tanah yang mencakup tanah yang akan dibebaskan untuk proyek dan tanah pengganti yang sesuai.	**Sedang**	• Melakukan Studi Dasar Sosial • Melakukan Penilaian Mata Pencaharian Ekonomi
Mekanisme Penyelesaian Keluhan Tingkat Proyek	Berdasarkan dokumentasi yang tersedia mengenai proses konsultasi tukar-menukar lahan, tidak ada keluhan yang tercatat terkait dengan rencana pengaturan tukar-menukar lahan. Meskipun tidak ada mekanisme pengaduan formal yang ditetapkan oleh proyek, para pengguna lahan mengetahui saluran informal untuk menyampaikan kekhawatiran dan harapan mereka terkait proyek. Biasanya, para pengguna lahan akan langsung menghubungi Kepala Desa Sanggrahan, yang kemudian akan meneruskan kekhawatiran tersebut ke Badan Lingkungan Hidup (DLH).	**Sedang**	• Mengambangkan Mekanisme Penyelesaian Keluhan

Persyaratan dan Referensi AIIB	Status dan Observasi Pengadaan Lahan (per 24 Januari 2025)	Risiko	Mitigasi yang Direkomendasikan
	Pelaksana proyek dan/atau pemerintah daerah disarankan untuk memelihara dan mengungkapkan mekanisme pengaduan formal guna memastikan bahwa setiap potensi keluhan yang timbul dari proses pengadaan tanah atau relokasi sementara pemulung (jika berlaku) dapat dicatat, ditangani, dan diselesaikan dengan tepat.		
Kompensasi dan Hak bagi Orang Terlantar (termasuk dukungan sosial, pemulihan mata pencaharian, bantuan pemukiman kembali)	Kompensasi diberikan dalam bentuk lahan pengganti seluas 8.181 m² yang berlokasi di Dusun Krajan. Penetapan lahan pengganti didasarkan pada asas nilai yang mempertimbangkan faktor-faktor seperti legalitas lahan, lokasi, kondisi fisik, dan kesuburan tanah. Namun, berdasarkan hasil wawancara, salah seorang perangkat desa (sebagai pengguna lahan) menyampaikan kekhawatiran bahwa luas lahan pengganti tidak setara dengan luas lahan sebelumnya. Selain itu, saat ini belum ada rencana kompensasi sosial atau program pemulihan mata pencaharian yang dirancang untuk para pemulung dan pengepul yang beroperasi di dalam area TPA yang ada.	**Sedang**	• Melakukan Studi Dasar Sosial • Melakukan Penilaian Mata Pencaharian Ekonomi • Mengembangkan Rencana Pemulihan Mata Pencaharian
Pemindahan Sumber Penghidupan	Penurunan luasan lahan yang diterima oleh pengguna lahan mungkin akan berdampak pada pendapatan hasil pertanian bila dibandingkan dengan lahan sebelumnya. Namun hal ini perlu dilakukan kajian lebih lanjut tentang dampak perubahan pendapatan pengguna lahan. Rencana pengembangan TPA berpotensi berdampak pada aktivitas pemulung dan pengepul di TPA Sanggrahan. Pembatasan aktivitas akan berdampak pada pendapatan pemulung utamanya. Berdasrkan observasi dan wawancara saat *scoping*, secara umum pemulung hanya memiliki aktivitas ekonomi di TPA Sanggrahan.	**Sedang**	• Melakukan Studi Dasar Sosial • Melakukan Penilaian Mata Pencaharian Ekonomi
Orang Tanpa Gelar atau Hak Hukum	Pada lahan yang di akuisi oleh proyek terdampak 4 pengguna lahan yang semuanya adalah aparat desa. Mereka tidak memiliki hal legal terhadap lahan. Pemanfaatan terhadap lahan akan hilang bila mereka sudah tidak menjabat sebagai aparat desa. Pada lahan yang ada terdapat 67 pemulung yang memeiliki kegiatan ekonomi di TPA Sanggrahan dengan rincian 28 pemulung laki-laki dan 39 pemulung perempuan. Berdasarkan hal survey diketahui bahwa terdapat 47 rumah tangga yang bekerja sebagai pemulung. Pemulung sebagian besar berasal dari Dusun Losari, Desa Sanggrahan.	**Sedang**	• Melakukan Studi Dasar untuk Orang yang Terkena Dampak Proyek (PAP) • Mengembangkan Analisis Dampak Mata Pencaharian

Persyaratan dan Referensi AIIB	Status dan Observasi Pengadaan Lahan (per 24 Januari 2025)	Risiko	Mitigasi yang Direkomendasikan
	Berdasarkan wawancara saat *scoping,* pendapatan rata-rata pemulung sebesar Rp. 200.000/minggu		
Pengungkapan Informasi	Konsultasi terkait dengan rencana kegiatan tukar guling lahan telah dilakukan sebanyak empat kali. Berikut merupakan *record* konsultasi yang telah dilakukan selama proses tukar guling lahan: 1. Sosialisasi panitia pengadaan tanah Kab. Temanggung dalam rangka pengadaan tanah untuk perluasan TPA Sanggrahan (16 November 2020) 2. Penelitian dan inventarisasi status hukum tanah panitia pengadaan tanah Kab. Temanggung dalam rangka pengadaan tanah untuk perluasan TPA Sanggrahan Kab. Temanggung (18 November 2020) 3. Persetujuan Lokasi dan bentuk Ganti rugi tanah antara panitia pengadaan tanah kab. Temanggung dalam rangka pengadaan tanah untuk perluasan TPA Sanggrahan Kab. Temanggung (20 November 2020) 4. Tukar menukar panitia pengadaan tanah Kab. Temanggung dalam rangka pengadaan tanah untuk perluasan TPA Sanggrahan Kab. Temanggung (23 November 2020) Meskipun demikian informais rinci terkait rencan pengembangan TPA Sanggrahan belum dilakukan. Konsultasi hanya dilakukan fokus pada pembebasan lahan pada pemangku kepentingan yang terbatas.	**Sedang**	• Melaksanakan Konsultasi Publik • Mengembangkan Mekanisme Penyelesaian Keluhan • Mengembangkan Rencana Pelibatan Pemangku Kepentingan
Pengawasan dan Pemantauan	Berdasarkan informasi dari DPRKPLH Kabupaten Temanggung, diketahui tidak ada aktivitas supervisi dan monitoring pasca kegiatan tukar guling lahan.	**Sedang**	• Mengembangkan Program Pemulihan Mata Pencaharian • Memantau Tingkat Pendapatan

Rencana Tindakan Korektif

Tabel berikut menguraikan Rencana Tindakan Korektif (CAP) untuk mengatasi kesenjangan yang teridentifikasi. Rencana ini mencakup usulan tindakan, jadwal, dan pihak yang bertanggung jawab untuk memastikan keselarasan dengan standar AIIB.

No	MASALAH/TEMUAN	TINDAKAN KOREKTIF	LINIMASA	PIHAK YANG BERTANGGUNGJAWAB
Standar Lingkungan dan Sosial 2: Pengadaan Lahan dan Pemukiman Kembali Secara Paksa				
1	Tidak adanya Rencana Pengadaan Tanah dan Pemukiman Kembali (LARP) dan Kerangka Perencanaan Pengadaan Tanah dan Pemukiman Kembali (LARPF)	• Audit Akuisisi Lahan • Melaksanakan Studi Dasar Sosial • Melaksanakan Penilaian Mata Pencaharian Ekonomi	Sebelum fase konstruksi	Dinas Lingkungan Hidup (DLH) Temanggung/ pemrakarsa proyek
2	Mekanisme Penyelesaian Keluhan (GRM) belum ditetapkan	• Mengembangkan dan menetapkan Mekanisme Penyelesaian Keluhan (GRM) yang disesuaikan dengan permasalahan terkait lahan dan pemukiman kembali	Sebelum fase konstruksi	Dinas Lingkungan Hidup (DLH) Temanggung/ pemrakarsa proyek
3	Potensi gangguan terhadap kegiatan ekonomi dan mata pencaharian pengguna lahan, pemulung, dan pengumpul sampah	• Melakukan Studi Dasar Sosial • Melakukan Penilaian Mata Pencaharian Ekonomi • Mengidentifikasi dan menilai potensi opsi pemulihan mata pencaharian	Sebelum fase konstruksi	Dinas Lingkungan Hidup (DLH) Temanggung/ pemrakarsa proyek
4	Konsultasi terbatas dengan pemangku kepentingan terkait rencana pembangunan TPA Sanggrahan	• Melaksanakan Konsultasi Publik yang bermakna • Mengembangkan Mekanisme Penyelesaian Keluhan (GRM) • Mengembangkan Rencana Keterlibatan Pemangku Kepentingan (SEP)	Sebelum dan selama pelaksanaan proyek	Dinas Lingkungan Hidup (DLH) Temanggung/ pemrakarsa proyek

No	MASALAH/TEMUAN	TINDAKAN KOREKTIF	LINIMASA	PIHAK YANG BERTANGGUNGJAWAB
Standar Lingkungan dan Sosial 2: Pengadaan Lahan dan Pemukiman Kembali Secara Paksa				
5	Kurangnya pengawasan dan pemantauan terhadap kegiatan pengadaan tanah dan dampak proyek terkait	• Menetapkan kerangka kerja pemantauan untuk akuisisi lahan dan dampak proyek • Menetapkan target pemantauan, frekuensi, dan unit yang bertanggung jawab	Sepanjang pelaksanaan proyek	Dinas Lingkungan Hidup (DLH) Temanggung/ pemrakarsa proyek

1. Introduction

1.1 Overview

1.1.1 The Asian Infrastructure Investment Bank (AIIB) is providing a state-guaranteed loan to the Republic of Indonesia to support the Solid Waste Management for Sustainable Urban Development (SWM-SUD) project. One of the sub-projects under this initiative is the rehabilitation and development of the Sanggrahan Landfill in Temanggung Regency, Central Java.

1.1.2 This report presents a Land Acquisition Audit (LAA) for the Sanggrahan Landfill subproject. The purpose of the audit is to assess whether the land acquisition process undertaken complies with applicable national regulations and is consistent with the requirements of the AIIB's Environmental and Social Framework (ESF), in particular Environmental and Social Standard 2 (ESS 2): Involuntary Resettlement. The LAA also seeks to identify any gaps, legacy issues, or risks associated with the process and recommend appropriate mitigation measures, if needed.

1.1.3 The audit was conducted through a combination of desk review, field verification, and stakeholder consultations. Key documents reviewed include land ownership records, evidence of compensation (if any), minutes of community meetings, and relevant correspondence between government agencies. The results of the review are used to assess the consistency of the land acquisition process with the core principles of the AIIB ESS 2, including voluntary versus involuntary resettlement, avoidance of displacement, transparency, compensation, consultation, and grievance redress. Where gaps or inconsistencies were identified, proposed corrective actions were outlined in a Corrective Action Plan (CAP). The methodology and tools used to conduct this review are detailed in chapter three.

1.2 Objectives

1.2.1 The purpose of this land acquisition audit is to assess the compliance of land acquisition activities conducted for the development of the Sanggrahan Landfill with applicable Indonesian laws and AIIB Environmental and Social Standards, in particular ESS 2: Land Acquisition and Involuntary Resettlement. The main objectives of this land audit are to

- Verify the completeness and accuracy of key documents, including land title deeds, land valuation reports, and meeting minutes related to the acquisition process.
- Confirm whether the land acquisition process followed a negotiated, willing buyer/willing seller approach, as required by AIIB ESS 2 in the case of no resettlement.
- Identify any potential gaps, legacy issues, or risks related to the land acquisition process.
- Provide practical and proportionate recommendations through a Corrective Action Plan (CAP), if necessary, to ensure compliance with AIIB ESS 2 and national regulations.

1.3 Scope of Reporting

1.3.1 This land acquisition audit focuses on assessing the processes and documentation related to land acquisition for the Sanggrahan Landfill subproject located in Temanggung Regency, Central Java. The scope of this audit is limited to reviewing:

- The land acquisition process conducted for the expansion of the Sanggrahan Landfill, involving landowners and land users;
- Relevant documentation, including land ownership certificates, evidence of transactions, land valuation documents, and records of meetings or negotiations;
- The procedures followed by the local government and village authorities to ensure that the land acquisition was in compliance with applicable Indonesian laws and consistent with AIIB ESS 2, in particular the principles of voluntary acquisition through negotiated settlement;
- Records of stakeholder consultations, if any, related to the land acquisition process.

1.3.2 This review does not assess the broader environmental and social impacts of the project, nor does it assess the technical aspects of landfill development, construction, or operation. The audit focuses strictly on the land acquisition process as a stand-alone activity, given its limited scale and lack of physical or economic displacement.

1.3.3 The audit findings are intended to support the AIIB's due diligence requirements and to ensure that land acquisition activities are transparent, fair, legally compliant, and socially acceptable.

1.4 Limitation

1.4.1 In preparing this report, ESC has relied on information obtained from secondary sources and personal interviews with relevant stakeholders. ESC has not independently verified all the information received and, unless otherwise stated, has assumed that such information is accurate and complete.

1.4.2 The findings, conclusions and recommendations contained in this report are based on conditions, laws, regulations and data available at the time of preparation. Any subsequent changes in these factors may affect the validity of the conclusions presented herein.

1.4.3 While the ESC made reasonable efforts to obtain and review relevant documentation, several limitations were encountered during the course of the audit, including :

- Incomplete documentation: Certain key documents related to the land acquisition process were unavailable or only partially provided by the local government. These included missing or incomplete land valuation reports, minutes of negotiation meetings, and official payment records.
- Limited Access to Historical Records: Access to some archival data, particularly records from the early planning and coordination stages of land acquisition, was limited.
- Time constraints: The audit was conducted within a limited timeframe, which limited follow-up with some stakeholders and the ability to request additional data.
- No formal record of complaints: There was no centralized or formal record of complaints or objections related to the land acquisition process, which limited the audit's ability to assess whether community concerns were adequately addressed.

1.4.4 ESC's reconnaissance was limited to physically accessible areas and did not include intrusive or legal investigations. No deviations from the scope of work were identified during the audit. However, this report does not constitute a legal opinion and should not be construed as a substitute for legal due diligence.

2. Project Description/ Land Acquisition Process Summary

2.1 Land Status

2.1.1 The TPA Sanggrahan and the proposed TPST facility are located on a total area of 60,278 square meters designated for non-commercial use based on the KKPR (Spatial Utilization Suitability Approval) issued in 2023. This land includes former plantation areas, rainfed rice fields and a portion of land previously classified as Protected Rice Field Land (LSD) and Sustainable Food Crop Land (LP2B).

2.1.2 According to KKPR approval No. 053/KKPR/2023 dated December 29, 2023, the status of LSD is subject to the recommendations of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), while the designation of LP2B has been regulated in accordance with applicable national laws and regulations.

2.1.3 In order to acquire land for the development of the landfill, the Temanggung Regency Government chose not to use a land purchase approach. Instead, a land swap (tukar-menukar tanah) was carried out between the village government and the regency government. This process was guided by a fair market valuation carried out by an independent public valuation company (KJPP), whose appointment and findings were mutually agreed by both parties. The land swap did not result in any displacement, resettlement or social conflict as the land was not occupied by residents or used for housing. However, the land had been cultivated by village officials for agricultural purposes, which may have affected their livelihoods.

2.1.4 The land exchange process was carried out through participatory and transparent consultation between the village and regency governments. Replacement land was provided with equivalent market value, sufficient area and within the same administrative boundary of Sanggrahan village.

2.1.5 The total area of land acquired for the landfill development is approximately 12,697 square metres, obtained through a land swap with "*bengkok*" land owned by the village and allocated for the use of village officials. The land was previously farmed by four village officials. As compensation, the regency government provided replacement land in Krajan hamlet, consisting of both dry agricultural land and rice fields.

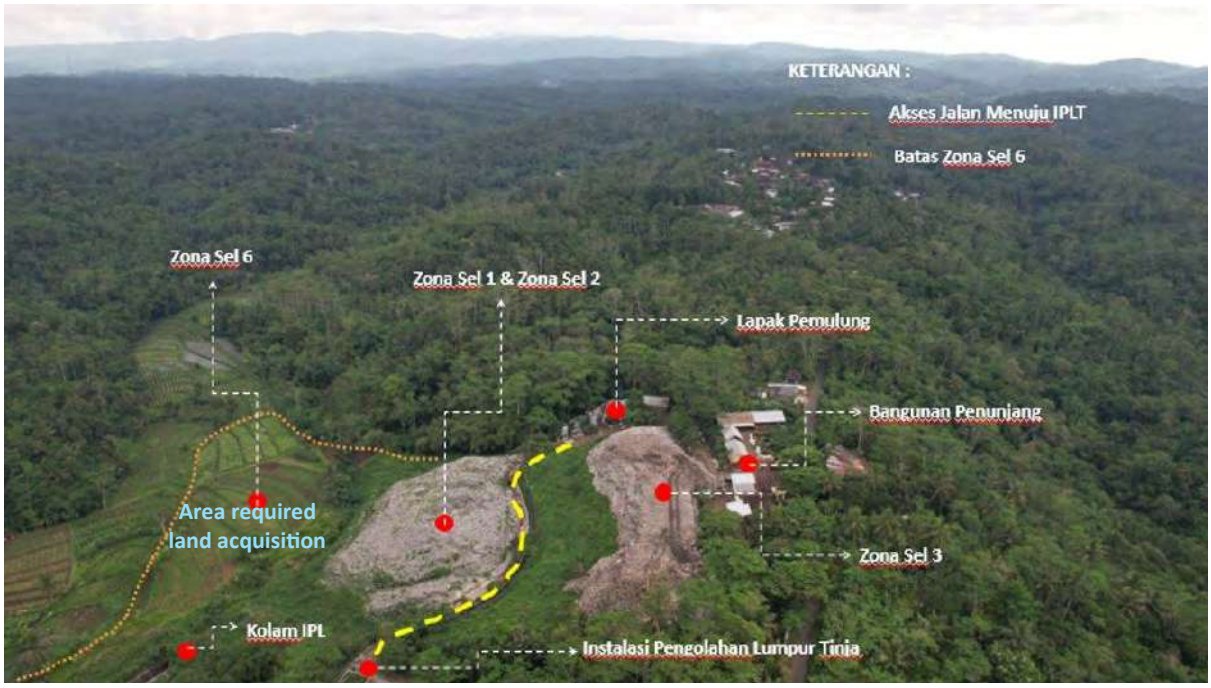
2.1.6 Based on field assessments, the replacement land was considered to be more productive than the original plots. The land swap process was initiated in 2020 and completed in 2023 as part of the land acquisition assessment.

2.2 Location

2.2.1 The project site is located north of Krajan Hamlet Road in Sanggrahan Village, Kranggan Subdistrict, Temanggung Regency, Central Java. The site is accessible by a local asphalt road with a width of approximately 4 meters, which can accommodate two-way traffic with minimal congestion. The road has drainage infrastructure and street lighting.

2.2.2 The main access road serving the area is Kranggan Road, located approximately 1,000 meters south of the proposed site. A notable landmark in the vicinity is SMP Negeri 1 Kranggan, located approximately 400 meters southwest of the site. Based on the field inspection, it was found that the land earmarked for the development is vacant and no longer under active cultivation. The land was previously used for agricultural purposes but is currently fallow.

Figure 2-1 TPA sanggrahan existing condition



Source: DPRKPLH Temanggung Regency, 2023

2.3 Land Details

2.3.1 The land required for the development of the Sanggrahan Landfill (TPA) covers an area of approximately 12,697 m², located in Tegal Ombo, Sanggrahan Village, Kranggan Subdistrict, Temanggung Regency, Central Java. This land was previously used as agricultural rice fields by village officials and is fully certified under a "Right of Use" (*Hak Pakai*) title in the name of the Sanggrahan Village Government.

2.3.2 Tabel below shows detail description for Land required for landfill development and Land provided as Replacement.

Table 2-1 Detail Land Description

No	Parameter	Acquired Land	Replacement land
1	Total Area	±12,697 m²	-
2	Total Assessed Area	-	21,983 m² (8 plots assessed)
3	Area Selected for Swap	-	8,181 m² (4 plots selected)
4	Location	Tegal Ombo, Sanggrahan Village, Kranggan Subdistrict	Krajan Hamlet, Sanggrahan Village, Kranggan Subdistrict
5	Land Type	Rice field (previously cultivated by village officials)	Rice field, currently used for agriculture
6	Land Status	Right of Use (Hak Pakai) Certificate	Letter C Certificate, Class I
7	Access	500 meters from Kranggan–Kaloran Road (asphalt, two-way, ±5 meters wide, low traffic, equipped with street lighting)	Adjacent to Krajan Hamlet Road (asphalt, ±4 meters wide, low traffic), approximately 1,000 meters from Kranggan Road
8	Surrounding Area	Vacant land, residential houses, Kranggan Landfill (existing), Al-Fatah Mosque	Residential area, near SMPN 1 Kranggan and Kranggan Subdistrict Office
9	Flood Risk	No history of flooding	No history of flooding
10	Water Infrastructure	Available in the vicinity; main water channel located approximately 10 meters southwest of the site	Available along the road; main water channel (Kali Progo River) approximately 1 km west
11	Utilities	Electricity, clean water, and telephone lines are available but not yet connected to the site	-
12	Public Transport	Approximately 600 meters from the site	±500 meters from the site
13	Social Facilities	Schools and places of worship within a ±600-meter radius	Schools, healthcare facilities, shopping centers, and places of worship within ±500 meters
14	Land Use Trend	Agricultural area	Predominantly residential and agricultural
15	Distance to TPA Site	0 km	Approximately 3.5 km

2.3.3 The following table summarizes the details of the land required for the development of the Sanggrahan Landfill (TPA) and the corresponding replacement land provided through the land swap mechanism. It includes information on land parcel identification, area, legal status, ownership, and appraised market value. This summary demonstrates that the land exchange was conducted on a fair and equivalent value basis, as determined by an independent Public Appraisal Firm (KJPP) and agreed upon by both the Village and Regency Governments.

Table 2-2 Detail summarize land required for the development of the Sanggrahan Landfill (TPA) and the replacement land

No	Land required for TPA	Area (M^2)	Ownership	Land Value Appraisal (IDR)	Land Swap (including location	Area (M^2)	Ownership	Land Value Appraisal (IDR)
1	SHP no 102 (Right of Use)	3,461	Bengkok Land of Sanggrahan Village	652,000,000	128 S Letter C in Sanggrahan Village	3,033	Government of Temanggung Regency	480,000,000
2	SHP no 106 (Right of Use)	1,138	Bengkok Land of Sanggrahan Village		127 S Letter C in Sanggrahan Village	1,746	Government of Temanggung Regency	281,000,000
3	SHP no 116 (Right of Use)	1,916	Bengkok Land of Sanggrahan Village					
4	SHP no 105 (Right of Use)	3,167	Bengkok Land of Sanggrahan Village	433,000,000	120 S Letter C in Sanggrahan Village	2,531	Government of Temanggung Regency	396,000,000
5	SHP no 123 (Right of Use)	1,159	Bengkok Land of Sanggrahan Village		124 S Letter C in Sanggrahan Village	1,176	Government of Temanggung Regency	154,000,000
6	SHP no 126 (Right of Use)	1,855	Bengkok Land of Sanggrahan Village	186,000,000				
Total		12,696	21,983	1,271,000,000		8,181		1,271,000,000

2.4 Valuation Approach

2.4.1 The value analysis begins by determining the unit of comparison and the elements of comparison that differ based on the available data. Adjustments are then made to these differences to arrive at a Market Value opinion for the asset being appraised. Factors typically considered for adjustments include:

- Legal factors
- Location factors, especially accessibility and the surrounding environment
- Physical factors, including infrastructure, elevation, and land classification
- Soil fertility factors

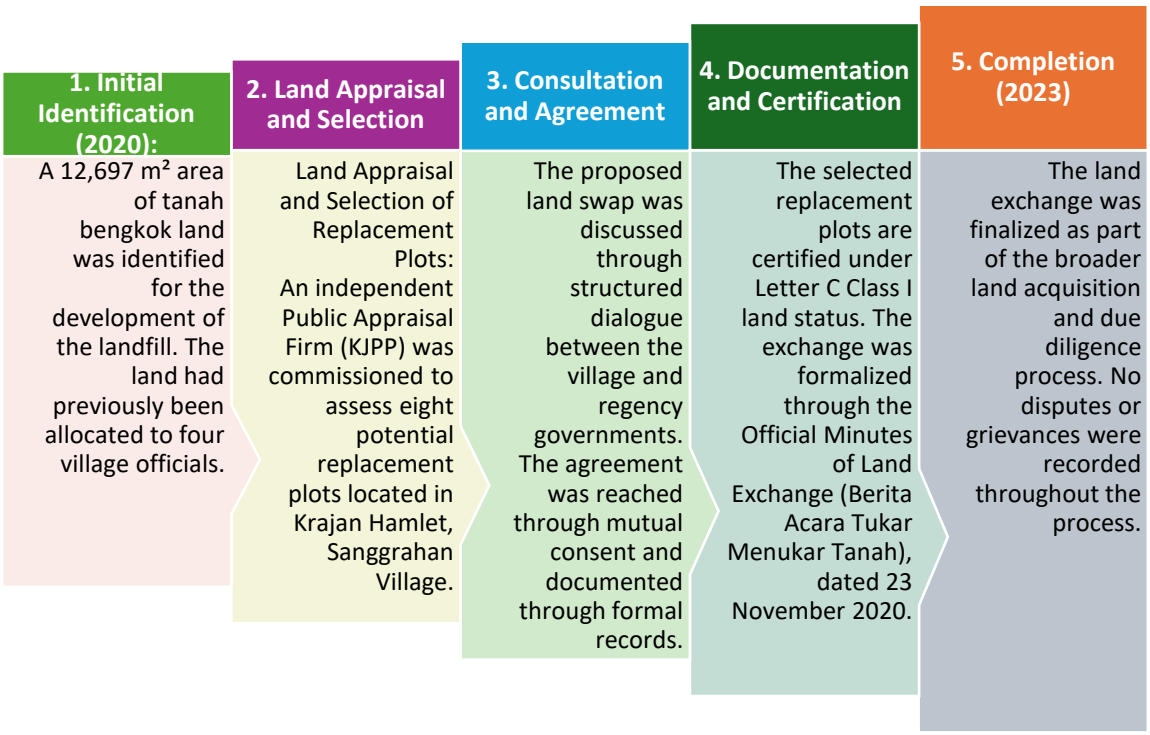
2.4.2 As compensation for the village land allocated for the landfill development, the Temanggung Regency Government provided a total of ±21,983 m² of land in Krajan Hamlet, Sanggrahan Village, consisting of eight plots with *Letter C* Class I land certificates. From this total area, four plots covering ±8,181 m² were selected based on equivalent market value, appraised at IDR 1,271,000,000 by the appointed KJPP.

2.5 Land Acquisition Process

2.5.1 The land acquisition for the development of the Sanggrahan Landfill (TPA) was carried out through a land swap (*tukar guling*) mechanism between the Sanggrahan Village Government and the Temanggung Regency Government. This process was conducted in a participatory, transparent, and non-displacing manner, as no individuals resided on or were physically relocated from the affected land.

2.5.2 The key stages of the land acquisition process commenced with the initial identification and continued through to completion. This process took place from 2020 and was finalised in 2023. The following diagram illustrates the key stages of the land acquisition process:

Figure 2-2 Key Stages of The Land Acquisition Process



2.5.3 Land Appraisal and Selection of Replacement Plots: An independent Public Appraisal Firm (KJPP) was commissioned to assess eight potential replacement plots located in Krajan Hamlet, Sanggrahan Village. The total area assessed was 21,983 m², with a total appraised value of IDR 2.87 billion. The table below summarizes the appraisal results:

No	Letter C Number	Area (M^2)	Location	Land Value Appraisal (IDR)
1	126 S	2,242	Krajan Hamlet, Sanggrahan Village, Kranggan Sub-District	269,000,000
2	125 S	5,421		598,000,000
3	129 S	2,517		302,000,000
4	123 S	3,317		390,000,000
5	124 S	1,176		154,000,000
6	128 S	3,033		480,000,000
7	127 S	1,746		281,000,000
8	120 S	2,531		396,000,000
Total		21,983		2,870,000,000

2.5.4 Based on the appraisal and suitability assessment, four plots were selected as the official replacement land, with a combined area of 8,181 m². These plots were deemed to meet the requirements in terms of market value, land productivity, and location within the same administrative area.

3. Approach

3.1 Overview

3.1.1 This chapter outlines the ESC's approach to conducting the land acquisition audit. The audit was based on information provided by DPRKPLH Kab. Temanggung, data collected during field visits to the project area, stakeholder engagement, and review of relevant secondary data sources. The results of this audit are presented primarily in tabular form in Section 5, while the results of the development of the Corrective Action Plan (CAP) are discussed in Section 6.

3.2 Compliance Framework

3.2.1 In line with the Asian Infrastructure Investment Bank (AIIB) Environmental and Social Standards (ESS), as well as relevant provincial and national legislation, regulations, and standards, a compliance framework has been developed for this report. This includes the following:

- Applicable Indonesian national legislation and ratified international treaties (evaluated through a permitting review)
- Asian Infrastructure Investment Bank (AIIB) Environmental and Social Standards (ESS), being: AIIB ESS2: Land Acquisition and Involuntary Ressetlement

3.3 Risk Rankings

3.3.1 The ESC assigned a risk ranking - low, medium or high - to each item assessed, based on the criteria defined below. The risk rankings take into account the effectiveness of current and proposed management, mitigation and monitoring measures and the capacity of the responsible parties to implement them. These risk ratings are dynamic and may change as further information is received from DPRKPLH Kab. Temanggung or other relevant stakeholders. The results of this risk assessment have guided the development of the CAP, which includes recommended actions to reduce the identified risks.

Table 3-1 Risk Categorization

Category	Parameters
Low	• No material impact on compliance with applicable standards based on risk/impact and likelihood. • Mitigation and monitoring measures are in place and assigned to appropriate parties. • Already aligned with ESS requirements.
Medium	• May have a material impact on compliance, but risks are being managed adequately. • May not be assigned to the optimal party but are generally aligned with good practices.
High	The risk/impact and likelihood can have a material impact on the overall compliance with the Applicable Standards and is not being managed appropriately. ESC recommends that the Project not proceed to financial close until this risk has been ameliorated to a medium or low risk level.
Insufficient Information	Insufficient information has been forthcoming from the Sponsor to allow ESC to determine the risk level (e.g land acquisition not being provided based upon "confidentiality" concerns or information pertaining to labor outsourcing contracts not available). ESC recommends that the Project not proceed to financial close until sufficient information has been provided to allow for a robust evaluation.

3.4 Document Review

3.4.1 The audit included a review of documents related to the local government's land acquisition process. The review was based on an initial list of document requests submitted to the DPRKPLH of Temanggung Regency, supplemented by additional requests following stakeholder interviews. The following table lists the documents received and reviewed as of 20 February 2025.

Table 3-2 List of Document Received

No	Document	Year
1	*Surat penetapan lokasi*	2021
2	*Rekomendasi LSD TPA (ATR)*	2024
3	*KKPR TPA Sanggarahan*	2023
4	*Pertek Pertanahan TPA Sanggrahan*	2023
5	*Berita Acara Tukar Tanah*	2020
6	*HP No 131 Tanah TPA Sanggrahan*	2008
7	*HP No 132 Tanah TPA Sanggrahan*	2013
8	*HP No 133 Tanah TPA Sanggrahan*	2013
9	*HP No 134 Tanah TPA Sanggrahan*	2014
10	*HP No 135 Tanah TPA Sanggrahan*	2014
11	*HP No 136 Tanah TPA Sanggrahan*	2015
12	*HP No 144 Tanah TPA Sanggrahan*	2023
13	*HP No 145 Tanah TPA Sanggrahan*	2023
14	*HP No 146 Tanah TPA Sanggrahan*	2023
15	*RTRW Kab. Temanggung*	2012
16	*Laporan Akhir Appraisal*	2020

3.5 Site Reconnaissance and Stakeholder Interview

3.5.1 Site visits were conducted on 15-16 May 2024 and 5-9 August 2024. The objectives were to observe site conditions, identify sensitive receptors, consult with internal stakeholders and conduct interviews with external stakeholders. These visits helped to develop a comprehensive understanding of the land acquisition context and informed the subsequent analysis. Site visit activities is as shown in **Table 3-3**.

Table 3-3 Site Visit Activities

No	Date	Activity	Participants
1	15 May 2024	Site observation	PUPR, Bappenas, AIIB, ESC, DPRKPLH Kab. Temanggung
2	16 May 2024	Discussion with DPRKPLH Kab. Temanggung	PUPR, Bappenas, AIIB, ESC, DPRKPLH Kab. Temanggung
3	5 – 9 August 2024	• Discussion with DPRKPLH Kab. Temanggung • Site observation • Baseline survey • SEP workshop	ESC, DPRKPLH Kab. Temanggung

4. Compliance Review

4.1 National Regulation

4.1.1 A review of national regulations related to land acquisition is necessary to evaluate the project's compliance in the implementation of the land acquisition process. The following presents a list of relevant national regulations in Indonesia.

- Law No. 6 of 2023 concerning the Stipulation of Government Regulation in Lieu of Law No. 2 of 2022 concerning Job Creation into Law
- Law No. 2 of 2012 concerning Land Acquisition for Development in the Public Interest
- Law No. 5 of 1960 concerning Basic Agrarian Law in Indonesia
- Government Regulation No. 39 of 2023 concerning Amendments to Government Regulation No. 19 of 2021 concerning the Implementation of Land Acquisition for Development in the Public Interest
- Presidential Regulation No. 78 of 2023 concerning Amendments to Presidential Regulation No. 62 of 2018 concerning Handling of Social Impacts in the Framework of Land Provision for National Development
- Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia Regulation No. 19 of 2021 concerning Provisions for the Implementation of Government Regulation No. 19 of 2021 concerning the Implementation of Land Acquisition for Development in the Public Interest
- Joint Regulation of the Ministry of Home Affairs, KLHK, Ministry of Public Works and Public Housing and Head of the National Land Agency of the Republic of Indonesia No. 79 of 2014, No. PB.3/MENHUT-11/2014, No. 17/PRT/M/2014, No. 8/SKB/X/2014 concerning Procedures for Settlement of Land Tenure in Forest Areas
- Indonesian Appraiser Code of Ethics and Indonesian Appraisal Standards VII Edition 2018.

4.2 Against the Applicable Standards

4.2.1 The environmental and social compliance review is following the AIIB Environmental and Social Standards. According to project descriptions and document reviews, AIIB ESS that apply (or are triggered) by the Project are summarized in the following table.

AIIB Environmental and Social Standards	Applicability	Justification
Environmental and Social Standards 1: Environmental and Social Assessment and Management	Yes	The construction of the Sanggrahan TPA involves the expansion of the existing landfill area by approximately 12,697 m². This expansion required additional land, which was acquired through a land swap mechanism with the village government. The project has potential site-specific environmental and social impacts, including those related to land conversion (from agricultural land to infrastructure use), temporary disruption during construction, and potential impacts on surrounding communities and vulnerable groups (i.e. waste pickers). A structured environmental and social assessment and management process is therefore required to

AIIB Environmental and Social Standards	Applicability	Justification
		identify, assess and mitigate these impacts in line with AIIB ESS 1.
Environmental and Social Standards 2: Land Acquisition and Involuntary Resettlement	Yes	While no physical displacement is expected, the project triggers ESS 2 due to economic displacement. The land used for the expansion is village-owned (village land known as *tanah bengkok*) and was previously used by four individuals for agricultural purposes without formal ownership. In addition, approximately 67 informal waste pickers who depend on the landfill for their livelihoods may be economically affected by changes in landfill operations during and after the construction phase. These circumstances require the development of appropriate livelihood restoration measures and the preparation of an abbreviated Land Acquisition and Resettlement Plan (LARP) in accordance with AIIB ESS 2.
Environmental and Social Standards 3: Indigenous Peoples	No	Based on field assessments and stakeholder consultations, there are no Indigenous Peoples within or around the project site that meet the criteria outlined in AIIB ESS 3. The affected communities do not have distinct social and cultural characteristics that would distinguish them from the broader population in terms of language, governance, or customary practices. Therefore, ESS 3 is not triggered by the project.

4.3 Categorisation and Applicability

4.3.1 Based on the review of compliance with national standards and AIIB ESS, as well as identification of social risks and impacts, the project is recommended to fall under Category B under the AIIB ESF. The reasons for this categorisation include:

- Limited number of economically affected parties, namely four land users and 67 waste pickers.
- There is no physical displacement.
- Risks and impacts are localized, non-cumulative, predictable, and can be mitigated through good management practices.
- The swap process has been carried out in accordance with the provisions and accompanied by supporting documents such as minutes and land certificates.

4.3.2 In accordance with AIIB ESS 2, since the impact of land acquisition is minor (no physical displacement and possible loss of assets below 10%), the preparation of an Abbreviated Land Acquisition and Resettlement Plan (LARP) document can be applied, with approval from the Bank.

5. Gaps Evaluation

ESC conducted the desktop study and documents review to analyze and find the gaps of the land acquisition against the AIIB Environmental and Social Standards. Detailed of gaps evaluation is provided in following table.

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
Environmental and Social Standard 2: Land Acquisition and Involuntary Resettlement			
Applicability and Type	The project required an additional land area of 12,697 m². The land acquisition process was carried out through a land swap (*tukar guling*) mechanism, involving *bengkok* land owned by four village officials of Sanggrahan Village, which was exchanged for replacement land located in Krajan Hamlet. ESS 2 has been determined as applicable, with the land acquisition categorised as Type B.	**Low**	-
Planning	The land acquisition process commenced in 2020, involving six land parcels owned by four village officials of Sanggrahan Village as the subject of acquisition. The land acquisition was carried out through a land swap (*tukar guling*) mechanism, whereby the six parcels of *bengkok* land owned by the four village officials were exchanged for other land parcels located elsewhere. The planned development of the Sanggrahan Final Disposal Site (TPA Sanggrahan) required an additional land area of 12,697 m², which has been fulfilled through the land swap scheme involving the *bengkok* land owned by the village officials. The land swap process was completed in 2023, with the six land parcels located near TPA Sanggrahan, previously designated as *bengkok* land for the four village officials, exchanged for eight land parcels located in Krajan Hamlet, which have been allocated to the same village officials. The replacement land in Krajan Hamlet had been assessed to ensure its value equivalence with the original land parcels being exchanged. The valuation process involved an independent third party, namely the Public Appraisal Office — Muttaqin Bambang Purwanto Rozak Uswatun & Partners (KJPP-MBPRU & Partners).	**Low**	-
Land Acquisition and Resettlement Plan	The available document consists of a land appraisal report, which includes the valuation of the land subject to the land swap scheme. The land appraisal report is provided in **Appendix I**. a. Based on field observations, the following groups of potentially affected persons (PAPs) have been identified: Four land users (village officials) whose *bengkok* land was subject to the land swap scheme; b. Sixty-seven waste pickers and three waste collectors operating within the existing TPA area.	**Medium**	• Land Acquisition Audit

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
	The land swap process was completed in 2023, with compensation to the village officials provided in the form of replacement *bengkok* land located elsewhere. However, there is currently no compensation plan or livelihood restoration programme in place for the waste pickers and waste collectors.		
Abbreviated Land Acquisition and Resettlement Plan	Based on the interview results, a total of four Project Affected Persons (PAPs) were identified. These individuals are village officials who also acted as land users of the land parcels subject to the land swap scheme. The land exchanged consisted of paddy fields; therefore, no physical displacement was identified as part of this activity. In the existing TPA area, no major potential for physical displacement was identified. Although several temporary, non-permanent shelters belonging to waste pickers were observed within the existing TPA site, these structures do not indicate the presence of significant physical displacement risks.	**Low**	-
Land Acquisition and Resettlement Planning Framework	Based on the secondary data obtained, no Land Acquisition and Resettlement Policy Framework (LARPF) developed by the local government was identified. The only available document at present is the land appraisal report, which covers the land to be acquired for the project and the corresponding replacement land.	**Medium**	• Conduct Social Baseline Study • Conduct Economic livelihood assessment
Proportionality	The determination of the land provided as compensation under the land swap scheme was based on several considerations, including comparable market prices, land legality status, location factors, physical characteristics, and soil fertility. Although the appraisal results indicated that the area of the replacement land was smaller than the original land parcels, the land was considered to have equivalent value when taking into account the aforementioned factors.	**Low**	-
Use of Land Aggregators	The additional land acquisition for the development of the Sanggrahan Final Disposal Site (TPA) involved the engagement of a licensed Public Appraisal Office (Kantor Jasa Penilai Publik – KJPP) to assess both the land to be swapped and the replacement land. Based on the appraisal process conducted, the total market value of the six land parcels to be swapped was determined at IDR 1,271,000,000. Meanwhile, the appraisal of the eight replacement land parcels indicated a total market value of IDR 2,870,000,000; however, only four of these parcels were utilised as replacement land for this project. The compensation process for the land users was conducted by swapping the land previously allocated as *tanah bengkok* (village officials' land allocation) by the	**Low**	-

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
	Sanggrahan Village Government with land in another location, while maintaining its status as *tanah bengkok*. The agreement regarding the location of the replacement land and the form of compensation was formalised in the Minutes of Agreement on the Location and Form of Land Compensation between the Land Acquisition Committee of Temanggung Regency for the expansion of Sanggrahan TPA, as stated in Document Number 590/03/P2T/2020.		
Consultations	Consultation activities related to land acquisition for the Sanggrahan Final Disposal Site (TPA) and the land swap process were carried out in stages, starting from the initial public dissemination to the signing of the land release statements by the affected land users. The consultations involved multiple stakeholders, including the Regional Secretary, Head of the Environmental Agency (DPLH), Assistant for Governance and Welfare, Head of the Regional Development Planning Agency (Bappeda), Head of the Regional Financial and Asset Management Agency (BPPKAD), Head of the Public Works, Housing, and Spatial Planning Agency (DPUPKP), Head of the Agriculture and Food Security Agency (Dintanpangan), Head of the Village Community Empowerment Agency (Dinpermades), Head of the Legal Division, Head of the National Land Agency (BPN), Secretary of the Environmental Agency (DLH), Head of Pollution and Environmental Damage Control Division of DLH, Head of Waste Management and Sanitation Division of DLH, Kranggan Sub-District Head, Kranggan Urban Village Head, Head of Sanggrahan Village, and the Head of Sanggrahan Village Consultative Body (BPD). However, consultations with waste pickers and waste collectors regarding the potential relocation of their temporary storage facilities (*lapak*) during project implementation have not yet been conducted. Records of the consultation activities are provided in **Annex B**.	**Low**	
Project Level Grievance Redress Mechanism	Based on the available documentation of the land swap consultation process, there were no recorded grievances related to the planned land swap arrangement. Although there is no formal grievance mechanism established by the project, the land users are familiar with the informal channels to raise their concerns and expectations regarding the project. Typically, land users would directly contact the Head of Sanggrahan Village, who would then forward the concerns to the Environmental Agency (DLH). The project implementer and/or local government are advised to maintain and disclose a formal grievance mechanism to ensure that any potential complaints arising	**Medium**	• Develop Grievance Redress Mechanism

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
	from the land acquisition process or the temporary relocation of waste pickers (if applicable) can be appropriately recorded, addressed, and resolved.		
Compensation and Entitlements for Displaced Persons (including social support, livelihood restoration, resettlement assistance)	Compensation was provided in the form of replacement land with a total area of 8,181 m^2 located in Dusun Krajan. The determination of replacement land was based on the principle of equivalent value, considering factors such as land legality, location, physical condition, and soil fertility. However, based on the interview results, one of the village officials (as a land user) expressed concern that the size of the replacement land was not equivalent to the previous land area. In addition, there is currently no social compensation plan or livelihood restoration program designed for the waste pickers and collectors (pengepul) who are operating within the existing landfill area.	**Medium**	• Conduct Social Baseline Study • Conduct Economic livelihood assessment • Develop Livelihood Restoration Plan
Physical displacement	No potential for physical displacement was identified on the land acquired.	**Low**	N/A
Economic Displacement	The reduction in the size of land received by the land users may potentially affect their agricultural income when compared to the previous land. However, further assessment is required to understand the extent of the impact on the land users' income. The proposed development of the Sanggrahan landfill (TPA) is likely to affect the activities of waste pickers and collectors operating within the site. Any restrictions on their activities are expected to have an impact primarily on the income of the waste pickers. Based on observations and interviews conducted during the scoping, it was identified that, in general, the waste pickers rely solely on economic activities within the Sanggrahan landfill for their livelihoods.	**Medium**	• Conduct Social Baseline Study • Conduct Economic livelihood assessment
Standards of Living	The compensation provided in the form of replacement land located in Dusun Krajan, Sanggrahan Village, has taken into consideration several factors in addition to the comparative market price. These include legal status, location factors (accessibility and surrounding environment), physical factors (infrastructure, elevation, and soil classification), as well as soil fertility.	**Low**	-
Persons without Title or Legal Rights	The acquired land for the project is currently utilised by four land users, all of whom are village officials. These individuals do not hold any legal ownership over the land. Their right to use the land will cease once they no longer serve as village officials. On the existing site, there are 67 waste pickers undertaking economic activities at the Sanggrahan Final Disposal Site (TPA Sanggrahan), comprising 28 male and 39 female	**Medium**	• Conduct Baseline Study for PAP • Develop Livelihood Impact Analysis

AIIB Requirement and Reference	Land Acquisition Status and Observations (as of 24 January 2025)	Risk	Recommended Mitigation
	waste pickers. Based on the survey, it was identified that there are 47 households engaged in waste-picking activities. The majority of these waste pickers originate from Dusun Losari, Sanggrahan Village. According to interviews conducted during the scoping visit, the average income of the waste pickers is approximately IDR 200,000 per week.		
Negotiated Settlement	No residential settlements or privately-owned properties were subject to displacement. Not applicable.	**Low**	N/A
Information Disclosure	Consultations regarding the proposed land swap for the project have been conducted on four occasions. The following records detail the consultations undertaken throughout the land swap process: 1. Socialisation by the Land Acquisition Committee of Temanggung Regency in relation to land acquisition for the expansion of Sanggrahan Final Disposal Site (TPA) (16 November 2020). 2. Research and inventory of land legal status by the Land Acquisition Committee of Temanggung Regency for the expansion of Sanggrahan TPA (18 November 2020). 3. Agreement on location and form of land compensation between the Land Acquisition Committee of Temanggung Regency for the expansion of Sanggrahan TPA (20 November 2020). 4. Land swap agreement by the Land Acquisition Committee of Temanggung Regency for the expansion of Sanggrahan TPA (23 November 2020). However, detailed information regarding the development plan for Sanggrahan TPA has not yet been disclosed. The consultations conducted have focused solely on land acquisition matters and involved a limited group of stakeholders.	**Medium**	• Conduct Public Consultation • Develop Grievance Redress Mechanism • Develop stakeholder engagement plan
Implementation	The land swap process commenced in December 2020 and was completed in 2023. As of the time of the scoping activities, the acquired land has not yet been utilised by the project.	**Low**	-
Supervision and Monitoring	Based on information obtained from the DPRKPLH of Temanggung Regency, it was confirmed that no supervision or monitoring activities were conducted following the completion of the land swap process.	**Medium**	• Develop livelihood restoration programs. • Monitor income levels.
Private Sector Responsibilities Under Government-Managed Resettlement	Based on the results of surveys and interviews, it was confirmed that there is no resettlement on either the land subject to the land swap or the land provided as compensation. Furthermore, there is no involvement of any private sector entity. Therefore, the following requirements are not applicable.	**Low**	N/A

6. Corrective Action Plan

This section provides the Corrective Action Plan (CAP) developed by ESC in accordance with the risk methodology adopted for the Eland acquisition audit and should be referred to for any reliance aspects for this report.

No	ISSUES/FINDINGS	CORRECTIVE ACTION	TIMELINE	RESPONSIBLE PARTY
Environmental and Social Standard 2: Land Acquisition and Involuntary Resettlement				
1	Absence of a Land Acquisition and Resettlement Plan (LARP) and Land Acquisition and Resettlement Planning Framework (LARPF)	Land Acquisition Audit Conduct Social Baseline Study Conduct Economic livelihood assessment	Before construction phase	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
2	Grievance Redress Mechanism (GRM) has not been established	Develop and establish a Grievance Redress Mechanism (GRM) tailored for land-related and resettlement concerns	Before construction phase	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
3	Potential disruption to economic activities and livelihoods of land users, waste pickers, and collectors	Conduct Social Baseline Study Conduct Economic livelihood assessment Identify and assess potential livelihood restoration options	Before construction phase	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
4	Limited stakeholder consultation on the proposed Sanggrahan Landfill development	Conduct meaningful Public Consultation Develop Grievance Redress Mechanism (GRM) Develop a Stakeholder Engagement Plan (SEP)	Before and during project implementation	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent
5	Lack of supervision and monitoring of land acquisition activities and associated project impact	Establish a monitoring framework for land acquisition and project impacts Define monitoring targets, frequency, and responsible units	Throughout project implementation	Dinas Lingkungan Hidup (DLH) Temanggung/ project proponent

Appendix I Data from KJPP

Kepada Yth.,
PEJABAT PEMBUAT KOMITMEN
DINAS LINGKUNGAN HIDUP KABUPATEN TEMANGGUNG
PEMERINTAH KABUPATEN TEMANGGUNG
Jl. Gerilya No. 20 Maron-Sidorejo (Lab. Tembakau)
Temanggung, Jawa Tengah 56221

LPA KJPP MBPRU

LAPORAN AKHIR

KEGIATAN :
PENGADAAN JASA KONSULTAN APRAISAL PENGADAAN TANAH TPA

LPA KJPP MBPRU

PEKERJAAN :
BELANJA JASA APRAISAL PENGADAAN JASA KONSULTAN APRAISAL PENGADAAN TANAH TPA

PEJABAT PEMBUAT KOMITMEN
DINAS LINGKUNGAN HIDUP KABUPATEN TEMANGGUNG
PEMERINTAH KABUPATEN TEMANGGUNG
Jl. Gerilya No. 20 Maron – Sidorejo (Lab. Tembakau)
Temanggung, Jawa Tengah 56221

PRIVATE AND CONFIDENTIAL

Yogyakarta, 03 Desember 2020
NO. LAP. : 00190/2.0027-01/PI/11/0104/1I/XII/2020
NO. PROY. : 00190/YYK-UK/XII/2020
Perihal : Penilaian Aset

Kepada Yth.,
PEJABAT PEMBUAT KOMITMEN
DINAS LINGKUNGAN HIDUP
PEMERINTAH KABUPATEN TEMANGGUNG
Jl. Gerilya No. 20 Maron-Sidorejo (Lab. Tembakau)
Temanggung, Jawa Tengah 56221

Dengan hormat,
Kami, Kantor Jasa Penilai Publik-Muttaqin Bambang Purwanto Rozak Uswatun dan Rekan (KJPP-MBPRU & Rekan), merupakan lembaga penilai independen berdasarkan Surat Izin Usaha Kantor Jasa Penilai Publik (SIU-KJPP) No. 2.09.0027 tanggal 6 April 2009 dan SK Menteri Keuangan No. 765/KM.1/2009, yang berkantor pusat di Jakarta. Saat ini KJPP-MBPRU telah memiliki 15 cabang yang tersebar di seluruh Indonesia. Rincian Cabang dan peijinannya dapat dilihat dalam profil singkat KJPP-MBPRU sebagaimana disertakan dalam Laporan ini.
Menunjuk Surat Perintah Kerja No. 7/PPK.APRSL/XI/2020 tanggal 11, bulan November, tahun 2020 yang telah disetujui oleh kedua belah pihak tentang penilaian aset milik Pemerintah Desa Sanggrahan dengan Pemerintah Kabupaten Temanggung, berupa:

1. Tanah kosong, terletak di Tegal Ombo, Desa Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah.
2. Tanah kosong, terletak di Krajan, Desa Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah.

Dengan ini kami menyatakan bahwa dalam batas-batas kemampuan kami yang terbaik, kami telah melakukan penilaian atas aset sebagaimana tersebut di atas, melakukan investigasi, meliputi inspeksi, pengumpulan data, penelaahan, penghitungan dan analisis sesuai tujuan penilaian. Laporan penilaian secara rinci diuraikan dalam:
- Definisi dan Lingkup Penugasan
- Presentasi Data
- Analisa Data dan Kesimpulan

Sesuai dengan tujuannya Dasar Nilai yang digunakan dalam laporan ini ialah **Nilai Pasar (*Market Value*)**.

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Berdasarkan hal-hal tersebut di atas, proses penilaian sebagaimana diuraikan dalam laporan ini, kami berkesimpulan bahwa untuk nilai tanah yang diganti sebesar:

Rp4.141.000.000,00

(EMPAT MILIAR SERATUS EMPAT PULUH SATU JUTA RUPIAH)

Merupakan **Nilai Pasar** ***(Market Value)*** dari aset tersebut per tanggal 12, bulan November, tahun 2020, dengan memperhatikan asumsi dan syarat-syarat yang kami lampirkan bersama laporan penilaian ini.

Laporan ini hanya dapat digunakan sesuai dengan tujuannya. Siapapun yang mendapat laporan ini, atau tembusan dari padanya, tidak ada hak untuk mempublikasikan baik secara keseluruhan isi laporan maupun sebagian, atau referensi di dalamnya, atau opini nilai, atau nama dan afiliasi profesional dari penilai tanpa izin tertulis dari Penilai.

Laporan ini tidak sah jika tidak ada stempel dari Kantor Jasa Penilai Publik-Muttaqin Bambang Purwanto Rozak Uswatun dan Rekan *(corporate seal)*.

Data faktual dalam laporan ini, kami simpan untuk keperluan referensi di kemudian hari apabila ada otorisasi tambahan yang memerlukan laporan terinci, termasuk dokumentasi. Atas permintaan, data tersebut tersedia untuk diperiksa.

LPA KJPP MBPRU

Hormat kami,

Kantor Jasa Penilai Publik
Muttaqin Bambang Purwanto
Rozak Uswatun & Rekan

Kantor Jasa Penilai Publik
mbpru Public Valuers and Advisors

Dra. Uswatun Khasanah, M.Si., MAPPI *(Cert)*
Kepala Cabang

Izin Penilai Menteri Keuangan RI	: No. P-1.09.00104
Anggota MAPPI	: No. 97 - S - 01019
Klasifikasi Bidang Jasa	: Penilai Properti (P)
Register Menteri Keuangan	: RMK-2017.00099

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2. Nilai Tanah I.II-1

3. Implementasi Penggunaan Pendekatan Penilaian I.II-1

4. Rekonsiliasi Dan Kesimpulan Nilai..... I.II-2

Lampiran: Foto-Foto Aset, Peta Lokasi Aset & Data Pembanding Aset, Gambar *Lay Out* Tanah, *Photocopy* Legalitas Tanah

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1. Tinjauan Properti Sebagai Objek Penilaian II.I-1

2. Analisis Lingkungan II.I-2

3. Deskripsi Objek Penilaian II.I-3

4. Tinjauan Pasar II.I-3

ANALISIS DATA DAN KESIMPULAN II.II-1

1. Penggunaan Tertinggi Dan Terbaik (*Highest & Best Use* - HBU)II.II-1

2. Nilai Tanah II.II-1

3. Implementasi Penggunaan Pendekatan Penilaian II.II-2

4. Rekonsiliasi Dan Kesimpulan Nilai..... II.II-2

Lampiran: Foto-Foto Aset, Peta Lokasi Aset & Data Pembanding Aset, Gambar *Lay Out* Tanah, *Photocopy* Legalitas Tanah

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PROFIL SINGKAT
KANTOR JASA PENILAI PUBLIK
MUTTAQIN BAMBANG PURWANTO ROZAK USWATUN DAN REKAN

Kantor Jasa Penilai Publik Muttaqin Bambang Purwanto Rozak Uswatun dan Rekan (KJPP-MBPRU) didirikan pada tahun 2009 sesuai dengan Surat Izin Usaha Kantor Jasa Penilai Publik (SIU-KJPP) No. 2.09.0027 tanggal 6 April 2009 dan SK Menteri Keuangan No. 365/KM.1/2009, yang berkantor pusat di Jakarta. KJPP-MBPRU juga terdaftar di OJK dan BPN/Kementerian ATR.

KANTOR PUSAT DAN KANTOR CABANG

Saat ini **KJPP MBPRU berkantor pusat di Jakarta** dan telah memiliki 15 (lima belas) Kantor Cabang yang tersebar di seluruh Indonesia, sebagai berikut:

1. Cabang Yogyakarta sesuai SK Menteri Keuangan No. 432/KM.1/2009;
2. Cabang Palembang sesuai SK Menteri Keuangan No.493/KM.1/2009;
3. Cabang Banjarmasin sesuai SK Menteri Keuangan No. 561/KM.1/2009;
4. Cabang Jambi sesuai SK Menteri Keuangan No. 979/KM.1/2010;
5. Cabang Bandar Lampung sesuai SK Menteri Keuangan No. 980/KM.1/2010;
6. Cabang Medan sesuai SK Menteri Keuangan No. 226/KM.1/2011;
7. Cabang Denpasar sesuai SK Menteri Keuangan No.333/KM.1/2011;
8. Cabang Surabaya sesuai SK MenteriKeuanganNo.1035/KM.1/2012;
9. Cabang Makassar sesuai SK Menteri Keuangan No. 190/KM.1/2015;
10. Cabang Jayapura sesuai SK Menteri Keuangan No. 54/KM.1/2016;
11. Cabang Semarang sesuai SK Menteri Keuangan No. 243/KM.1/2016;
12. Cabang Padang sesuai SK Menteri Keuangan No. 270/KM.1/2016;
13. Cabang Batam sesuai SK Menteri Keuangan No. 328/KM.1/2016;
14. Cabang Bandung sesuai SK Menteri Keuangan No. 90/KM.1/2018.
15. Cabang Purwokerto sesuai SK Menteri Keuangan No.272/KM.1/2020

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JASA LAYANAN

Penilaian; *Property Development Consultancy* (*Feasibility Study; Highest & Best Use Study*; Optimalisasi Aset; *Financial Advisory; Due Diligence;* Pengawasan); *Asset Management Consultancy; Property Marketing Consultancy; Market Research.*

PENILAI PUBLIK, PENILAI DAN STAFF

Untuk mendukung layanan jasa dan operasional seluruh kantor tersebut saat ini KJPP-MBPRU didukung oleh: 20 orang Penilai Publik; 32 orang Penilai MAPPI-T; 111 orang Penilai MAPPI-P; dan staff keuangan, sekretariat dan umum dll sebanyak 173 orang, total seluruhnya 336 orang.

P E R N Y A T A A N P E N I L A I
(*COMPLIANCE STATEMENT*)

Dalam batas kemampuan dan keyakinan kami sebagai penilai, kami yang bertanda tangan di bawah ini menyatakan bahwa:

1. Pernyataan dalam laporan penilaian ini, sebatas pengetahuan kami, adalah benar dan akurat.
2. Analisis, opini dan kesimpulan yang dinyatakan di dalam Laporan Penilaian ini dibatasi oleh asumsi dan batasan-batasan yang diungkapkan di dalamnya, yang mana merupakan hasil analisis, opini dan kesimpulan Penilai yang tidak berpihak dan tidak memiliki benturan kepentingan.
3. Kami tidak mempunyai kepentingan baik sekarang maupun di masa yang akan datang terhadap properti yang dinilai, kami juga tidak memiliki kepentingan pribadi maupun keberpihakan kepada pihak-pihak lain yang berkepentingan terhadap properti yang dinilai.
4. Penunjukan dalam penugasan ini tidak berhubungan dengan opini Penilaian yang telah disepakati sebelumnya dengan Pemberi Tugas.
5. Biaya jasa profesional tidak dikaitkan dengan nilai yang telah ditentukan sebelumnya atau gambaran nilai yang diinginkan oleh Pemberi Tugas, besaran opini nilai, pencapaian hasil yang dinyatakan, atau adanya kondisi yang terjadi kemudian *(subsequent event)* yang berhubungan secara langsung dengan penggunaan yang dimaksud.
6. Penilai telah mengikuti persyaratan pendidikan profesional yang ditetapkan/ dilaksanakan oleh Masyarakat Profesi Penilai Indonesia (MAPPI).
7. Penilai memiliki pengetahuan yang memadai sehubungan dengan property dan/atau jenis industri yang dinilai.
8. Penilai telah melaksanakan ruang lingkup sebagai berikut:
    - Identifikasi masalah (identifikasi batasan, tujuan dan obyek, definisi Penilaian, dan tanggal Penilaian);
    - Pengumpulan data dan wawancara;
    - Analisis data;
    - Estimasi nilai dengan menggunakan pendekatan Penilaian;
    - Penulisan laporan.
9. Penilai telah melakukan inspeksi (seluruh) lapangan terhadap obyek Penilaian.

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10. Analisis, opini dan kesimpulan yang dibuat oleh Penilai, serta laporan penilaian telah dibuat dengan memenuhi ketentuan KEPI dan SPI yang berlaku.

Demikian pernyataan ini kami buat, tidak seorangpun kecuali yang tanda tangan dibawah ini ikut dalam penyusunan laporan penilaian ini.

No.	NAMA	TANDA TANGAN
1.	**Team Leader:** Dra. Uswatun Khasanah, M.Si., MAPPI *(Cert)* Izin Penilai Menteri Keuangan RI: No. P-1.09.00104 Anggota MAPPI: No. 97-S-01019 Klasifikasi Bidang Jasa Penilai: Penilai Properti (P)	.....
2.	**Penilai Pratama:** - Rio Jaka Tama, S.E., M.Ec.Dev. Anggota MAPPI: No. 16-P-06789 - Made Erlan Dwipa, S.E. Anggota MAPPI: No. 14-P-04721	....
3.	**Pelaksana Inspeksi:** - Edi Hartoyo, S.T. Anggota MAPPI: No. 14-P-04925 - Irvan, A.Md. Anggota MAPPI: No. 15-P-06150 - Dewi Anggraini, S.E. Anggota MAPPI: No. 17-P-07255 - Muhammad Ezal Zauhari, S.E. Anggota MAPPI: No. 19-P-09966	....

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RINGKASAN PENILAIAN

- Nama Pemberi Tugas : Pemerintah Kabupaten Temanggung Dinas Lingkungan Hidup
- Nama Klien/Debitur : Pemerintah Kabupaten Temanggung Dinas Lingkungan Hidup
- Tanggal Inspeksi : 12 November 2020
- Tanggal Penilaian : 12 November 2020
- Identifikasi Jenis Penilaian : Normal
- Format Laporan : Laporan Terinci
- Objek Penilaian : Tanah Kosong
- Alamat Objek Penilaian : Dusun Tegal Ombo, Desa Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah

No.	Uraian	Luas	Nilai Pasar (Rp.)
I.	**PENILAIAN TANAH KOSONG**		
A.	**Tanah**		
	SHP 126/Sanggrahan(Gambar Ukur 703/2020)	1,855 m²	**186,000,000**
	SHP 106, 116, 102, /Sanggrahan (Gambar Ukur 673/2020)	6,516 m²	**652,000,000**
	SHP 105, 123/Sanggrahan (Gambar Ukur 676/2020)	4,326 m²	**433,000,000**
	TOTAL	**12,097**	**1,271,000,000**

Catatan :
Luasan menyesuaikan pengukuran ulang

LPA KJPP MBPRU

- Alamat Objek Penilaian : Dusun Krajan, Desa Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah

No.	Uraian	Luas	Nilai Pasar (Rp.)
II.	**PENILAIAN TANAH KOSONG**		
A.	**Tanah**		
1	Letter C 126 S	2,242 m²	**269,000,000**
2	Letter C 125 S	5,421 m²	**598,000,000**
3	Letter C 129 S	2,517 m²	**302,000,000**
4	Letter C 123 S	3,317 m²	**390,000,000**
5	Letter C 124 S	1,176 m²	**154,000,000**
6	Letter C 128 S	3,033 m²	**480,000,000**
7	Letter C 127 S	1,746 m²	**281,000,000**
8	Letter C 120 S	2,531 m²	**396,000,000**
	TOTAL	**21,983**	**2,870,000,000**

Catatan:
Luasan menyesuaikan pengukuran ulang

TOTAL I + II	**4,141,000,000**

SYARAT PEMBATAS

1. Penelitian dan penyelidikan yang ada hubungannya dengan kebenaran legalitas hak milik serta hutang piutang yang mengakibatkan kerugian atas objek yang dinilai, bukan merupakan ruang lingkup pekerjaan yang disepakati, kami berasumsi bahwa objek yang dinilai tersebut telah bebas dari segala tuntutan hukum. Telaah yang dilakukan hanya terbatas kepada status kepemilikan sesuai data yang diterima.

2. Informasi yang telah diberikan oleh pihak lain kepada kami seperti yang disebutkan dalam Laporan Penilaian dianggap layak dan dipercaya, tetapi kami tidak bertanggung jawab jika ternyata informasi yang diberikan itu terbukti tidak sesuai dengan hal yang sesungguhnya. Informasi yang dinyatakan tanpa menyebutkan sumbernya merupakan hasil penelaahan kami terhadap data yang ada atau dokumen dan keterangan dari instansi pemerintah yang berwenang. Tanggung jawab untuk memeriksa kembali kebenaran informasi tersebut sepenuhnya berada di pihak Pemberi Tugas.

3. Kecuali diatur berbeda oleh peraturan dan perundangan yang ada, maka Penilaian dan Laporan Penilaian bersifat rahasia dan hanya ditunjukan terbatas untuk Pemberi Tugas dan penasehat profesionalnya dan disajikan hanya untuk maksud dan tujuan sesuai dengan yang dicantumkan pada Laporan Penilaian. Kami tidak bertanggung jawab kepada pihak lain selain Pemberi Tugas. Pihak lain yang menggunakan Laporan Penilaian bertanggung jawab atas risiko yang timbul.

4. Nilai yang dicantumkan dalam Laporan Penilaian serta setiap nilai lain dalam laporan yang merupakan bagian dari properti yang dinilai hanya berlaku sesuai dengan maksud dan Tujuan Penilaian dan tidak boleh digunakan untuk Tujuan Penilaian lain yang dapat mengakibatkan terjadinya kesalahan.

5. Kami tidak melakukan pengukuran luas terhadap tanah dan pengembangan yang ada diatasnya, namun kami melakukan verifikasi terbatas terhadap kesesuaian data yang kami terima dari Pemberi Tugas dengan kondisi lapangan sebagaimana yang lazim dilakukan dalam praktek penilaian.

6. Kami tidak melakukan penyelidikan atas kondisi tanah dan fasilitas lingkungan lainnya, untuk suatu pengembangan baru. Apabila tidak diinformasikan lain, penilaian kami didasarkan pada kewajaran, dan untuk suatu rencana pengembangan tidak ada pengeluaran tidak wajar atau keterlambatan dalam masa pembangunan.

7. Kami tidak melakukan penyelidikan atas masalah lingkungan yang berkaitan dengan pencemaran. Apabila tidak diinformasikan lain, Penilaian kami didasarkan pada asumsi mengenai tidak adanya pencemaran yang dapat berpengaruh terhadap nilai.

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8. Gambar, denah ataupun peta yang terdapat dalam laporan ini disajikan hanya untuk kemudahan visualisasi saja. Kami tidak melaksanakan survey /pemetaan dan tidak bertanggung jawab mengenai hal ini.

9. Keterangan mengenai rencana tata kota diperoleh dari Rencana Umum Tata Ruang Kota dan Pernyataan Tertulis yang dikeluarkan oleh instansi yang berwenang. Kecuali diinstrusikan lain, kami beranggapan bahwa properti yang dinilai tidak terpengaruh oleh berbagai hal yang bersifat pembatasan-pembatasan dan properti maupun kondisi penggunaan baik saat ini maupun yang akan datang tidak bertentangan dengan peraturan-peraturan yang berlaku.

10. Semua bukti kepemilikan, legalitas dan perizinan yang ada didasarkan kepada informasi dan data yang diberikan Lembaga selaku pemberi tugas/ pengguna laporan. Oleh karena itu, kami tidak melakukan pengukuran ulang terhadap luasan properti secara detail, melainkan data dari sertifikat & gambar ukur yang diterima dari Pemberi Tugas.

11. Kami berasumsi bahwa pendamping di lapangan yang ditunjuk oleh Pemberi Tugas menjamin bahwa kegiatan inspeksi yang kami lakukan di lapangan telah mendapat izin dari pihak-pihak terkait. Jika dikemudian hari ada tuntutan dari pihak-pihak yang terkait, maka hal tersebut bukan menjadi tanggung jawab kami.

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DEFINISI
DAN LINGKUP PENUGASAN

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DEFINISI DAN LINGKUP PENUGASAN

1. STATUS PENILAI

- Penilai yang bertanggung jawab dalam penugasan ini adalah Pemimpin Rekan dari Kantor Jasa Penilai Publik - Muttaqin Bambang Purwanto Rozak Uswatun dan Rekan, yang berkedudukan di Kantor Cabang Yogyakarta. Peniai dimaksud telah memiliki kompetensi dalam melakukan penilaian serta telah memperoleh izin sebagai penilai publik dari Menteri Keuangan dan terdaftar sebagai penilai di OJK dan di Badan Pertanahan Nasional.
- Penugasan penilaian ini bersifat independen, Penilai tidak memiliki kepentingan terhadap objek penugasan atau tidak dipengaruhi orang lain, menjunjung tinggi objektivitas, profesional, dan tidak memihak.
- Untuk penilaian aset sebagaimana dijelaskan pada Butir 5 tidak diperlukan bantuan tenaga ahli eksternal.
- Seluruh Penilai, ahli dan staf pelaksana dalam penugasannya ini adalah satu kesatuan Tim Penugasan di bawah koordinator Penilai Berizin atau Penanggung Jawab Laporan Penilaian.

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2. PEMBERI TUGAS

Nama Pemberi Tugas	:	Pemerintah Kabupaten Temanggung (Dinas Lingkungan Hidup)
Bidang Usaha	:	Pemerintahan
Alamat	:	Jalan Gerilya No. 20, Maron, Sidorejo, Temanggung
No. NPWP	:	00.117.683.3-553.000
Alamat sesuai NPWP	:	Jl. Gerilya Maron Sidorejo Temanggung
Telepon; faksimili	:	(0293) 4901569
Alamat e-mail	:	dlh.temanggung@gmail.com

3. PENGGUNA LAPORAN

Nama Pengguna Laporan	:	Pemerintah Kabupaten Temanggung (Dinas Lingkungan Hidup)
Bidang Usaha	:	Pemerintahan
Alamat	:	Jalan Gerilya No. 20, Maron, Sidorejo, Temanggung
No. NPWP	:	00.117.683.3-553.000
Alamat sesuai NPWP	:	Jl. Gerilya Maron Sidorejo Temanggung
Telepon; faksimili	:	(0293) 4901569
Alamat e-mail	:	dlh.temanggung@gmail.com

4. MAKSUD DAN TUJUAN PENILAIAN

Penilaian ini dilaksanakan dengan maksud untuk memperoleh opini Nilai Pasar (*Market Value*) dari aset (objek penilaian) tersebut. Tujuan penilaian adalah untuk Tukar Guling.

5. OBJEK PENILAIAN

Objek penilaian terdiri dari:

Lokasi 1

Real properti yang termasuk Aset Tetap, yang dimiliki oleh pemberi tugas berupa tanah kosong, luas tanah ± 12.697 m², terletak di Tegal Ombo, Desa Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah.

Kondisi tanah merupakaan tanah sawah dan pada saat inspeksi lapangan aset tersebut dimanfaatkan sebagai tanah pertanian.

Lokasi 2 (tanah pengganti)

Real properti yang termasuk Aset Tetap, yang dimiliki oleh pemberi tugas berupa tanah kosong, luas tanah ± 21.983 m², terletak di Dusun Krajan, Desa Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah.

Kondisi tanah merupakaan tanah sawah dan pada saat inspeksi lapangan aset tersebut dimanfaatkan sebagai tanah pertanian.

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6. HAK KEPEMILIKAN

Bentuk kepemilikan aset adalah kepemilikan tunggal, terdiri:

1. **Lokasi 1**
   1. Sertipikat Hak Pakai No. 126 / Desa/Kelurahan Sanggrahan
   2. Sertipikat Hak Pakai No. 116 / Desa/Kelurahan Sanggrahan
   3. Sertipikat Hak Pakai No. 123 / Desa/Kelurahan Sanggrahan
   4. Sertipikat Hak Pakai No. 102 / Desa/Kelurahan Sanggrahan
   5. Sertipikat Hak Pakai No. 105 / Desa/Kelurahan Sanggrahan
   6. Sertipikat Hak Pakai No. 106 / Desa/Kelurahan Sanggrahan

2. **Lokasi 2 (tanah pengganti)**
   1. Letter C 126 S Kelas I
   2. Letter C 125 S Kelas I
   3. Letter C 129 S Kelas I
   4. Letter C 123 S Kelas I
   5. Letter C 124 S Kelas I
   6. Letter C 128 S Kelas I

7. Letter C 127 S Kelas I
8. Letter C 120 S Kelas I

7. DASAR NILAI

Sesuai dengan jenis objek serta maksud dan tujuan penilaian tersebut maka dasar nilai yang digunakan ialah **Nilai Pasar (*Market Value*).**

8. TANGGAL PENILAIAN

Dalam laporan ini tanggal penilaian ditetapkan per tanggal 12 bulan November tahun 2020.

9. PENGGUNAAN MATA UANG

Dalam penilaian ini mata uang yang digunakan ialah mata uang Rupiah.

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10. TINGKAT KEDALAMAN INVESTIGASI

Investigasi dalam konteks penilaian adalah proses pengumpulan data yang cukup dengan cara melakukan inspeksi, penelaahan, penghitungan dan analisis sesuai tujuan penilaian.

- **Inspeksi lapangan:** dalam inspeksi lapangan kami telah melakukan verifikasi antara dokumen awal dengan fisik objek di lapangan, mengumpulkan data spesifikasi dan kondisi objek, mengidentifikasi lokasi objek penilaian, kondisi lingkungan, sarana dan prasarana umum, aksesibilitas serta mengumpulkan data pasar properti pembanding.

  Dalam pelaksanaan inspeksi, objek penilaian seluruhnya dapat ditinjau.
- **Penelaahan:** semua data yang berhasil dikumpulkan pada saat inspeksi lapangan dilakukan penelaahan, jika terdapat data yang tidak relevan telah diabaikan dan data yang tersedia kami anggap telah cukup.
- **Perhitungan dan analisis:** terhadap data-data yang telah terseleksi kami adakan perhitungan dan analisis sehingga diperoleh opini nilai sesui dengan tujuan penilaian.
- **Tanggal inspeksi:** inspeksi lapangan dilakukan pada tanggal 12, bulan November, tahun 2020.

Selama melakukan inspeksi lapangan kami didampingi oleh Bapak Agustinus dan Bapak Harno dari Desa sebagai wakil pemberi tugas. Pendamping menunjukkan lokasi, batas-batas tanah yang dinilai, dan memberi informasi yang berkaitan dengan kondisi objek penilaian.

11. SIFAT DAN SUMBER INFORMASI

Informasi dan dokumen kepemilikan aset kami terima dari pemberi tugas, tanpa dilakukan verifikasi dengan dokumen aslinya. Penunjukan lokasi, batas-batas dan kondisi aset kami peroleh dari pendamping yang mewakili pemberi tugas.

Data pembanding yang kami gunakan dalam laporan ini bersumber data penawaran dan transaksi di sekitar lokasi aset.

12. ASUMSI UMUM DAN ASUMSI KHUSUS

12.1. Asumsi Umum

- Semua data dan informasi termasuk antara lain identifikasi jenis aset, kepemilikan tanah dan luas tanahnya, penunjukan lokasi serta hal-hal yang relevan lainnya yang berkaitan dengan penilaian ini kami terima dari pemberi tugas. Kami menganggap bahwa informasi dan data yang kami terima sepanjang menyangkut data dan keterangan mengenai objek penilaian adalah benar. Kesalahan informasi dan data termasuk kesalahan penunjukan lokasi yang mengakibatkan hasil penilaian yang tidak tepat bukan merupakan tanggung jawab penilai.
- Kami tidak melakukan pengukuran luas terhadap tanah dan pengembangan yang ada diatasnya, namun kami melakukan verifikasi terbatas terhadap kesesuaian data yang kami terima dari pemberi tugas dengan kondisi lapangan sebagaimana yang lazim dilakukan dalam praktek penilaian.
- Kami berasumsi bahwa pendamping di lapangan yang ditunjuk oleh pemberi tugas menjamin bahwa kegiatan inspeksi yang kami lakukan di lapangan telah mendapat ijin dari pihak pihak terkait. Jika dikemudian hari ada tuntutan dari pihak - pihak yang terkait, maka hal tersebut bukan menjadi tanggung jawab penilai.

12.2. Asumsi Khusus

- Pada tanggal penilaian sedang terjadi pandemi corona (Covid - 19) dikarenakan batas kemampuan kami, kami tidak memperhitungkan dan tidak melakukan penyesuaian terhadap hal tersebut, agar menjadi perhatian bagi pengguna laporan.

13. PENDEKATAN DAN METODE PENILAIAN

Pemilihan pendekatan dalam penilaian sangat tergantung pada jenis properti dari aset yang menjadi objek penilaian serta ketersediaan data di lapangan. Sesuai maksud dan tujuan, dasar nilai, jenis dan karakteristik properti serta ketersediaan data pasar di

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lapangan, maka pendekatan dan metode penilaian yang digunakan dalam penilaian ini adalah:

- **Pendekatan Pasar *(Market Approach)*** (KPUP-15.1 s/d KPUP-15.2), dengan Metode Perbandingan Data Pasar (SPI 106-6.2.c.) dan/atau (SPI 106-6.2.d.)

14. DEFINISI DAN PENGERTIAN

14.1. Nilai Pasar *(Market Value)*

Nilai Pasar didefinisikan sebagai estimasi sejumlah uang yang dapat diperoleh atau dibayar untuk penukaran suatu aset atau liabilitas pada tanggal penilaian, antara pembeli yang berminat membeli dengan penjual yang berminat menjual, dalam suatu transaksi bebas ikatan, yang pemasarannya dilakukan secara layak, di mana kedua pihak masing-masing bertindak atas dasar pemahaman yang dimilikinya, kehati-hatian dan tanpa paksaan. **(SPI 101 - 3.1)**

Nilai Pasar dipahami sebagai nilai dari suatu aset yang diestimasi tanpa memperhatikan biaya penjualan atau pembelian dan tanpa dikaitkan dengan setiap pengenaan pajak pengalihan yang terkait.**(SPI 101 - 3.3).**

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14.2. Pendekatan Pasar (*Market Approach*)

Pendekatan Pasar menghasilkan indikasi nilai dengan cara membandingkan aset yang dinilai dengan aset yang identik atau sebanding, di mana informasi harga transaksi atau penawaran tersedia. (KPUP - 15.1)

Dalam Pendekatan Pasar, langkah pertama adalah mempertimbangkan harga yang baru terjadi di pasar dari transaksi aset yang identik atau sebanding. Jika transaksi terakhir yang telah terjadi hanya sedikit atau tidak ada, dapat dipertimbangkan dengan menggunakan harga yang ditawarkan (untuk dijual) atau yang terdaftar (*listed*) dari aset yang identik atau sebanding, relevansinya dengan informasi ini perlu diketahui secara jelas dan dengan seksama dianalisis. Dalam hal ini perlu dilakukan penyesuaian atas informasi harga transaksi atau penawaran apabila terdapat perbedaan dengan transaksi yang sebenarnya, sesuai dengan Dasar Nilai dan asumsi yang akan digunakan dalam penilaian. Perbedaan dapat juga meliputi karakteristik hukum, ekonomi atau fisik dari aset yang ditransaksikan (aset pembanding) dan yang dinilai. (KPUP - 15.2)

Metode Perbandingan Data Pasar

Dalam pendekatan pasar untuk penilaian properti pada umumnya digunakan Metode Perbandingan Data Pasar.

Apabila hanya terdapat beberapa transaksi atau bahkan tidak terdapat data transaksi yang dapat diandalkan (harga kuotasian), penilai dapat mempertimbangkan harga dari aset identik atau sejenis yang ditawarkan untuk dijual, dengan syarat bahwa relevansi dari informasi ini dituangkan secara jelas, dianalisis secara kritikal dan didokumentasikan. Metode ini juga dapat disebut sebagai *comparable listings method* dan seharusnya tidak digunakan sebagai satu-satunya indikasi nilai, namun dapat digunakan sebagai salah satu pertimbangan bersama metode lainnya.Pada kondisi dimana Penilai tidak dapat menggunakan metode lainnya, maka metode ini dapat diterima sebagai metode satu-satunya dengan memberikan justifikasi dan alasan yang memadai.Ketika mempertimbangkan penawaran jual atau beli, bobot yang diberikan kepada harga penawaran seharusnya **memperhatikan tingkat komitmen** dan kondisi lainnya yang melekat kepada harga dan berapa lama aset tersebut telah ditawarkan di pasar.Sebagai contoh, penawaran yang mewakili kometmen yang mengikat untuk membeli atau menjual aset pada harga tertentu dapat diberikan bobot yang lebih besar dari pada harga yang dikutip tanpa adanya komitmen yang mengikat. (SPI 106-6.2.c)

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Metode Perbandingan Data Pasar dapat menggunakan beragam variasi dari bukti pembanding yang berbeda, juga dikenal sebagai unit perbandingan, yang membentuk basis dari perbandingan.Sebagai contoh, beberapa dari berbagai unit perbandingan yang umum digunakan dalam penilaian real properti adalah harga per meter persegi, sewa per meter persegi dan tingkat kapitalisasi.Unit perbandingan yang umum digunakan pelaku pasar dapat berbeda antara berbagai kelas aset dan lintas industri serta geografi.(SPI 106-6.2.d)

Dalam menerapkan metode perbandingan data pasar ini penilai telah memperhatikan kualitas sumber informasi dan transaksinya (jika ada) atau penawaran harganya, diskon penawaran, hak kepemilikan, spesefikasi dan kondisi fisik aset yang dinilai, dan faktor lain yang relevan dari data pembanding dan melakukan penyesuaian secara cermat jika dibandingkan dengan kondisi aset yang dinilai.

Ilustrasi dari Pendekatan Pasar - Metode Perbandingan Data Pasar dapat dilihat sebagai berikut:



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Di Indonesia belum ada lembaga resmi yang mempublikasikan data transaksi properti sehingga untuk mendapatkan data transaksi resmi yang outentik sangat sulit. Oleh sebab itu dalam penerapannya data pembanding diperoleh dari data transaksi (bilamana ada), data penawaran, data dari lembaga resmi (jika ada dan relevan) dan jika diperlukan dapat ditambah dengan berbagai informasi yang relevan seperti wawancara dengan berbagai pihak yang kompeten antara lain pejabat setempat dan pemilik aset lainnya.

Disamping hak kepemilikan, karakteristik dari data pembanding yang diperhatikan adalah: lokasi, spesifikasi dan kondisi bangunan, kondisi lingkungan, kemudahan pencapaian, bentuk dan ukuran.

Penilaian ini didasarkan atas asumsi bahwa pemilik akan menjual aset tersebut tanpa adanya penundaan keuntungan selama waktu penjualan, *lease back, management arrangement* atau setiap perjanjian yang serupa yang menyebabkan peningkatan nilai dari aset tersebut.

15. PEDOMAN DAN PENGGUNAAN STANDAR

Pedoman penilaian yang digunakan dalam penugasan ini adalah **Kode Etik Penilai Indonesia dan Standar Penilaian Indonesia (KEPI & SPI) Edisi VII - 2018.**

16. SYARAT DAN PERSETUJUAN PUBLIKASI

Siapapun yang mendapat laporan ini, atau tembusan dari padanya, tidak ada hak untuk mempublikasikan baik secara keseluruhan isi laporan maupun sebagian, atau referensi di dalamnya, atau opini nilai, atau nama dan afiliasi profesional dari penilai tanpa izin tertulis dari penilai.

17. PENUGASAN BERSAMAAN

Pemberi Tugas memastikan, bahwa dalam waktu yang bersamaan (dalam jangka waktu tidak lebih dari dua bulan), aset yang menjadi objek penilaian tidak sedang atau telah dinilai oleh Penilai Publik lainnya untuk maksud, tujuan, pengguna laporan dan tanggal penilaian yang sama atau berdekatan. (KEPI - 5.0. c.4).

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PRESENTASI DATA

LOKASI:
Dusun Tegal Ombo, Desa Sanggrahan,
Kecamatan Kranggan, Kabupaten Temanggung,
Provinsi Jawa Tengah

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PRESENTASI DATA

1. TINJAUAN PROPERTI SEBAGAI OBJEK PENILAIAN

1.1. Lokasi

Lokasi aset terletak di sebelah timur Jalan Kranggan - Kaloran ± 500 Dusun Tegal Ombo, yang termasuk ke dalam wilayah Desa/Kelurahan Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah.

Jalan Kranggan - Kaloran merupakan jalan penghubung di daerah tersebut dengan lalu-lintas 2 (dua) arah yaitu dari arah utara ke selatan dan sebaliknya dengan intensitas pemakaiannya rendah. Perkerasan jalan terbuat dari aspal lebar jalan ± 5 m dengan kondisi cukup baik, dilengkapi dengan penerangan jalan umum.

Gambar 1 Peta Lokasi Aset



(Sumber: *maps.google.com*)

Sedangkan jalan utama di daerah tersebut adalah Jalan Raya Kranggan yang terletak di sebelah selatan dengan jarak ± 2.600 m dari lokasi aset.

1.2. Pencapaian

Lokasi aset mudah dicapai dari SDN 1 Sanggrahan ke arah utara melalui Jalan Kranggan - Kaloran setelah menempuh jarak ± 600 m belok kanan memasuki Jalan kampong Tegal Ombo, menuju lokasi aset (sekitar ± 500 m).

Bangunan di dekat lokasi yang mudah dikenal adalah bangunan TPA (Tempat Pembuangan Akhir Sampah), yang terletak disebelah timur dengan jarak ± 100 m dari lokasi aset.

Gambar 2 Peta Pencapaian Lokasi Aset



(Sumber: ***maps.google.com***)

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2. ANALISIS LINGKUNGAN

2.1. Lingkungan

Lingkungan di sekitar lokasi asset pada umumnya adalah tanah kosong, rumah tinggal. Beberapa bangunan yang berada tidak jauh dari lokasi antara lain TPA Kranggan, Masjid Al Fatah.

Daerah tersebut merupakan daerah yang belum pernah banjir. Saluran air tersedia, sementara saluran induk yang dapat menampung pembuangan air dari daerah sekitar berada disebelah timur dayadengan jarak ± 10 m.

Sarana prasarana umum seperti listrik, telepon, dan air bersih tersedia di daerah tersebut, tetapi belum disambungkan ke aset.

Sarana transportasi umum seperti angkutan umum terdapat dengan jarak ± 600 m dari lokasi aset. Sementara fasilitas sosial seperti sekolah, tempat ibadah terdapat dengan jarak ± 600 m dari lokasi aset.

Terminal Bus Antar Kota Terminal Kranggan terletak ± 2,5 km dari lokasi.

2.2. Peruntukan Sesuai dengan Kecenderungan Lingkungan

Berdasarkan perkembangan pembangunan yang ada disekitar lokasi, daerah tersebut memiliki kecenderungan menjadi kawasan pertanian.

3. DESKRIPSI OBJEK PENILAIAN

Pada saat inspeksi lapangan, aset adalah berupa Tanah Kosong. Secara keseluruhan kondisi saat ini dipergunakan untuk lahan pertanian.

A. Data Tanah

Tanah tersebut terdiri dari 6 (enam) bidang tanah, dengan surat bukti kepemilikan sebagai berikut:

1. Sertipikat Hak Pakai No. 126/Sanggrahan yang dikeluarkan oleh Kepala Kantor Pertanahan Kabupaten Temanggung pada tanggal 25 November 2004 dan akan berakhir selama waktu Dipergunakan untuk lahan Pertanian/Bengkok, terakhir tercatat atas nama PEMERINTAH DESA SANGGRAHAN KECAMATAN KRANGGAN. Luas tanah sesuai dengan Surat Ukur No. 1034/Sgh/2004 tanggal 14 September 2004 adalah 1.970 m².
2. Sertipikat Hak Pakai No. 116/Sanggrahan yang dikeluarkan oleh Kepala Kantor Pertanahan Kabupaten Temanggung pada tanggal 25 November 2004 dan akan berakhir selama waktu Dipergunakan untuk lahan Pertanian/Bengkok, terakhir tercatat atas nama PEMERINTAH DESA SANGGRAHAN KECAMATAN KRANGGAN. Luas tanah sesuai dengan Surat Ukur No. 1035/Sgh/2004 tanggal 14 September 2004 adalah 1.880 m².
3. Sertipikat Hak Pakai No. 123/Sanggrahan yang dikeluarkan oleh Kepala Kantor Pertanahan Kabupaten Temanggung pada tanggal 25 November 2004 dan akan berakhir selama waktu Dipergunakan untuk lahan Pertanian/Bengkok, terakhir tercatat atas nama PEMERINTAH DESA SANGGRAHAN KECAMATAN KRANGGAN. Luas tanah sesuai dengan Surat Ukur No. 1036/Sgh/2004 tanggal 14 September 2004 adalah 1.100 m².
4. Sertipikat Hak Pakai No. 102/Sanggrahan yang dikeluarkan oleh Kepala Kantor Pertanahan Kabupaten Temanggung pada tanggal 25 November 2004 dan akan berakhir selama waktu Dipergunakan untuk lahan Pertanian/Bengkok, terakhir tercatat atas nama PEMERINTAH DESA SANGGRAHAN KECAMATAN KRANGGAN. Luas tanah sesuai dengan Surat Ukur No. 1037/Sgh/2004 tanggal 14 September 2004 adalah 3.655 m².
5. Sertipikat Hak Pakai No. 105/Sanggrahan yang dikeluarkan oleh Kepala Kantor Pertanahan Kabupaten Temanggung pada tanggal 25 November 2004 dan akan berakhir selama waktu Dipergunakan untuk lahan Pertanian/Bengkok, terakhir tercatat atas nama PEMERINTAH DESA SANGGRAHAN KECAMATAN KRANGGAN. Luas tanah sesuai dengan Surat Ukur No. 1038/Sgh/2004 tanggal 14 September 2004 adalah 2.975 m².
6. Sertipikat Hak Pakai No. 123/Sanggrahan yang dikeluarkan oleh Kepala Kantor Pertanahan Kabupaten Temanggung pada tanggal 25 November 2004 dan akan berakhir selama waktu Dipergunakan untuk lahan Pertanian/Bengkok, terakhir tercatat atas nama PEMERINTAH DESA SANGGRAHAN KECAMATAN

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KRANGGAN. Luas tanah sesuai dengan Surat Ukur No. 1039/Sgh/2004 tanggal 14 September 2004 adalah 1.255 m².

Akan tetapi tanah yang digunakan dalam penilaian ini sesuai Gambar Ukur dari BPN yang terdiri dari 3 bidang tanah sebagai berikut :

1. Gambar Ukur No. 703/2020 tanggal 10 November 2020 luas tanah : 1.855 m²
2. Gambar Ukur No. 673/2020 tanggal 10 November 2020 luas tanah : 6.516 m²
3. Gambar Ukur No. 676/2020 tanggal 10 November 2020 luas tanah : 4.326 m²

Total luas tanah keseluruhan adalah : **12.697 m².**

Batas-batas tanah adalah sebagai berikut:

- Utara : Tanah kosong
- Timur : Sungai
- Selatan : Tanah kosong
- Barat : Tanah kosong

Bentuk tanah tidak beraturan. Kontur tanah datar dengan ketinggian tanah dibawah jalan sekitarnya.

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Hubungan kepemilikan tanah dengan pihak pemberi tugas

Tanah dalam penilaian tersebut bukan atas nama DINAS LINGKUNGAN HIDUP sebagai pemberi tugas. Sesuai dengan penjelasan dari pihak pemberi tugas, hubungan antara nama pemilik tanah dalam sertifikat tersebut dengan pemberi tugas adalah sebagai pihak pengguna tanah.

4. TINJAUAN PASAR

4.1. Umum

Bank Indonesia memproyeksikan pertumbuhan ekonomi Jawa Tengah mencapai 5,4-5,8 persen dengan inflasi terjaga pada kisaran 3,0±1 persen pada 2020. Untuk mencapai hal itu diperlukan sinergitas, transformasi, dan inovasi serta jaminan kenyamanan dan kepastian lahan bagi investor. Pencapaian Propinsi Jawa Tengah selama tiga triwulan pada 2019 terus meningkat, mulai dari 5,15 persen hingga 5,66 persen di triwulan keempat. Data ini menunjukkan konsistensi pertumbuhan ekonomi Jawa Tengah di atas nasional setidaknya dalam 10 tahun terakhir. optimistis Jawa Tengah bisa sesuia proyeksi mengingat didukung dengan kepemilikan sumber daya yang melimpah, misalnya menjadi salah satu lumbung pangan dan kualitas sumber daya manusia yang tinggi. Belum lagi industri-industri yang menghasilkan produk andalan. Namun, untuk mencapai pertumbuhan tinggi dan berkualitas bukanlah pekerjaan yang mudah. Tingkat pertumbuhan ekonomi yang tinggi, harus disertai pula dengan inflasi yang rendah dan terkendali. Peran perbankan juga perlu lebih ditingkatkan terutama dalam pembiayaan infrastruktur strategis. ada tiga hal yang harus direalisasikan untuk

menarik investor, mewujudkan pertumbuhan ekonomi, dan menurunkan angka kemiskinan di Jawa Tengah. Ketiganya yakni aspek kewilayahan, aspek kecepatan dan kemudahan pelayanan tingkat daerah, serta kondusivitas.

Properti di Indonesia

Lesunya sektor properti diperkirakan masih akan berlanjut hingga 2020. Tahun 2020 diprediksi akan menjadi tahun yang menantang bagi industri properti dan pembiayaan properti karena tantangan likuiditas dan kekhawatiran memburuknya kualitas kredit akibat ancaman perlambatan ekonomi dan gejolak ekonomi global.

Selain itu tahun 2020 menjadi tahun yang penuh tantangan untuk mendorong pembiayaan properti di tengah ancaman perlambatan ekonomi nasional dan ancaman resesi ekonomi global. Namun sejumlah peluang juga menghadang karena sektor properti diprediksi masih menggeliat karena sejumlah insentif yang diberikan Pemerintah, mulai dari kuota bantuan pembiayaan perumahan, insentif perpajakan hingga penurunan suku bunga acuan Bank Indonesia.
Selain itu juga ada pelonggaran *Loan to Value* atau LTV yang meringankan uang muka yang wajib disetorkan konsumen untuk mengakses KPR, kredit pemilikan rumah. Perbankan pada umumnya bersikap lebih hati-hati dalam menghadapi tahun 2020 karena masih ada tantangan likuiditas dan tekanan dari kredit bermasalah.

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Pertumbuhan kredit properti seperti Kredit Pemilikan Rumah (KPR) subsidi maupun non subsidi, serta kredit agunan rumah dan kredit pembangunan rumah akan tumbuh *single digit* karena sejumlah faktor, diantaranya anggaran pemerintah untuk subsidi perumahan yang terbatas. Kementerian Pekerjaan Umum dan Perumahan Rakyat telah menganggarkan APBN Rp 11 triliun untuk memfasilitasi subsidi pembiayan 102.500 unit pada tahun 2020. Jumlah unit rumah yang dapat mendapat subsidi tersebut lebih rendah dari tahun 2018 yang sebesar 280.000 unit dan tahun 2019 yang mencapai 162.000 unit. Pembiayaan perumahan merupakan salah satu aspek yang sangat penting dalam penyediaan perumahan, saat ini APBN memberikan porsi yang tidak banyak atau kurang dari 2% jadi pertumbuhan KPR subsidi.

Adanya status bencana Covid-19 dan situasi ketidakpastian ekonomi global termasuk Indonesia saat ini, mengakibatkan informasi dan analisa pasar dalam keterbatasan dan ketidakpastian. Sehingga adanya keterbatasan tersebut, analisa yang kami informasikan dalam laporan ini perlu pemahaman dan kehati hatian dalam penggunaanya.

4.2. Perkembangan Properti di Sekitar Lokasi

Perkembangan bisnis properti di wilayah Kranggan khususnya di sekitar lokasi aset saat ini relatif stabil. Belum ada faktor yang mempengaruhi karena di wilayah sekitar lokasi aset belum ada pembangunan yang signifikan, pusat perdagangan atau pusat pertokoan belum ada.

Sementara itu, perkembangan transaksi properti di sekitar lokasi aset, adalah cenderung stabil. Dimana, di di Sanggrahan dan sekitarnya, berdasarkan data penawaran dan transaksi yang ada, indikasi harga pasar properti tanah secara umum berkisar antara Rp90.000,00hingga Rp120.000,00/m². Kisaran harga tersebut umumnya tergantung kepada faktor lokasi, luas, bentuk maupun legalitas.

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ANALISIS DATA DAN KESIMPULAN

LOKASI:
Dusun Tegal Ombo, Desa Sanggrahan,
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Provinsi Jawa Tengah

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ANALISIS DATA DAN KESIMPULAN NILAI

1. PENGGUNAAN TERTINGGI DAN TERBAIK *(HIGHEST & BEST USE - HBU)*

Mengingat uraian-uraian pada bagian Definisi dan Lingkup Penugasan, Presentasi Data dan mengamati penggunaan tanah di sekitarnya, kecenderungan bangunan di sekitar lokasi aset, maka menurut pendapat kami penggunaan tanah saat ini agar memenuhi Prinsip Penggunaan Tertinggi dan Terbaik adalah sebagai Pertanian

2. NILAI TANAH

- **Data Pembanding**

  Pada saat dilakukan peninjauan lapangan, diperoleh data transaksi jual-beli, dan terdapat beberapa data penawaran yang dapat digunakan sebagai pembanding, dengan beberapa penyesuaian yang perlu dilakukan. Data-data transaksi dan penawaran tersebut adalah sebagai berikut:

  1. Tanah kosong yang berlokasi di Dusun Tegal Ombo, Desa Sanggrahan, dengan luas tanah 1.000 m² dan legalitas berupa SHM. Harga penawaran pada November 2020 Rp110.000.000,00.
  2. Tanah kosong yang berlokasi di Dusun Tegal Ombo, Desa Sanggrahan, dengan luas tanah 500 m² dan legalitas berupa SHM. Harga transaksi pada 2019 Rp50.000.000,00.
  3. Tanah kosong yang berlokasi di Dusun Tegal Ombo, Desa Sanggrahan, dengan luas tanah 30.000 m² dan legalitas berupa SHM. Harga penawaran November 2020 Rp5.250.000.000,00.

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- **Penyesuaian**

  Analisa nilai dimulai dari tahap menentukan unit perbandingan dan elemen perbandingan yang memiliki perbedaan, berdasarkan data-data yang tersedia. Kemudian terhadap perbedaan tersebut dilakukan penyesuaian sehingga diperoleh opini Nilai Pasar terhadap objek penilaian. Faktor-faktor penyesuaian yang umumnya diperhitungkan antara lain adalah:

  - faktor legalitas
  - faktor lokasi, terutama aksesibilitas dan lingkungan
  - faktor fisik, termasuk infrastruktur, elevasi, klasifikasi tanah
  - faktor kesuburan tanah

3. IMPLEMENTASI PENGGUNAAN PENDEKATAN PENILAIAN

- **Pendekatan Penilaian**

  Pemilihan pendekatan penilaian yang akan diterapkan ditentukan oleh jenis properti dari aset yang dinilai serta ketersediaan data pembandingnya.

Mengingat aset berupa **tanah kosong,** dimana terdapat beberapa data pasar yang dapat dijadikan sebagai data pembanding**,** maka pendekatan yang digunakan adalah **Pendekatan Pasar** – Metode Perbandingan Data Pasar *(**Market Approach** - Market Data Comparison Method)*. Detail mengenai pendekatan tersebut dapat dilihat di bagian Definisi dan Lingkup Penugasan pada laporan ini.

4. KESIMPULAN NILAI

- **Kesimpulan Nilai**

  Berdasarkan hal-hal tersebut di atas**,** maka kami berkesimpulan bahwa **Nilai Pasar (*Market Value*)** dari aset tersebut per tanggal **12 November 2020** adalah **Rp1.271.000.000,00 (Satu Miliar Dua RatusTujuh Puluh Satu Juta Rupiah).**

LPA KJPP MBPRU

LAMPIRAN

LOKASI:
Dusun Tegal Ombo, Desa Sanggrahan,
Kecamatan Kranggan, Kabupaten Temanggung,
Provinsi Jawa Tengah

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FOTO ASET

LPA KJPP MBPRU

FOTO ASET



TANAH SHP 126



TANAH SHP 126

FOTO ASET



BATAS TANAH SHP 126

LPA KJPP MBPRU



BATAS TANAH SHP 126

FOTO ASET



BATAS TANAH SHP 126



BATAS TANAH SHP 126

FOTO ASET



TANAH SHP. 116



TANAH SHP. 116

FOTO ASET



TANAH SHP. 116



BATAS TANAH SHP. 116

FOTO ASET



TANAH SHP. 116



TANAH SHP. 116

FOTO ASET



TANAH SHP. 123



TANAH SHP. 123

FOTO ASET



TANAH SHP. 123



TANAH SHP. 123

FOTO ASET



TANAH SHP. 123



TANAH SHP. 123

FOTO ASET



TANAH SHP. 102



TANAH SHP. 102

FOTO ASET



TANAH SHP. 102



TANAH SHP. 102

FOTO ASET



TANAH SHP. 123



BATAS TANAH SHP. 102

FOTO ASET



TANAH SHP. 105



TANAH SHP. 105

FOTO ASET



TANAH SHP. 105



TANAH SHP. 105

FOTO ASET



TANAH SHP. 105



TANAH SHP. 105

FOTO ASET



TANAH SHP. 106



TANAH SHP. 106

FOTO ASET



TANAH SHP. 106



TANAH SHP. 106

FOTO ASET



TANAH SHP. 106



TANAH SHP. 106

GAMBAR SITUASI

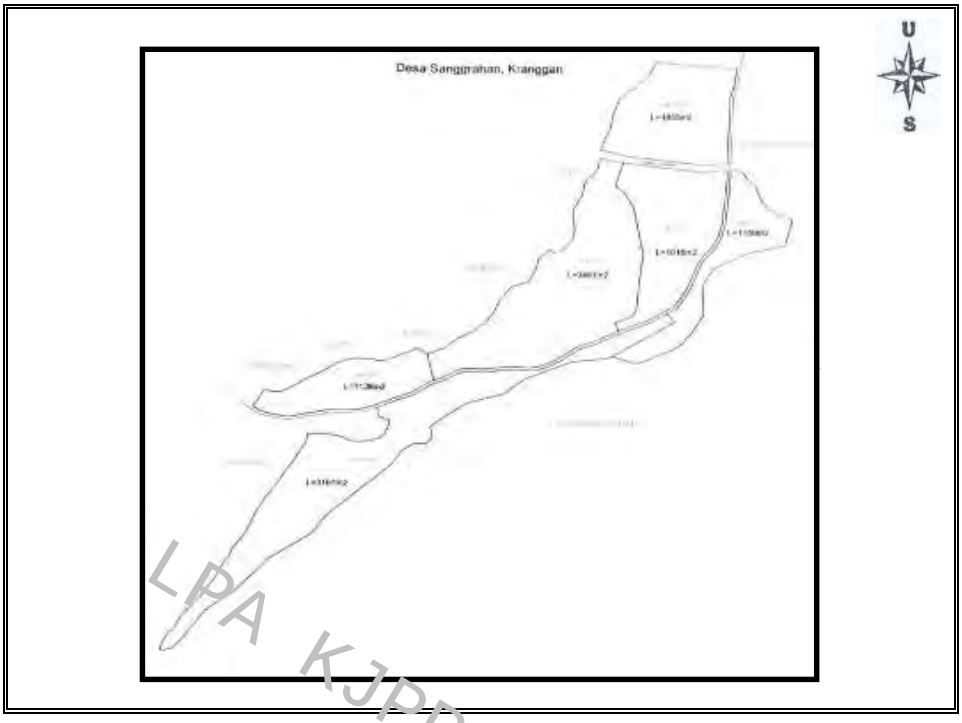
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PETA LOKASI ASET

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***LAY OUT* TANAH**



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LAMPIRAN LAINNYA

(TERLAMPIR)

LPA KJPP MBPRU

PRESENTASI DATA

LOKASI:
Dusun Krajan, Desa Sanggrahan,
Kecamatan Kranggan, Kabupaten Temanggung,
Provinsi Jawa Tengah

LPA KJPP MBPRU

PRESENTASI DATA

1. TINJAUAN PROPERTI SEBAGAI OBJEK PENILAIAN

1.1. Lokasi

Lokasi aset terletak di sebelah utara Jalan Dusun Krajan, yang termasuk ke dalam wilayah Desa Sanggrahan, Kecamatan Kranggan, Kabupaten Temanggung, Provinsi Jawa Tengah.

Jalan Dusun Krajan merupakan jalan lingkungan di daerah tersebut dengan lalu-lintas 2 (dua) arah yaitu dari arah timur ke barat dan sebaliknya dengan intensitas pemakaiannya rendah. Perkerasan jalan terbuat dari aspal, lebar jalan ± 4 m dengan kondisi cukup baik, dilengkapi dengan saluran air serta penerangan jalan.

Gambar 1 Peta Lokasi Aset



LPA KJPP MBPRU

(Sumber: *maps.google.com*)

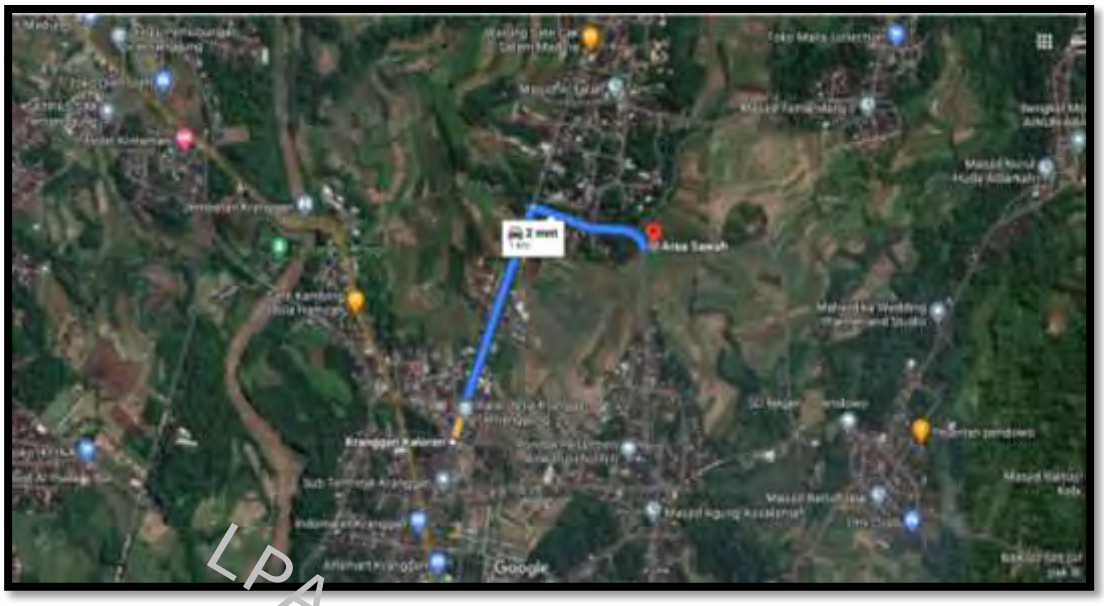
Sedangkan jalan utama di daerah tersebut adalah Jalan Kranggan yang terletak di sebelah selatan dengan jarak ± 1.000 m dari lokasi aset.

1.2. Pencapaian

Lokasi aset dapat dicapai dari Pasar Kranggan ke arah utara melalui Jalan Kranggan Kaloran setelah menempuh jarak ± 1 km belok kanan memasuki Jalan Dusun Krajan, menuju lokasi aset (sekitar ± 300 m) yang berada di sebelah kiri jalan.

Bangunan di dekat lokasi yang mudah dikenal adalah bangunan SMP N 1 Kranggan yang terletak disebelah barat daya dengan jarak ± 400 m dari lokasi aset.

Gambar 2 Peta Pencapaian Lokasi Aset



(Sumber: ***maps.google.com***)

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2. ANALISIS LINGKUNGAN

2.1. Lingkungan

Lingkungan di sekitar lokasi asetpada umumnya adalah bangunan rumah tinggal. Beberapa bangunan yang berada tidak jauh dari lokasi antara lain SMPN 1 Kranggan, Kantor Kecamatan Kranggan.

Daerah tersebut merupakan daerah yang belum pernah banjir. Saluran air tersedia ditepi jalan, sementara saluran induk Sungai Kali Progo yang dapat menampung pembuangan air dari daerah sekitar berada disebelah barat dengan jarak ± 1 km.

Sarana prasarana umum seperti listrik, telepon, dan air bersih telah tersedia di daerah tersebut, tetapi belum disambungkan ke aset.

Sarana transportasi umum seperti angkutan umum, terdapat dengan jarak ± 500 m dari lokasi aset. Sementara fasilitas sosial seperti sekolah, rumah-sakit, pusat perbelanjaan, tempat ibadah terdapat dengan jarak ± 500 m dari lokasi aset.

Terminal Kranggan terletak ± 1 km dari lokasi.

2.2. Sesuai dengan Kecenderungan Lingkungan

Berdasarkan perkembangan pembangunan yang ada disekitar lokasi, daerah tersebut memiliki kecenderungan menjadi kawasan permukiman/ Pertanian.

3. DESKRIPSI OBJEK PENILAIAN

Pada saat inspeksi lapangan, aset adalah berupa tanah kosong. Sekarang digunakan sebagai lahan pertanian.

A. Data Tanah

Tanah tersebut terdiri dari 8 (delapan) bidang tanah, dengan surat bukti kepemilikan sebagai berikut:

a. Letter C Nomer 126 S Dengan Luas Terukur 2.242 m2
b. Letter C Nomer 125 S Dengan Luas Terukur 5.421 m2
c. Letter C Nomer 129 S Dengan Luas Terukur 2.517 m2
d. Letter C Nomer 123 S Dengan Luas Terukur 3.317 m2
e. Letter C Nomer 124 S Dengan Luas Terukur 1.176 m2
f. Letter C Nomer 128 S Dengan Luas Terukur 3.033 m2
g. Letter C Nomer 127 S Dengan Luas Terukur 1.746 m2
h. Letter C Nomer 120 S Dengan Luas Terukur 2.531 m2

Sesuai dengan surat keterangan dari Pemerintah Kabupaten Temanggung Dinas Lingkungan Hidup nomer: 800/995/XI/2020 tanggal 4 November 2020.

Total luas tanah adalah **21.983 m²**.

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Batas-batas tanah adalah sebagai berikut:

- Utara : Tanah kosong
- Timur : Parit dan tanah kosong
- Selatan : Jalan lingkungan
- Barat : Parit

Bentuk tanah tidak beraturan dengan lebar yang menghadap jalan (*frontage*) ± 80 m dan panjang kebelakang ± 130 m. Kontur tanah datar dengan ketinggian tanah dibawah dengan permukaan jalan di depannya.

Hubungan kepemilikan tanah dengan pihak pemberi tugas

Tanah dalam penilaian tersebut bukan atas nama DINAS LINGKUNGAN HIDUP sebagai pemberi tugas. Sesuai dengan penjelasan dari pihak pemberi tugas, hubungan antara nama pemilik tanah dalam sertifikat tersebut dengan pemberi tugas adalah sebagai pihak pengguna tanah.

4. TINJAUAN PASAR

4.1. Umum

Bank Indonesia memproyeksikan pertumbuhan ekonomi Jawa Tengah mencapai 5,4-5,8 persen dengan inflasi terjaga pada kisaran 3,0±1 persen pada 2020. Untuk mencapai hal itu diperlukan sinergitas, transformasi, dan inovasi serta jaminan

kenyamanan dan kepastian lahan bagi investor. Pencapaian Propinsi Jawa Tengah selama tiga triwulan pada 2019 terus meningkat, mulai dari 5,15 persen hingga 5,66 persen di triwulan keempat. Data ini menunjukkan konsistensi pertumbuhan ekonomi Jawa Tengah di atas nasional setidaknya dalam 10 tahun terakhir. optimistis Jawa Tengah bisa sesuia proyeksi mengingat didukung dengan kepemilikan sumber daya yang melimpah, misalnya menjadi salah satu lumbung pangan dan kualitas sumber daya manusia yang tinggi. Belum lagi industri-industri yang menghasilkan produk andalan. Namun, untuk mencapai pertumbuhan tinggi dan berkualitas bukanlah pekerjaan yang mudah. Tingkat pertumbuhan ekonomi yang tinggi, harus disertai pula dengan inflasi yang rendah dan terkendali. Peran perbankan juga perlu lebih ditingkatkan terutama dalam pembiayaan infrastruktur strategis. ada tiga hal yang harus direalisasikan untuk menarik investor, mewujudkan pertumbuhan ekonomi, dan menurunkan angka kemiskinan di Jawa Tengah. Ketiganya yakni aspek kewilayahan, aspek kecepatan dan kemudahan pelayanan tingkat daerah, serta kondusivitas.

Properti di Indonesia

LPA KLHP MBPRU

Lesunya sektor properti diperkirakan masih akan berlanjut hingga 2020. Tahun 2020 diprediksi akan menjadi tahun yang menantang bagi industri properti dan pembiayaan properti karena tantangan likuiditas dan kekhawatiran memburuknya kualitas kredit akibat ancaman perlambatan ekonomi dan gejolak ekonomi global.

Selain itu tahun 2020 menjadi tahun yang penuh tantangan untuk mendorong pembiayaan properti di tengah ancaman perlambatan ekonomi nasional dan ancaman resesi ekonomi global. Namun sejumlah peluang juga menghadang karena sektor properti diprediksi masih menggeliat karena sejumlah insentif yang diberikan Pemerintah, mulai dari kuota bantuan pembiayaan perumahan, insentif perpajakan hingga penurunan suku bunga acuan Bank Indonesia.
Selain itu juga ada pelonggaran *Loan to Value* atau LTV yang meringankan uang muka yang wajib disetorkan konsumen untuk mengakses KPR, kredit pemilikan rumah. Perbankan pada umumnya bersikap lebih hati-hati dalam menghadapi tahun 2020 karena masih ada tantangan likuiditas dan tekanan dari kredit bermasalah.

Pertumbuhan kredit properti seperti Kredit Pemilikan Rumah (KPR) subsidi maupun non subsidi, serta kredit agunan rumah dan kredit pembangunan rumah akan tumbuh *single digit* karena sejumlah faktor, diantaranya anggaran pemerintah untuk subsidi perumahan yang terbatas. Kementerian Pekerjaan Umum dan Perumahan Rakyat telah menganggarkan APBN Rp 11 triliun untuk memfasilitasi subsidi pembiayan 102.500 unit pada tahun 2020. Jumlah unit rumah yang dapat mendapat subsidi tersebut lebih rendah dari tahun 2018 yang

sebesar 280.000 unit dan tahun 2019 yang mencapai 162.000 unit. Pembiayaan perumahan merupakan salah satu aspek yang sangat penting dalam penyediaan perumahan, saat ini APBN memberikan porsi yang tidak banyak atau kurang dari 2% jadi pertumbuhan KPR subsidi.

Adanya status bencana Covid-19 dan situasi ketidakpastian ekonomi global termasuk Indonesia saat ini, mengakibatkan informasi dan analisa pasar dalam keterbatasan dan ketidakpastian. Sehingga adanya keterbatasan tersebut, analisa yang kami informasikan dalam laporan ini perlu pemahaman dan kehati hatian dalam penggunaanya.

4.2. Perkembangan Properti di Sekitar Lokasi

Perkembangan bisnis properti di wilayah Kranggan khususnya di sekitar lokasi aset saat ini relatif stabil. Belum ada faktor yang mempengaruhi karena diwilayah sekitar lokasi asset belum ada pembangunan yang signifikan, pusat perdagangan atau pusat pertokoan belum ada.

Sementara itu, perkembangan transaksi properti di sekitar lokasi aset, adalah cenderung stabil. Dimana, di Sanggrahan dan sekitarnya, berdasarkan data penawaran dan transaksi yang ada, indikasi harga pasar properti tanah secara umum berkisar antara Rp100.000,00 hingga Rp160.000,00/m². Kisaran harga tersebut umumnya tergantung kepada faktor lokasi, luas, bentuk maupun legalitas.

LPA KJPP MBPRU

ANALISIS DATA DAN KESIMPULAN

LOKASI:
Dusun Krajan, Desa Sanggrahan,
Kecamatan Kranggan, Kabupaten Temanggung,
Provinsi Jawa Tengah

LPA KJPP MBPRU

ANALISIS DATA DAN KESIMPULAN NILAI

1. PENGGUNAAN TERTINGGI DAN TERBAIK *(HIGHEST & BEST USE - HBU)*

Mengingat uraian-uraian pada bagian Definisi dan Lingkup Penugasan, Presentasi Data dan mengamati penggunaan tanah di sekitarnya, kecenderungan bangunan di sekitar lokasi aset, maka menurut pendapat kami penggunaan tanah saat ini agar memenuhi Prinsip Penggunaan Tertinggi dan Terbaik adalah sebagai pertanian.

2. NILAI TANAH

- **Data Pembanding**

  Pada saat dilakukan peninjauan lapangan, diperoleh data transaksi jual-beli, dan terdapat beberapa data penawaran yang dapat digunakan sebagai pembanding, dengan beberapa penyesuaian yang perlu dilakukan. Data-data transaksi dan penawaran tersebut adalah sebagai berikut:

  1. Tanah kosong yang berlokasi di Dusun Temanggal, Desa Pandowo, dengan luas tanah 1.000 m² dan legalitas berupa SHM. Harga Transaksi pada Maret 2020 Rp150.000.000,00.
  2. Tanah kosong yang berlokasi di Dusun Krajan, Desa Sanggrahan, dengan luas tanah 3.000 m² dan legalitas berupa SHM. Harga transaksi pada Juni 2020 Rp350.000.000,00.
  3. Tanah kosong yang berlokasi di Dusun Temanggal, Desa Pandowo, dengan luas tanah 1.100 m² dan legalitas berupa SHM. Harga Transaksi Desember Rp150.000.000,00.
  4. Tanah kosong yang berlokasi di Dusun Rowo Kulon, Desa Sanggrahan, dengan luas tanah 450 m² dan legalitas berupa SHM. Harga Penawaran November 2020 Rp130.000.000,00.

- **Penyesuaian**

  Analisa nilai dimulai dari tahap menentukan unit perbandingan dan elemen perbandingan yang memiliki perbedaan, berdasarkan data-data yang tersedia. Kemudian terhadap perbedaan tersebut dilakukan penyesuaian sehingga diperoleh opini Nilai Pasar terhadap objek penilaian. Faktor-faktor penyesuaian yang umumnya diperhitungkan antara lain adalah:

  - faktor legalitas
  - faktor lokasi, terutama aksesibilitas dan lingkungan
  - faktor fisik, termasuk infrastruktur, elevasi, klasifikasi tanah
  - faktor kesuburan tanah

LPA KJPP MBPRU

3. IMPLEMENTASI PENGGUNAAN PENDEKATAN PENILAIAN

- **Pendekatan Penilaian**

  Pemilihan pendekatan penilaian yang akan diterapkan ditentukan oleh jenis properti dari aset yang dinilai serta ketersediaan data pembandingnya.

  Mengingat aset berupa **tanah kosong,** dimana terdapat beberapa data pasar yang dapat dijadikan sebagai data pembanding**,** maka pendekatan yang digunakan adalah **Pendekatan Pasar** - Metode Perbandingan Data Pasar *(**Market Approach** - Market Data Comparison Method)*. Detail mengenai pendekatan tersebut dapat dilihat di bagian Definisi dan Lingkup Penugasan pada laporan ini.

4. KESIMPULAN NILAI

- **Kesimpulan Nilai**

  Berdasarkan hal-hal tersebut di atas**,** maka kami berkesimpulan bahwa **Nilai Pasar (*Market Value*)** dari aset tersebut per tanggal **12 November 2020** adalah **Rp2.870.000.000,00 (Dua Miliar Delapan Ratus Tujuh Puluh Juta Rupiah)**.

LPA KJPP MBPRU

LAMPIRAN

LOKASI:
Dusun Krajan, Desa Sanggrahan,
Kecamatan Kranggan, Kabupaten Temanggung,
Provinsi Jawa Tengah

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FOTO ASET

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FOTO ASET



TAMPAK TANAH PENGGANTI



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TAMPAK TANAH PENGGANTI



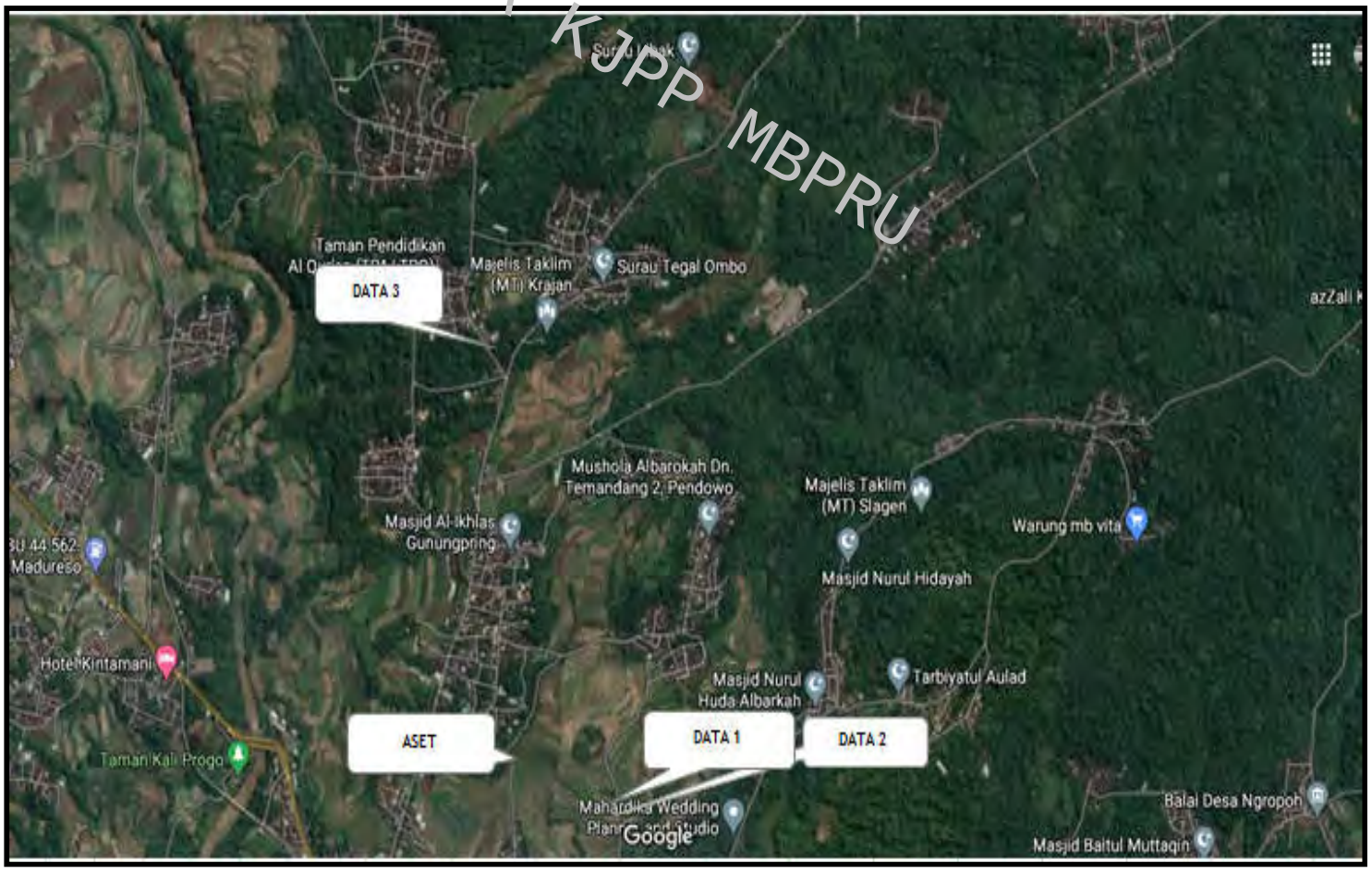
TAMPAK TANAH PENGGANTI

GAMBAR SITUASI

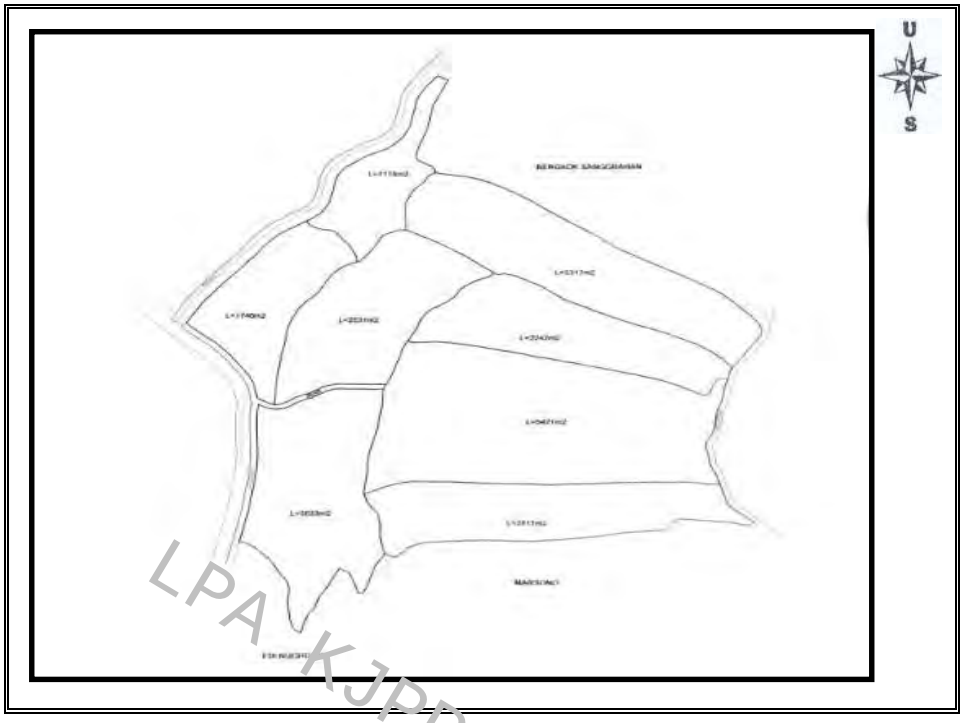
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PETA LOKASI ASET

LPA KJPP MBPRU



***LAY OUT* TANAH**



LPA KJPP MBPRU

Appendix II Land Certificate

BB 065057

DAFTAR ISIAN 206

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

SERTIPIKAT

HAK : PAKAI No. 131

PROPINSI : JAWA TENGAH

KABUPATEN / KOTA : TEMANGGUNG

KECAMATAN : KRANGGAN

D E S A/ KELURAHAN : SANGGRAHAN

DAFTAR ISIAN 307
No. 8126 / 2008
DAFTAR ISIAN 208
No. 7228 / 2008

KANTOR PERTANAHAN
KABUPATEN / KOTA

TEMANGGUNG

11 • 24 • 03 • 06 • 4 • 00131

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : PAKAI
No. : 131 ✓
Desa / Kel. : Sanggrahan
Tgl. berakhirnya hak :
Selama dipergunakan untuk Tempat Pembuangan Akhir Sampah ✓

b) NIB 11.24. 03.06.01706 ✓
Letak Tanah

f) NAMA PEMEGANG HAK
PEMERINTAH KABUPATEN TEMANGGUNG
BERKEDUDUKAN DI TEMANGGUNG ✓
Tanggal lahir / akta pendirian

c) ASAL HAK

1. Konversi

2. Pemberian hak Pakai
Atas Tanah Bekas HM No. 1075, 1138, 1423, 1457, Leter C No.1204.P.18.D.IV ##

3. Pemecahan / Pemisahan / Penggabungan bidang

g) PEMBUKUAN
Temanggung 14 Juli 2008 ✓
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

Ir. IZDA PUTRA, MM
NIP 750 001 780

d) DASAR PENDAFTARAN

1. Daftar Isian 202
Tgl.
No.

2. Surat Keputusan Ka.Kanwil BPN Prop. Jawa Tengah
Tgl. 18 Juni 2008 ✓
No. SK.086-530.3-33-2008 ✓

3. Permohonan Pemecahan / Pemisahan / Penggabungan bidang
Tgl.
No.

h) PENERBITAN SERTIPIKAT
Temanggung 14 Juli 2008 ✓
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

Ir. IZDA PUTRA, MM
NIP 750 001 780

e) SURAT UKUR
Tgl. 10 Juli 2008
No. 544/Sgh/2008
Luas. 26.717 M2

i) PENUNJUK Warkah Nomor : 7233 / 2008
Leter C No.1000.P.18.D.IV, C No.1498.P.18.D.IV, C No.1461.P.18.D.IV ✓
C No.1507.P.18.D.IV, C No.1391.P.18.D.IV, C No.1327.P.18.D.IV, C No.1403.P.18.D.IV
C No.1498.P.18.D.IV, ✓

DAFTAR ISIAN 207

11 • 24 • 03 • 06 • 4 • 00131

NIB : 11.24.03.06.01706

SURAT UKUR

Nomor : 544/Sgh 12008

SEBIDANG TANAH TERLETAK DALAM

Propinsi : Jawa Tengah

Kabupaten / ~~Kota~~ : Temanggung

Kecamatan : Kranggan

Desa / ~~Kelurahan~~ : Sangrahan

Peta : - Nomor Peta Pendaftaran : 49.1-42.068-14-5

Lembar : - Kotak : -

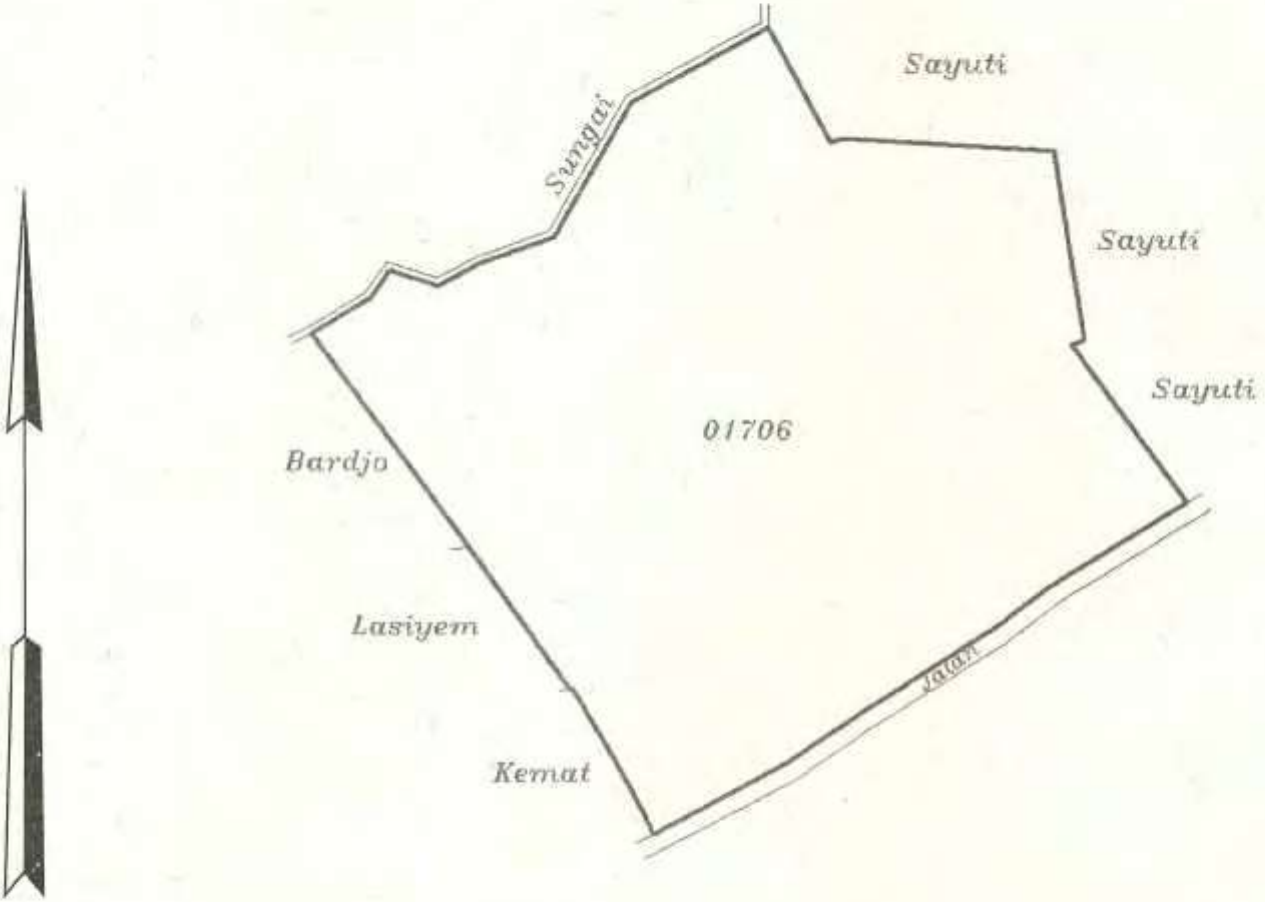
Keadaan Tanah : Sebidang tanah pertanian

Tanda-tanda batas : Pada titik batas berdiri patok beton

Luas : 26.717 m2. (Dua puluh enam ribu tujuh ratus tujuh belas meter persegi).

Penunjukan dan penetapan batas : Penunjukan batas oleh : Adi Supanggyo,S.Ag ~~(Pemilik)~~&Perangkat Desa dan Penetapan batas oleh Panitia Ajudikasi /-Kepala Seksi Survei Pengukuran dan Pemetaan / Panitia A / Panitia B**

SKALA 1 : 2000



PENJELASAN : _____ **batas tanah ini**

Hal lain - lain : Bidang tanah dlm Surat Ukur ini asalnya salinan dari Peta Tunggal Lembar : 49.1-42.068-14-5 dengan NIB.No.11.24.03.08.01706

Daftar Isian 302 tgl. 24 September 2007 No. 1977/2007

Daftar Isian 307 tgl. No.

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

Temanggung 14 JUL 2008

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

[illegible] PUTRA, MM
NIP 750 001 780

Temanggung 10-7-2008

Kepala Seksi Survei, Pengukuran dan Pemetaan

Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

PURWOTO, A.Ptnh
NIP 750 001 036

Lihat surat ukur Pemisahan / Penggabungan / Pengganti

Nomor : Nomor hak :

Dikeluarkan surat ukur		Luas	Nomor hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam surat ukur Nomor : Nomor hak :

BL 871651

DAFTAR ISIAN 206

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA



SERTIPIKAT

HAK : **PAKAI** No. **132**

PROVINSI : JAWA TENGAH

KABUPATEN / ~~KOTA~~ : TEMANGGUNG

KECAMATAN : KRANGGAN

DESA / ~~KELURAHAN~~ : SANGGRAHAN

DAFTAR ISIAN 307
No. 8595 / 2013

DAFTAR ISIAN 208
No. 4280 / 2013

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~

TEMANGGUNG

11 • 24 • 03 • 08 • 4 • 00132

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : **Pakai**
No. : **132**
Desa / Kel. : Sanggrahan
Tgl. berakhirnya hak :
Selama Dipergunakan untuk **

b) NIB 11.24.03.08.01732
Letak Tanah

c) ASAL HAK

1. Konversi

2. Pemberian hak Pakai
Atas Tanah Negara Bekas Hak Milik No. 119

3. Pemecahan / Pemisahan /
Penggabungan bidang

d) DASAR PENDAFTARAN

1. Daftar Isian 202
Tgl.
No.

2. Surat Keputusan Kakan Pertanahan Kab. Temanggung
Tgl. 18 April 2013
No. 07 / HP / BPN.33.23 / 2013

3. Permohonan Pemecahan /
Pemisahan / Penggabungan bidang
Tgl.
No.

e) SURAT UKUR
Tgl. 17 April 2013
No. 00008 / Sanggrahan / 2013
Luas. 3548 M2

f) NAMA PEMEGANG HAK

PEMERINTAH KABUPATEN TEMANGGUNG
BERKEDUDUKAN DI TEMANGGUNG

Tanggal lahir / akta pendirian

g) PEMBUKUAN

Temanggung 25 April 2013
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

HARTOYO, SH
NIP **19610805 198301 1 001**

h) PENERBITAN SERTIPIKAT

Temanggung 25 April 2013
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

HARTOYO, SH
NIP **19610805 198301 1 001**

i) PENUNJUK Warkah No. 4280 / 2013

** Perluasan TPA Sanggrahan

BL 871651

DAFTAR ISIAN 207

11 • 24 • 03 • 08 • 4 • 00132

NIB : 11.24.03.08.01732

SURAT UKUR

Nomor : 00008/SANGGRAHAN/2013

SEBIDANG TANAH TERLETAK DALAM

Provinsi : JAWA TENGAH

Kabupaten / Kota : TEMANGGUNG

Kecamatan : KRANGGAN

Desa /Kelurahan : SANGGRAHAN,

Peta : Nomor Peta Pendaftaran : 49.1-42.068-14-8

Lembar : Kotak : B3

Keadaan Tanah : Sebidang tanah tegalan

Tanda-tanda batas : Patok beton berdiri diatas batas sesuai PMNA /KA BPN No.3/1997

Luas : 3.548 m². (Tiga Ribu Lima Ratus Empat Puluh Delapan Meter Persegi.)

Penunjukan dan penetapan batas : Penunjukan batas oleh Siyami dan Suranto (Perangkat Desa) untuk dan atas nama Pemkab Temanggung (Pemohon) dan telah disetujui oleh tetangga yang berbatasan

2500

SKALA 1 : .....



Koordinat titik tengah : 280163,689867

PENJELASAN : ..... batas tanah ini

Hal lain - lain : Surat Ukur ini merupakan Surat Ukur pengganti dari Gambar Situasi Nomor : 1223/1998, tanggal 10 Juni 1981, Hak Milik Nomor : 119

Daftar Isian 302 tgl. 05/03/2012 No. 2342/2012

Daftar Isian 307 tgl. 17/04/2013 No. 7458/2013

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

TEMANGGUNG 25 APR 2013

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
TEMANGGUNG

NIP NIP. 19610805 198301 1 001

TEMANGGUNG 17/04/2013

Kepala Seksi Survei, Pengukuran dan Pemetaan

Kantor Pertanahan
Kabupaten / ~~Kota~~
TEMANGGUNG

ttd

JOKO PITOYO CAHYONO SSIT

NIP 19740922199303 1001

Lihat surat ukur Pemisahan / Penggabungan / Pengganti

Nomor : Nomor hak :

Dikeluarkan surat ukur		Luas	Nomor hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam surat ukur Nomor : Nomor hak :

BL 871652

DAFTAR ISIAN 206

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA



SERTIPIKAT

HAK : **PAKAI** No. **133**

PROVINSI : JAWA TENGAH

KABUPATEN / ~~KOTA~~ : TEMANGGUNG

KECAMATAN : KRANGGAN

DESA / ~~KELURAHAN~~ : SANGGRAHAN

DAFTAR ISIAN 307
No. 8596 / 2013
DAFTAR ISIAN 208
No. 4281 / 2013

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~

TEMANGGUNG

11 • 24 • 03 • 08 • 4 • 00133

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : **Pakai**
No. : **133**
Desa / Kel. : Sanggrahan
Tgl. berakhirnya hak :
Selama Dipergunakan untuk **

b) NIB 11.24.03.08.01731
Letak Tanah

c) ASAL HAK

1. Konversi

2. Pemberian hak Pakai
Atas Tanah Negara Bekas Hak Milik Adat
C.842.P.24S.S.II

3. Pemecahan / Pemisahan /
Penggabungan bidang

d) DASAR PENDAFTARAN

1. Daftar Isian 202
Tgl.
No.

2. Surat Keputusan
Tgl. 18 April 2013
No. 07 / HP / BPN.33.23 / 2013

3. Permohonan Pemecahan /
Pemisahan / Penggabungan bidang
Tgl.
No.

e) SURAT UKUR
Tgl. 17 April 2013
No. 00007 / Sanggrahan / 2013
Luas. 3685 M2

f) NAMA PEMEGANG HAK

PEMERINTAH KABUPATEN TEMANGGUNG
BERKEDUDUKAN DI TEMANGGUNG

Tanggal lahir / akta pendirian

g) PEMBUKUAN

Temanggung 25 April 2013
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

HARTOYO, SH
NIP 19610805 198301 1 001

Kakan Pertanahan
Kab. Temanggung

h) PENERBITAN SERTIPIKAT

Temanggung 25 April 2013
Kepala Kantor Pertanahan
Kabupaten ~~/Kota~~
Temanggung

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

HARTOYO. SH
NIP 19610805 198301 1 001

i) PENUNJUK Warkah No. 4281 / 2013

** Perluasan TPA Sanggrahan

BL 871652

DAFTAR ISIAN 207

11 • 24 • 03 • 08 • 4 • 00133

NIB : 11.24.03.08.01731

SURAT UKUR

Nomor : 00007/SANGGRAHAN/2013

SEBIDANG TANAH TERLETAK DALAM

Provinsi : JAWA TENGAH

Kabupaten / ~~Kota~~ : TEMANGGUNG

Kecamatan : KRANGGAN

Desa / ~~Kelurahan~~ : SANGGRAHAN,

Peta : Nomor Peta Pendaftaran : 49.1-42.068-14-8

Lembar : Kotak : B4

Keadaan Tanah : Sebidang tanah sawah

Tanda-tanda batas : Patok beton berdiri diatas batas sesuai PMNA /KA BPN No.3/1997

Luas : 3.685 m². (Tiga Ribu Enam Ratus Delapan Puluh Lima Meter Persegi.)

Penunjukan dan penetapan batas : Penunjukan batas oleh Siyami dan Suranto (Perangkat Desa) untuk dan atas nama Pemkab Temanggung (Pemohon) dan penetapan batas oleh Panitia A / Kepala Seksi Survei Pengukuran dan Pemetaan

SKALA 1 : $\frac{2500}{\ldots\ldots\ldots\ldots}$



Koordinat titik tengah : 280163,689867

PENJELASAN : ..... batas tanah ini

Hal lain - lain : Bidang tanah dalam Surat Ukur ini asalnya dari C. Persil Klas

Daftar Isian 302 tgl. 05/03/2012 No. 2343/2012

Daftar Isian 307 tgl. 17/04/2013 No. 7455/2013

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

TEMANGGUNG 25 APR 2013

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
TEMANGGUNG

HARYOYO, SH.
NIP 19610805 198301 1 001

TEMANGGUNG 17/04/2013

Kepala Seksi Survei, Pengukuran dan Pemetaan

Kantor Pertanahan
Kabupaten / ~~Kota~~
TEMANGGUNG

ttd

JOKO PITOYO CAHYONO SSiT
NIP 197409221993031001

Lihat surat ukur Pemisahan / Penggabungan / Pengganti

Nomor : Nomor hak :

Dikeluarkan surat ukur		Luas	Nomor hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam surat ukur Nomor : Nomor hak :

BQ 568685

DAFTAR ISIAN 206

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

SERTIPIKAT

HAK : **PAKAI** No. **134**

PROVINSI : JAWA TENGAH

KABUPATEN / ~~KOTA~~ : TEMANGGUNG

KECAMATAN : KRANGGAN

DESA / ~~KELURAHAN~~ : SANGGRAHAN

DAFTAR ISIAN 307
No. 6192 / 2014

DAFTAR ISIAN 208
No. 2458 / 2014

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~
TEMANGGUNG

11.24.03.08.4.00134

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : **Pakai**
No. : **134**
Desa / Kel. : Sanggrahan
Tgl. berakhirnya hak :
Selama Dipergunakan untuk Perluasan TPA

b) NIB 11.24.03.08.01744
Letak Tanah

c) ASAL HAK

1. Konversi

2. Pemberian hak Pakai
Atas Tanah Negara Bekas Hak Milik Nomor 1716

3. Pemecahan / Pemisahan / Penggabungan bidang

d) DASAR PENDAFTARAN

1. Daftar Isian 202
Tgl.
No.

2. Surat Keputusan
Tgl. 18 Februari 2014
No. 07 / HP / BPN.33.23 / 2014

3. Permohonan Pemecahan / Pemisahan / Penggabungan bidang
Tgl.
No.

e) SURAT UKUR
Tgl. 13 Desember 2013
No. 00010 / Sanggrahan / 2014
Luas. 3590 M2

f) NAMA PEMEGANG HAK
PEMERINTAH KABUPATEN TEMANGGUNG
BERKEDUDUKAN DI TEMANGGUNG
Tanggal lahir / akta pendirian

g) PEMBUKUAN
Temanggung 07 Maret 2014
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

HARTOYO, SH
NIP **19610805 198301 1 001**

h) PENERBITAN SERTIPIKAT
Temanggung 07 Maret 2014
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

HARTOYO, SH
NIP **19610805 198301 1 001**

i) PENUNJUK Warkah No. 2458 / 2014

BQ 568685

DAFTAR ISIAN 207

11	24	03	08	4	00134

NIB : 11.24.03.08.01744

SURAT UKUR

Nomor : 00010/SANGGRAHAN/2013

SEBIDANG TANAH TERLETAK DALAM

Provinsi : JAWA TENGAH

Kabupaten / ~~Kota~~ : TEMANGGUNG

Kecamatan : KRANGGAN

Desa / ~~Kelurahan~~ : SANGGRAHAN

Peta : Nomor Peta Pendaftaran : 49.1-42.068-14-8

Lembar : Kotak : B3

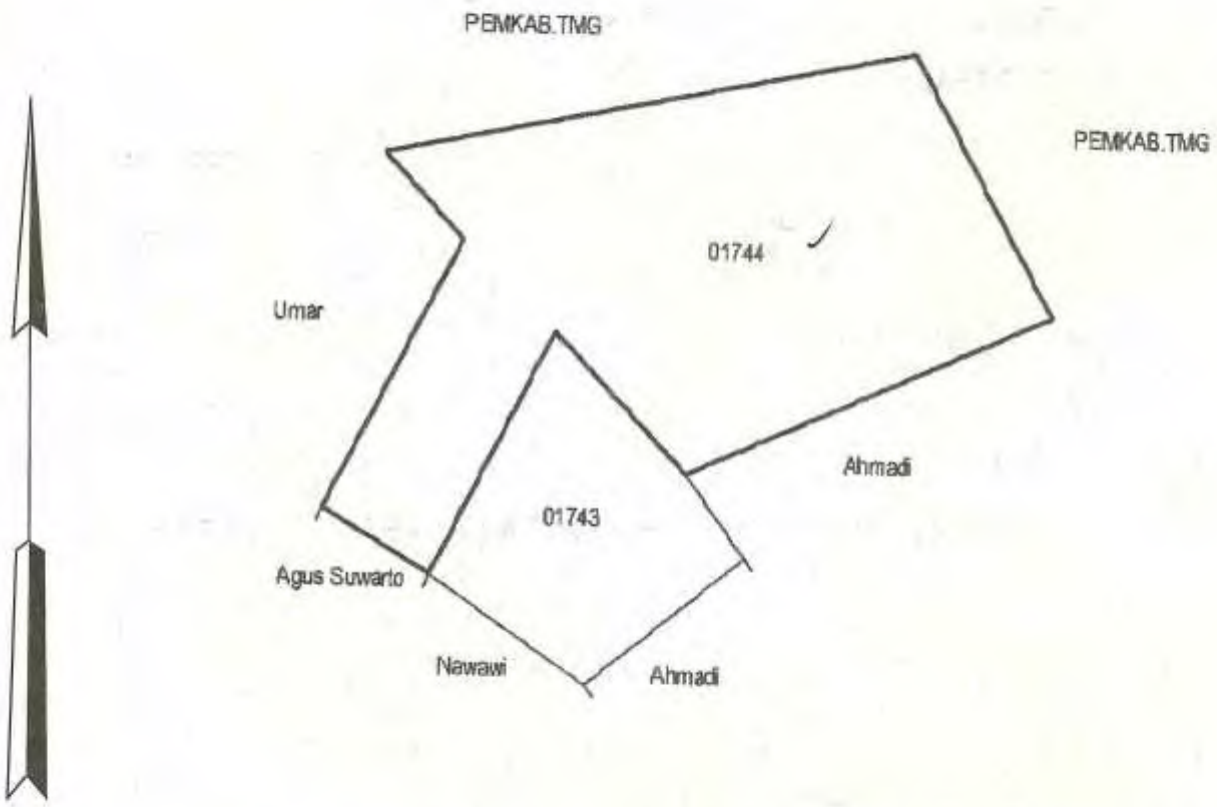
Keadaan Tanah : Sebidang tanah kosong

Tanda-tanda batas : Patok beton berdiri diatas batas sesuai PMNA /KA BPN No.3/1997

Luas : 3.590 m² (Tiga Ribu Lima Ratus Sembilan Puluh Meter Persegi.)

Penunjukan dan penetapan batas : Penunjukan batas oleh Suranto untuk dan atas nama PEMKAB TEMANGGUNG (Pemohon) dan disetujui oleh tetangga yang berbatasan

SKALA 1 : $\frac{1}{1000}$



Koordinat titik tengah : 280142,689718

PENJELASAN : ..... batas tanah ini

Hal lain - lain : Bidang tanah dalam Surat Ukur ini asalnya dari Pemberian Hak Tanah Negara Bekas Hak Milik Nomor 1716

Daftar Isian 302 tgl. 26/11/2013 No. 8691/2013

Daftar Isian 307 tgl. 13/12/2013 No. 32299/2013

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

TEMANGGUNG 07 MAR 2014

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
TEMANGGUNG

HARTOYO, SH.
NIP NIP. 19610805 198301 1 001

TEMANGGUNG 13/12/2013

Kepala Seksi Survei, Pengukuran dan Pemetaan

Kantor Pertanahan
Kabupaten / ~~Kota~~

TEMANGGUNG
ttd

JOKO PITOYO CAHYONO SSIT
NIP 197409221993031001

Lihat surat ukur Pemisahan / Penggabungan / Pengganti

Nomor : Nomor hak :

Dikeluarkan surat ukur		Luas	Nomor hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam surat ukur Nomor : Nomor hak :

BQ 568686

DAFTAR ISIAN 206

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA



SERTIPIKAT

HAK : **PAKAI** No. **135**

PROVINSI : JAWA TENGAH

KABUPATEN / ~~KOTA~~ : TEMANGGUNG

KECAMATAN : KRANGGAN

~~DESA~~ / KELURAHAN : SANGGRAHAN

DAFTAR ISIAN 307
No. 6193 / 2014

DAFTAR ISIAN 208
No. 2459 / 2014

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~
TEMANGGUNG

11.24.03.08.4.00135

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : **Pakai**
No. : **135**
Desa / Kel. : Sanggrahan
Tgl. berakhirnya hak :
Selama Dipergunakan untuk Perluasan TPA

b) NIB 11.24.03.08.01743
Letak Tanah

f) NAMA PEMEGANG HAK
PEMERINTAH KABUPATEN TEMANGGUNG
BERKEDUDUKAN DI TEMANGGUNG
Tanggal lahir / akta pendirian

c) ASAL HAK
1. Konversi
2. Pemberian hak Pakai
Atas Tanah Negara Bekas Hak Milik Adat C.1669 P.18 D.III
3. Pemecahan / Pemisahan / Penggabungan bidang

g) PEMBUKUAN
Temanggung 07 Maret 2014
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

HARTOYO, SH
NIP **19610805 198301 1 001**

.d) DASAR PENDAFTARAN
1. Daftar Isian 202
Tgl.
No.
2. Surat Keputusan
Tgl. 18 Februari 2014
No. 07 / HP / BPN.33.23 / 2014
3. Permohonan Pemecahan / Pemisahan / Penggabungan bidang
Tgl.
No.

Kakan Pertanahan
Kab. Temanggung

h) PENERBITAN SERTIPIKAT
Temanggung 07 Maret 2014
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

HARTOYO, SH
NIP **19610805 198301 1 001**

e) SURAT UKUR
Tgl. 13 Desember 2013
No. 00009 / Sanggrahan / 2014
Luas. 1055 M2

i) PENUNJUK Warkah No. 2459 / 2014

BQ 568686

DAFTAR ISIAN 207

11	24	03	08	4	00135

NIB : 11.24.03.08.01743

SURAT UKUR

Nomor : 00009/SANGGRAHAN/2013

SEBIDANG TANAH TERLETAK DALAM

Provinsi : JAWA TENGAH

Kabupaten / ~~Kota~~ : TEMANGGUNG

Kecamatan : KRANGGAN

~~Desa~~ /Kelurahan : SANGGRAHAN,

Peta : Nomor Peta Pendaftaran : 49.1-42.068-14-8

Lembar : Kotak : B2

Keadaan Tanah : Sebidang tanah kosong

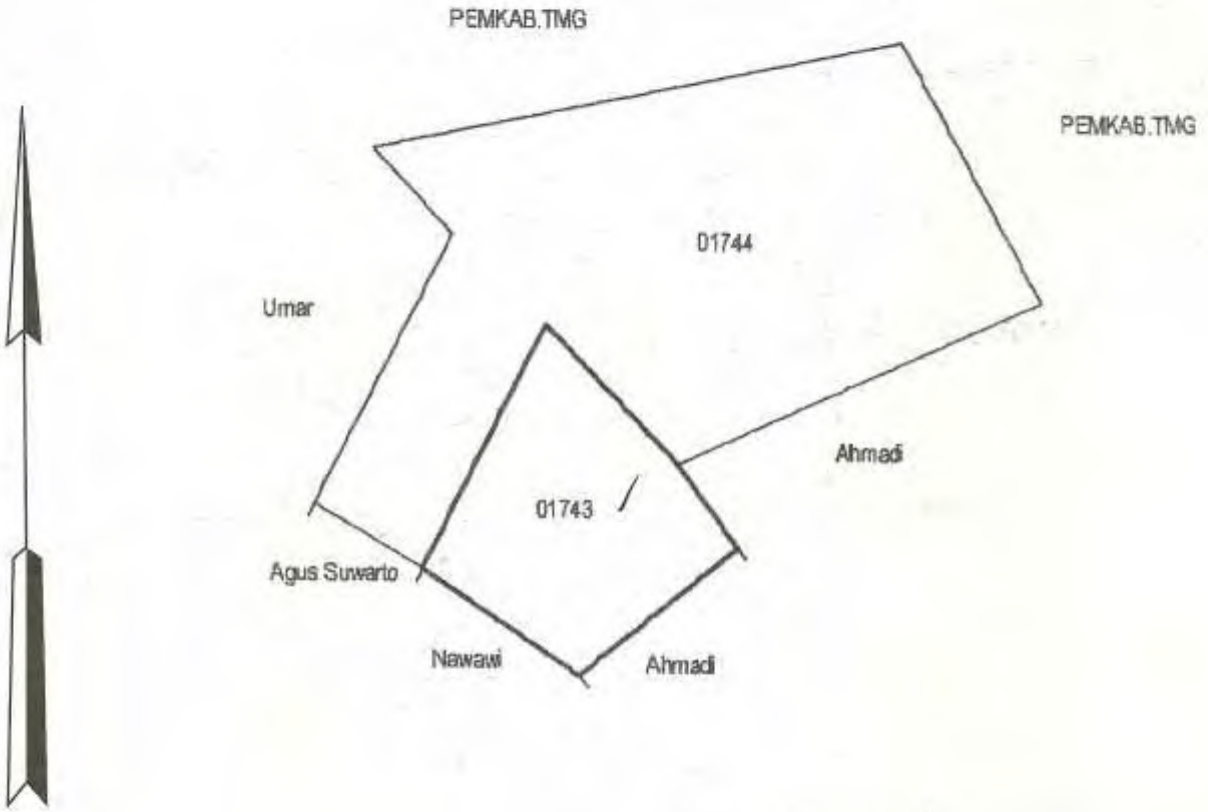
Tanda-tanda batas : Patok beton berdiri diatas batas sesuai PMNA /KA BPN No.3/1997

Luas : 1.055 m². (Seribu Lima Puluh Lima Meter Persegi.)

Penunjukan dan penetapan batas : Penunjukan batas oleh Suranto untuk dan atas nama PEMKAB TEMANGGUNG (Pemohon) dan penetapan batas oleh Panitia A / Kepala Seksi Survei Pengukuran dan Pemetaan

1000

SKALA 1 : .....



Koordinat titik tengah : 280142,689718

PENJELASAN : ..... **batas tanah ini**

Hal lain - lain : Bidang tanah dalam Surat Ukur ini asalnya dari Pemberian Hak Tanah Negara

Bekas Bengkok C. 1669 Persil 15 Klas

Daftar Isian 302 tgl. 26/11/2013 No. 8692/2013

Daftar Isian 307 tgl. 13/12/2013 No. 32298/2013

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

TEMANGGUNG 0 7 MAR 2014

Kepala Kantor Pertanahan
Kabupaten / Kota
TEMANGGUNG

SARTOYO, SH.
NIP. 19610805 198301 1 001

TEMANGGUNG 13/12/2013

Kepala Seksi Survei, Pengukuran dan Pemetaan

Kantor Pertanahan
Kabupaten / Kota
TEMANGGUNG

ttd

JOKO PITOYO CAHYONO SSiT
NIP197409221993031001

Lihat surat ukur Pemisahan / Penggabungan / Pengganti

Nomor : Nomor hak :

Dikeluarkan surat ukur		Luas	Nomor hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam surat ukur Nomor : Nomor hak :

BU 109979

DAFTAR ISIAN 206

BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA





SERTIPIKAT

(TANDA BUKTI HAK)

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~

TEMANGGUNG

1	1	•	2	4	•	0	3	•	0	8	•	4	•	0	0	1	3	6			

Dipindai dengan CamScanner

BADAN PERTANAHAN NASIONAL
REPUBLIK INDONESIA



SERTIPIKAT

HAK : **PAKAI** No. **136**

PROVINSI : JAWA TENGAH

KABUPATEN / ~~KOTA~~ : TEMANGGUNG

KECAMATAN : KRANGGAN

DESA / ~~KELURAHAN~~ : SANGGRAHAN

DAFTAR ISIAN 307
No. 22883 / 2015
DAFTAR ISIAN 208
No. 11536 / 2015

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~
TEMANGGUNG

11 • 24 • 03 • 08 • 4 • 00136

Dipindai dengan CamScanner

PENDAFTARAN - PERTAMA

Halaman

a) HAK : Pakai
No. : 136
Desa / Kel. : Sanggrahan
Tgl. berakhirnya hak : selama dipergunakan
Perluasan TPA Sanggrahan

b) NIB : 11.24.03.08.02068
Letak Tanah :

c) ASAL HAK
1. ~~Konversi~~
2. Pemberian hak : Pakai
Atas Tanah Negara Bekas HM No. 1349 Desa Sanggrahan. *)
3. ~~Pemecahan / Pemisahan~~ /
~~Penggabungan bidang~~

d) DASAR PENDAFTARAN
1. Daftar Isian 202
Tgl. :
No. :
Kakan Pertanahan Kab. Temanggung
2. Surat Keputusan
Tgl. : 24-08-2016
No. : 37/HP/BPN.33.23/2016
3. Permohonan Pemecahan / Pemisahan / Penggabungan bidang
Tgl. :
No. :

e) SURAT UKUR
Tgl. : 26-07-2016
No. : 00318 / SANGGRAHAN / 2015
Luas : 8986 M2

f) PENUNJUK : Warkah No. 11536 / 2015

f) NAMA PEMEGANG HAK
PEMERINTAH KABUPATEN TEMANGGUNG

Tanggal lahir / akta pendirian

g) PEMBUKUAN
Temanggung, 25-08-2016
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

HARTOYO, SH
NIP 19610805 198301 1 001

h) PENERBITAN SERTIPIKAT
Temanggung, 25-08-2016
Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

HARTOYO, SH
NIP 19610805 198301 1 001

*) C Desa No 1699 P.18 D.IV dan C Desa No 1700 P.18 D.IV

Dipindai dengan CamScanner

BU 109979

DAFTAR ISIAN 207

11 • 24 • 03 • 08 • 4 • 00136 NIB : 11240308.02068

SURAT UKUR

Nomor : 00318/SANGGRAHAN/2016

SEBIDANG TANAH TERLETAK DALAM

Provinsi : Jawa Tengah

Kabupaten / ~~Kota~~ : TEMANGGUNG

Kecamatan : KRANGGAN

Desa / ~~Kelurahan~~ : SANGGRAHAN

Peta : Nomor Peta Pendaftaran : 49.1-42.068-14-8

Lembar : Kotak : A2

Keadaan Tanah : Sebidang tanah non pertanian

Tanda-tanda batas : Patok beton berdiri diatas batas sesuai PMNA /KA BPN No.3/1997

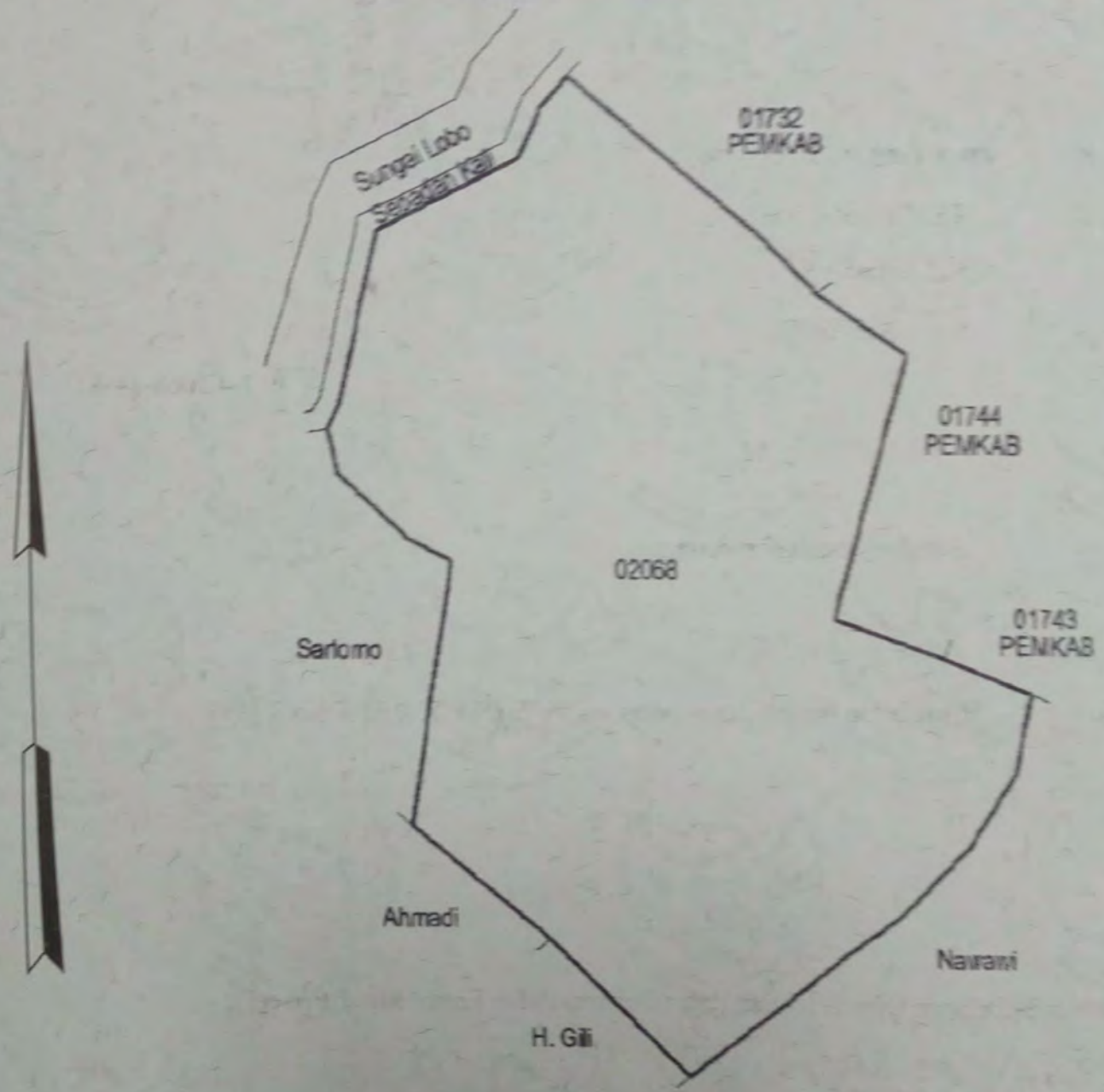
Luas : 8986 m2 (Delapan Ribu Sembilan Ratus Delapan Puluh Enam Meter Persegi)

Penunjukan dan penetapan batas : Penunjukan batas oleh Rokhman untuk dan atas nama PEMKAB TEMANGGUNG (Pemohon) dan penetapan batas oleh Panitia A / Kepala Seksi Survei Pengukuran dan Pemetaan

Dipindai dengan CamScanner

1000

SKALA 1 : _____



Koordinat titik tengah : 260077,689695

PENJELASAN : _____ batas tanah ini

Dipindai dengan CamScanner

Bidang tanah dalam Surat Ukur ini asalnya dari Pemberian Hak Tanah Negara Bekas

Hal lain - lain :

Hak Milik Nomor : 1349 dan C Nomor : 239

Daftar Isian 302 tgl. 04/05/2016 No. 4334/2016

Daftar Isian 307 tgl. 26/07/2016 No. 20817/2016

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

TEMANGGUNG, 25 AUG 2016

Kepala Kantor Pertanahan
Kabupaten / Kota
TEMANGGUNG

SUTOYO, SH.

NIP 19610605 198301 1 001

TEMANGGUNG, 26-07-2016

Kepala Seksi Survei, Pengukuran dan Pemetaan

Kantor Pertanahan
Kabupaten / Kota
TEMANGGUNG

ttd

JOKO PITOYO CAHYONO S.SiT

NIP 197409221993031001

Pemisahan
Lihat surat ukur Penggabungan
Pengganti

Nomor :

Nomor hak :

Dikeluarkan surat ukur		Luas	Nomor hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam surat ukur Nomor :

Nomor hak :

Dipindai dengan CamScanner

ABJ788419

DAFTAR ISIAN 20(

KEMENTERIAN AGRARIA DAN TATA RUANG / BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA



150976



SERTIPIKAT

(TANDA BUKTI HAK)

KANTOR PERTANAHAN
KABUPATEN /KOTA

TEMANGGUNG

1	1	•	2	4	•	0	3	•	0	8	•	4	•	0	0	1	4	4

Dipindai dengan CamScanner

ABJ788419

DAFTAR ISIAN 206

KEMENTERIAN AGRARIA DAN TATA RUANG / BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

SERTIPIKAT

HAK : PAKAI No. 00144

PROVINSI	:	JAWA TENGAH
KABUPATEN / ~~KOTA~~	:	TEMANGGUNG
KECAMATAN	:	KRANGGAN
DESA / ~~KELURAHAN~~	:	SANGGRAHAN

DAFTAR ISIAN 307
No. 112003/2023, Tanggal 22/12/2023
DAFTAR ISIAN 208
No. 55684/2023, Tanggal 22/12/2023

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~
TEMANGGUNG

11 • 24 • 03 • 08 • 4 • 00144

Dipindai dengan CamScanner

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : PAKAI

No. : 00144

Desa /~~Kel~~ : SANGGRAHAN

Tgl. berakhirnya hak :
Selama Dipergunakan

b) NIB 11240308.02650

Letak Tanah

f) NAMA PEMEGANG HAK

PEMERINTAH KABUPATEN TEMANGGUNG

Tanggal lahir / akta pendirian

c) ASAL HAK

1. Konversi

2. Pemberian Hak Pakai
Atas tanah Negara bekas Sertipikat Hak Pakai Nomor : 116, 106, 102, Sanggrahan, atas nama Pemerintah Desa Sanggrahan

3. Pemecahan / Pemisahan / Penggabungan bidang

g) PEMBUKUAN

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

RETNA KUSTIYAH, S.H., M.M.
NIP 19680329 199403 2 001

d) DASAR PENDAFTARAN

1. Daftar Isian 202
Tgl.
No.

2. Surat Keputusan
Tgl. 22/12/2023
No. 493/HP/BPN-33.23/XII/2023

3. Permohonan Pemecahan / Pemisahan / Penggabungan bidang
Tgl.
No.

h) PENERBITAN SERTIPIKAT

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

RETNA KUSTIYAH, S.H., M.M.
NIP 19680329 199403 2 001

e) SURAT UKUR

Tgl. 31/08/2023

No. 00634/SANGGRAHAN/2023

Luas : 6.516 m² (Enam Ribu Lima Ratus Enam belas Meter Persegi)

i) PENUNJUK

- Berdasarkan Surat Pernyataan Aset Nomor : 590/2098/VI/2023 Tanggal : 20 Juni 2023
- Berdasarkan Surat Pernyataan Penguasaan Fisik Bidang Tanah Tanggal : 20 Juni 2023
- Berdasarkan Surat Pernyataan Pelepasan Hak Atas Tanah Nomor : 590/05/P2T/XII/2020, Tanggal : 06/12/2020
- Sebidang tanah sawah dipergunakan untuk Tempat Pemrosesan Akhir (TPA) Sanggrahan.
- Hak Pakai ini tidak dapat dijadikan jaminan utang dengan dibebani Hak Tanggungan, tidak dapat beralih, dialihkan kepada pihak lain atau diubah haknya.

Dipindai dengan CamScanner

ABJ788419

DAFTAR ISIAN 207

1	1	•	2	4	•	0	3	•	0	8	•	4	•	0	0	1	4	4

NIB : 11240308.02650

SURAT UKUR

Nomor : 00634/SANGGRAHAN/2023

SEBIDANG TANAH TERLETAK DALAM

Provinsi : JAWA TENGAH

Kabupaten / K[redacted] TEMANGGUNG

Kecamatan : KRANGGAN

Desa / K[redacted] : SANGGRAHAN

Peta : Pendaftaran Nomor Peta Pendaftaran : 49.1- 42.068-14-8

Lembar : Kotak : B4

Keadaan Tanah : Sebidang tanah sawah

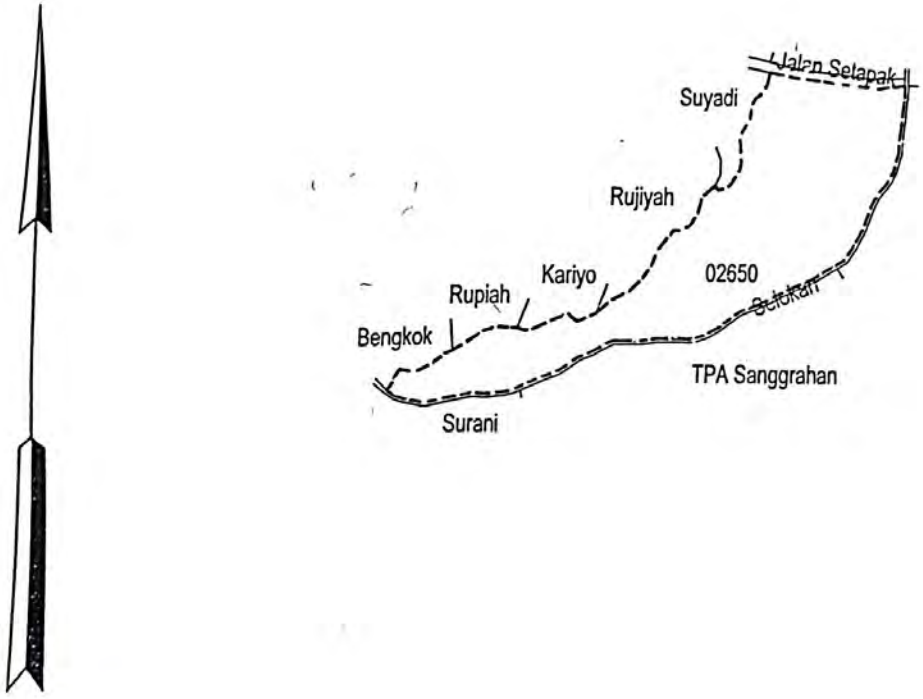
Tanda-tanda batas : Batas sesuai dengan Peraturan Pemerintah nomor 24 tahun 1997 pasal 19 ayat(1)

Luas : 6516 m2 (Enam Ribu Lima Ratus Enam belas Meter Persegi)

Penunjukan dan penetapan batas : Penunjukan batas dilakukan oleh Tri Winarno untuk dan atas nama Pemerintah Kabupaten Temanggung (Pemohon) dan penetapan batas oleh Yansi Kurnianto, S.ST (Petugas Ukur)

Dipindai dengan CamScanner

SKALA 1 : 2500



Koordinat titik tengah : 280111, 689859

PENJELASAN : ..... batas tanah ini

Dipindai dengan CamScanner

Hal lain - lain: Bidang tanah dalam Surat Ukur ini asalnya dari tanah negara

Daftar Isian 303 tgl. /2023 No. 8881/2023

Daftar Isian 302 tgl. No.

Daftar Isian 307 tgl. 23 No. 61360/2023

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan
Kabupaten / [redacted]
Temanggung

RETNA KUSTRIYAH, S.H., M.M.
NIP 19680329 199403 2 001

TEMANGGUNG, 31/08/2023

Kepala Seksi Survei dan Pemetaan

Kantor Pertanahan
Kabupaten / [redacted]
Temanggung

ttd

Hadi Yuntarto S.T., M.A.P.
NIP 198406132009031001

Lihat Surat Ukur Pemisahan / Penggabungan / Pengganti

Nomor : Nomor Hak :

Dikeluarkan Surat Ukur		Luas	Nomor Hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam Surat Ukur Nomor : ..... Nomor Hak : .....

Dipindai dengan CamScanner

ABJ788441

DAFTAR ISIAN 206

KEMENTERIAN AGRARIA DAN TATA RUANG / BADAN PERTANAHAN NASIONAL REPUBLIK INDON

150977/23





SERTIPIKAT

(TANDA BUKTI HAK)

KANTOR PERTANAHAN
KABUPATEN /~~KOTA~~

TEMANGGUNG

1	1	•	2	4	•	0	3	•	0	8	•	4	•	0	0	1	4	5

Dipindai dengan CamScanner

ABJ788441

DAFTAR ISIAN 206

KEMEN\ RIAN AGRARIA DAN TATA RUANG / B. \ AN ..RTANAHAN NASIONAL REPUBLIK INDONESIA



SERTIPIKAT

HAK : PAKAI No. 00145

PROVINSI : JAWA TENGAH

KABUPATEN / ~~KOTA~~ : TEMANGGUNG

KECAMATAN : KRANGGAN

DESA / ~~KELURAHAN~~ : SANGGRAHAN

DAFTAR ISIAN 307
No. 112004/2023, Tanggal 22/12/2023
DAFTAR ISIAN 208
No. 55685/2023, Tanggal 22/12/2023

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~
TEMANGGUNG

1	1	•	2	4	•	0	3	•	0	8	•	4	•	0	0	1	4	5

Dipindai dengan CamScanner

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : PAKAI

No. : 00

Desa GGRAHAN

Tgl. berakhirnya : Seumur Hidup / Diperg

b) NIB 1124 08.02052

Letak Tanah

f) NAMA PEMEGANG HAK

PEMERINTAH KABUPATEN TEMANGGUNG

Tanggal lahir / akta pendirian

c) ASAL HAK

1. Konversi

2. Pemberian Hak Pakai

Atas tanah Negara bekas Sertipikat Hak Pakai Nomor : 126 Sanggrahan, atas nama Pemerintah Desa Sanggrahan

3. Pemecahan / Pemisahan / Penggabungan bidang

g) PEMBUKUAN

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan

Kabupaten / ~~Kota~~

Temanggung

ttd

RETNA KUSTIYAH, S.H., M.M.

NIP 19680329 199403 2 001

d) DASAR PENDAFTARAN

1. Daftar Isian 202

Tgl.

No.

2. Surat Keputusan

Tgl. 22/12/2023

No. 494/HP/BPN-33.23/XII/2023

3. Permohonan Pemecahan / Pemisahan / Penggabungan bidang

Tgl.

No.

h) PENERBITAN SERTIPIKAT

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan

Kabupaten / ~~Kota~~

Temanggung

RETNA KUSTIYAH, S.H., M.M.

NIP 19680329 199403 2 001

e) SURAT UKUR

Tgl. 31/08/2023

No. 00635/SANGGRAHAN/2023

Luas : 1.855 m² (Seribu Delapan Ratus Lima Puluh Lima Meter Persegi)

i) PENUNJUK

- Berdasarkan Surat Pernyataan Aset Nomor : 590/2096/VI/2023 Tanggal : 20 Juni 2023
- Berdasarkan Surat Pernyataan Penguasaan Fisik Bidang Tanah Tanggal : 20 Juni 2023
- Berdasarkan Surat Pernyataan Pelepasan Hak Atas Tanah Nomor : 590/05/P2T/XII/2020, Tanggal : 06/12/2020
- Sebidang tanah sawah dipergunakan untuk Tempat Pemrosesan Akhir (TPA) Sanggrahan.
- Hak Pakai ini tidak dapat dijadikan jaminan utang dengan dibebani Hak Tanggungan, tidak dapat beralih, ~~dialihkan kepada pihak lain atau diubah haknya.~~

Dipindai dengan CamScanner

ABJ7884**

DAFTAR ISIAN 207

1	1	•		•		•	0	0	1	4	5

NIB : 11240308.02652

AT UKUR

Nomor : 00635/SANGGRAHAN/2023

SEBIDANG T A TAK DALAM

Provinsi : JA TE AL

Kabupaten / [redacted] : TEMANGGUNG

Kecamatan : KRANGGAN

Desa / [redacted] : SANGGRAHAN

Peta : Pendaftaran Nomor Peta Pendaftaran : 49.1-42.068-14-8

Lembar : Kotak : B5

Keadaan Tanah : Sebidang tanah sawah

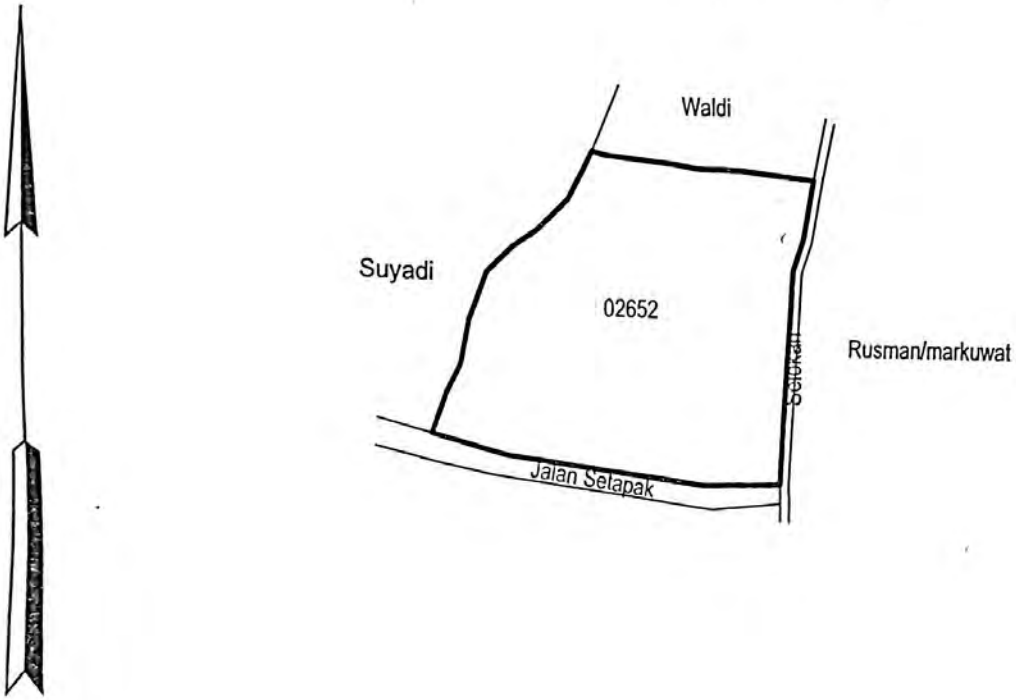
Tanda-tanda batas : Patok beton dibatas sesuai PMNA/KA.BPN No. 3 / 1997 pasal 22 ayat (1e)

Luas : 1855 m2 (Seribu Delapan Ratus Lima Puluh Lima Meter Persegi)

Penunjukan dan penetapan batas : Penunjukan batas dilakukan oleh Tri Winarno untuk dan atas nama Pemerintah Kabupaten Temanggung (Pemohon) dan penetapan batas oleh Yansi Kurnianto, S.ST (Petugas Ukur)

Dipindai dengan CamScanner

SKALA 1 : 1000



Koordinat titik tengah : 280180, 689959

PENJELASAN : ——— **batas tanah ini**

Dipindai dengan CamScanner

Hal lain - lain: Bidang tanah dalam Surat Ukur ini asalnya dari tanah negara

Daftar Isian 303 tgl. 18/08/2023 No. 8879/2023

Daftar Isian 302 tgl. ..... No. .....

Daftar Isian 307 tgl. 31/08/2023 No. 61392/2023

Tanggal Penomoran Surat Ukur .....

UNTUK SERTIPIKAT

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan
Kabupaten / [redacted]
Temanggung

RENNA KUSTIYAH, S.H., M.M.
NIP 19630329 199403 2 001

TEMANGGUNG, 31/08/2023

Kepala Seksi Survei dan Pemetaan

Kantor Pertanahan
Kabupaten / [redacted]
Temanggung

ttd

Hadi Yuntarto S.T., M.A.P.
NIP 198406132009031001

Lihat Surat Ukur: Pemisahan / Penggabungan / Pengganti

Nomor : ..... Nomor Hak : .....

Dikeluarkan Surat Ukur		Luas	Nomor Hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam Surat Ukur Nomor : ..... Nomor Hak : .....

Dipindai dengan CamScanner

ABJ788442

DAFTAR ISIAN 20

KEMENTERIAN AGRARIA DAN TATA RUANG / BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

150972.

SERTIPIKAT

(TANDA BUKTI HAK)

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~

TEMANGGUNG

1	1	•	2	4	•	0	3	•	0	8	•	4	•	0	0	1	4	6

Dipindai dengan CamScanner

ABJ788442

DAFTAR ISIAN 206

KEMENTERIAN AGRARIA DAN TATA RUANG / BADAN PERTANAHAN NASIONAL REPUBLIK INDONESIA

SERTIPIKAT

HAK : PAKAI No. 00146

PROVINSI : JAWA TENGAH

KABUPATEN / ~~KOTA~~ : TEMANGGUNG

KECAMATAN : KRANGGAN

DESA / ~~KELURAHAN~~ : SANGGRAHAN

DAFTAR ISIAN 307
No. 112005/2023, Tanggal 22/12/2023
DAFTAR ISIAN 208
No. 55686/2023, Tanggal 22/12/2023

KANTOR PERTANAHAN
KABUPATEN / ~~KOTA~~
TEMANGGUNG

11 • 24 • 03 • 08 • 4 • 00146

Dipindai dengan CamScanner

PENDAFTARAN - PERTAMA

Halaman :

a) HAK : PAKAI
No. : 00146
Desa / ~~Kel.~~ SANGGRAHAN
Tgl. berakhirnya hak : Selama Dipergunakan

b) NIB 11240308.02651
Letak Tanah

f) NAMA PEMEGANG HAK

PEMERINTAH KABUPATEN TEMANGGUNG

Tanggal lahir / akta pendirian

c) ASAL HAK

1. Konversi

2. Pemberian Hak Pakai
Atas tanah Negara bekas Sertipikat Hak Pakai Nomor : 123 & 105 Sanggrahan, atas nama Pemerintah Desa Sanggrahan

3. Pemecahan / Pemisahan / Penggabungan bidang

g) PEMBUKUAN

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

ttd

RETNA KUSTIYAH, S.H., M.M.
NIP 19680329 199403 2 001

d) DASAR PENDAFTARAN

1. Daftar Isian 202
Tgl.
No.

2. Surat Keputusan
Tgl. 22/12/2023
No. 495/HP/BPN-33.23/XII/2023

3. Permohonan Pemecahan / Pemisahan / Penggabungan bidang
Tgl.
No.

h) PENERBITAN SERTIPIKAT

TEMANGGUNG, 22/12/2023

Kepala Kantor Pertanahan
Kabupaten / ~~Kota~~
Temanggung

RETNA KUSTIYAH, S.H., M.M.
NIP 19680329 199403 2 001

e) SURAT UKUR
Tgl. 31/08/2023
No. 00633/SANGGRAHAN/2023
Luas : 4.326 m^2 (Empat Ribu Tiga Ratus Dua Puluh Enam Meter Persegi)

i) PENUNJUK
- Berdasarkan Surat Pernyataan Aset Nomor : 590/2097/VI/2023 Tanggal : 20 Juni 2023
- Berdasarkan Surat Pernyataan Penguasaan Fisik Bidang Tanah Tanggal : 20 Juni 2023
- Berdasarkan Surat Pernyataan Pelepasan Hak Atas Tanah Nomor : 590/05/P2T/XII/2020, Tanggal : 06/12/2020
- Sebidang tanah sawah dipergunakan untuk Tempat Pemrosesan Akhir (TPA) Sanggrahan.
- Hak Pakai ini tidak dapat dijadikan jaminan utang dengan dibebani Hak Tanggungan, tidak dapat beralih, ~~dialihkan kepada pihak lain atau diubah haknya.~~

Dipindai dengan CamScanner

ABJ788442

DAFTAR ISIAN 207

1	1	•	2	4	•	0	3	•	0	8	•	4	•	0	0	1	4	6

NIB : 11240308.02651

SURAT UKUR

Nomor : 00633/SANGGRAHAN/2023

SEBIDANG TANAH TERLETAK DALAM

Provinsi : JAWA TENGAH

Kabupaten / [redacted] : TEMANGGUNG

Kecamatan : KRANGGAN

Desa / [redacted] : SANGGRAHAN

Peta : Pendaftaran Nomor Peta Pendaftaran : 49.1- 42.068-14

Lembar : Kotak : C6

Keadaan Tanah : Sebidang tanah sawah

Tanda-tanda batas : Batas sesuai dengan Peraturan Pemerintah nomor 24 tahun 1997 pasal 19 ayat(1)

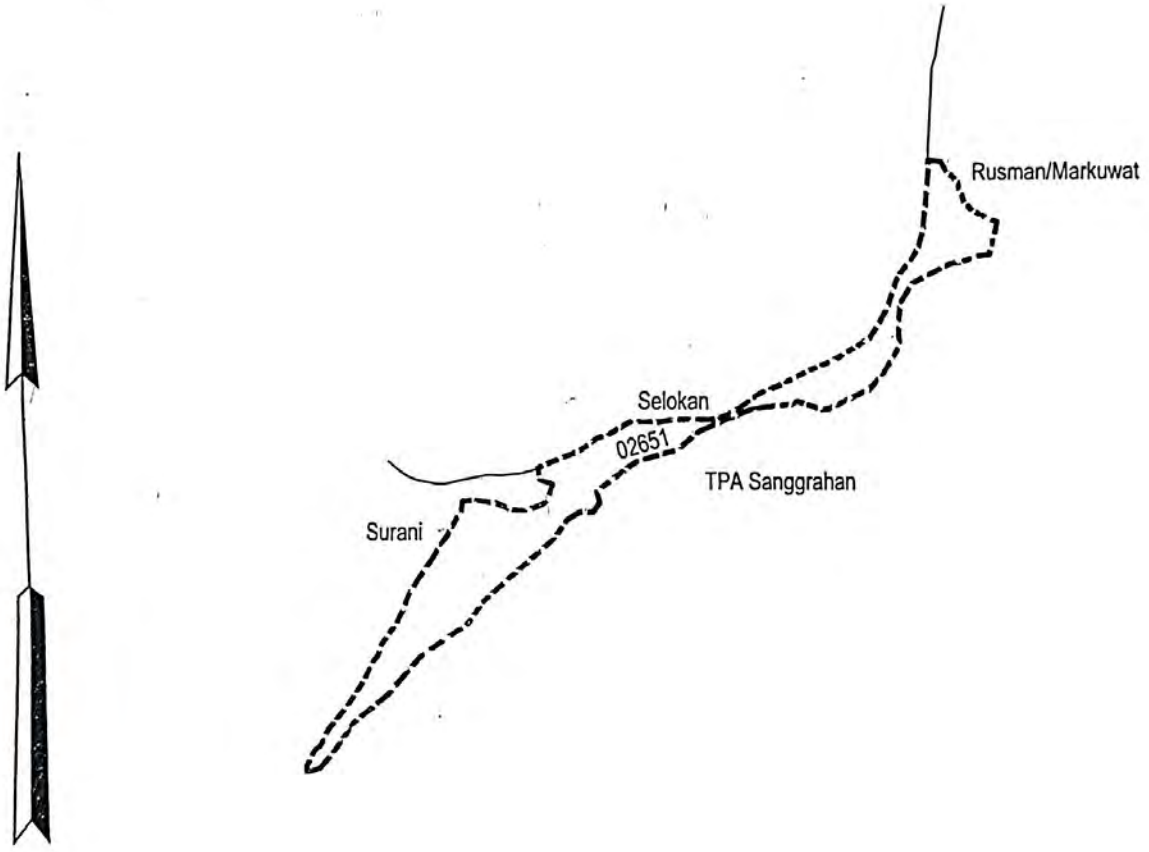
+

Luas : 4326 m2 (Empat Ribu Tiga Ratus Dua Puluh Enam Meter Persegi)

Penunjukan dan penetapan batas : Penunjukan batas dilakukan oleh Tri Winarno untuk dan atas nama Pemerintah Kabupaten Temanggung (Pemohon) dan penetapan batas oleh Yansi Kurnianto, S.ST (Petugas Ukur)

Dipindai dengan CamScanner

SKALA 1 : 2500



Koordinat titik tengah : 280101, 689834

PENJELASAN : ——— **batas tanah ini**

Dipindai dengan CamScanner

Hal lain - lain: Bidang tanah dalam Surat Ukur ini asalnya dari tanah negara

Daftar Isian 303 tgl. 18/08/2023 No. 8877/2023

Daftar Isian 302 tgl. No.

Daftar Isian 307 tgl. 31/08/2023 No. 61255/2023

Tanggal Penomoran Surat Ukur

UNTUK SERTIPIKAT

TEMANGGUNG, 22/12/2023

An. Kepala Kantor Pertanahan
Kabupaten [redacted]
Temanggung

RETNA KUSTIYAH, S.H., M.M.

NIP 19680329 199403 2 001

TEMANGGUNG, 31/08/2023

Kepala Seksi Survei dan Pemetaan

Kantor Pertanahan
Kabupaten [redacted]
Temanggung

ttd

Hadi Yuntarto S.T., M.A.P.

NIP 198406132009031001

Lihat Surat Ukur Pemisahan / Penggabungan / Pengganti

Nomor : Nomor Hak :

Dikeluarkan Surat Ukur		Luas	Nomor Hak	Sisa luas
Tanggal	Nomor			

Sisanya diuraikan dalam Surat Ukur Nomor : ..... Nomor Hak : .....

Dipindai dengan CamScanner

Appendix III Profile of Land-User

Profil Rumah Tangga di wilayah Studi Temanggung

INFORMASI RESPONDEN

1. Nama Responden : Riyanto
2. Jenis Kelamin : Laki-Laki
3. Umur : 53
4. Agama : Islam
5. Suku : Jawa
6. Status Perkawinan : Menikah
7. Pendidikan Formal : Tamat SMP/MTs
8. Nama Kepala Keluarga : Riyanto
9. Tempat Tinggal : Di luar lokasi proyek, Sebutkan Desa - Sanggrahan
10. Bekerja dalam sehari : 10 – 12 Jam.

INFORMASI KK

1. Jumlah Anggota Keluarga : 4
2. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Riyanto	Kepala Keluarga	53	Tamat SMP/MTs	Menikah	Petani (pemilik lahan)	
Ruwet	Istri	53	Tamat SMA/SMK/MA	Menikah	Petani (pemilik lahan)	
Adi M. Sakban	Anak	25	Tamat SMA/SMK/MA	Belum Menikah	TNI/Polisi	
Tias Heri Susanti	Anak	24	Tamat S1/ Perguruan Tinggi	Belum Menikah	Lainnya	

3. Penyakit Kronis : -
4. Penghasilan dalam Sebulan :

Sumber	Rp
Utama	> Rp. 4.000.000,-
Sampingan	> Rp. 4.000.000,-
Kiriman	

5. Pengeluaran

Sumber	Rp
Makanan	2000000
Non Makanan	965000

6. Pengeluaran Khusus :

Sumber	Rp
Biaya kegiatan agama (Idul Fitri, Natal)	200000
Biaya sumbangan acara pernikahan, kematian, khitanan, kelahiran, dll	500000
Pembayaran PBB Retribusi	150000
Pemeliharaan Rumah	
Rekreasi	

Lainnya	

7. Besaran Pinjaman : 1000000 tiap bulan dari total 20000000
8. Program Pemerintah yang didapatkan : BPJS

Fasilitas Layanan

1. Kebutuhan Air
   a. Minum : Lainnya (Harap Sebutkan) - PAMSIMAS
   b. Mandi : Lainnya (Harap Sebutkan) - PAMSIMAS
   c. Masak : Lainnya (Harap Sebutkan) - PAMSIMAS
2. Kondisi Rumah : Tembok
3. Bahan Bakar yang digunakan : Arang dan /atau kayu bakar
4. Sumber Listrik : Listrik PLN
5. Kepemilikan Aset

Kepemilikan Aset	Satuan	Jumlah
Rumah	m2	126
Tanah	m2	400
Tambak	m2	
Sawah	m2	10000
Perahu	Unit	
Bagan Tancap	Unit	
Mobil	Unit	
Motor	Unit	2
Sepeda	Unit	1
TV	Unit	1
Kulkas	Unit	1
HP	Unit	2
Tabungan	Rp	
Emas	Gram	
Lainnya		

Profil Pertanian

Profil	Jawaban
Luas Lahan (m2)	2750
Jenis Kerjasama/Izin	Lainnya (Harap Sebutkan)- Bengkok, sisanya SHM
Lama Penggunaan Lahan	16
Menerima Kompensasi dan Kesesuaian	Ya dan Sesuai
Jumlah Kompensasi	
Menerima Pemberitahuan Proyek	Ya
Usaha di Lahan Tsb	Pertanian (tanaman semusim)

Kesehatan

1. Kartu Jaminan Kesehatan : BPJS
2. Upaya jika ada keluarga yang sakit : Lainnya (Harap Sebutkan) - Puskesmas
3. Fasilitas Kesehatan :

Fasilitas Kesehatan	1. Ada / 2. Tidak ada	Kondisi
Rumah sakit	Ya	Cukup
Puskesmas	Ya	Cukup
Pustu		
Posyandu	Ya	Cukup
Bidan	Ya	Cukup
Klinik	Ya	Cukup
Lainnya……..		

Persepsi dan Pengetahuan

1. Mengetahui Pembangunan TPST : Ya
2. Sumber Informasi : Kepala desa atau perangkat desa
3. Tanggapan TPST : Mendukung
4. Kekhawatiran TPST : Tidak
5. Kondisi Lingkungan Saat Ini : Nyaman
6. Harapan : mengurangi pengangguran dan ada kompensasi untuk yang terdampak

Profil Rumah Tangga di wilayah Studi Temanggung

INFORMASI RESPONDEN

1. Nama Responden : Sunarno
2. Jenis Kelamin : Laki-Laki
3. Umur : 58
4. Agama : Islam
5. Suku : Jawa
6. Status Perkawinan : Menikah
7. Pendidikan Formal : Tamat SMA/SMK/MA
8. Nama Kepala Keluarga : Sunarno
9. Tempat Tinggal : Di luar lokasi proyek, Sebutkan Desa - Sanggrahan
10. Bekerja dalam sehari : 10 – 12 Jam.

INFORMASI KK

1. Jumlah Anggota Keluarga : 2
2. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sunarno	Kepala Keluarga	58	Tamat SMA/SMK/MA	Menikah	Petani (pemilik lahan)	
Sutini	Istri	55	Tamat SMP/MTs	Menikah	Petani (pemilik lahan)	

3. Penyakit Kronis : -
4. Penghasilan dalam Sebulan :

Sumber	Rp
Utama	Rp. 1.000.000,- s.d. < Rp 2.036.947- (UMP Jateng 2024)
Sampingan	
Kiriman	500000

5. Pengeluaran

Sumber	Rp
Makanan	1500000
Non Makanan	315000

6. Pengeluaran Khusus :

Sumber	Rp
Biaya kegiatan agama (Idul Fitri, Natal)	225000
Biaya sumbangan acara pernikahan, kematian, khitanan, kelahiran, dll	500000
Pembayaran PBB Retribusi	125000
Pemeliharaan Rumah	
Rekreasi	
Lainnya	

7. Besaran Pinjaman : 1000000 tiap bulan dari total 20000000
8. Program Pemerintah yang didapatkan : BPJS

Fasilitas Layanan

1. Kebutuhan Air
   a. Minum : Lainnya (Harap Sebutkan) - Pamsimas
   b. Mandi : Lainnya (Harap Sebutkan) - Pamsimas
   c. Masak : Lainnya (Harap Sebutkan) - Pamsimas
2. Kondisi Rumah : Tembok
3. Bahan Bakar yang digunakan : Arang dan /atau kayu bakar
4. Sumber Listrik : Genset sendiri
5. Kepemilikan Aset

Kepemilikan Aset	Satuan	Jumlah
Rumah	m2	165
Tanah	m2	350
Tambak	m2	
Sawah	m2	750
Perahu	Unit	
Bagan Tancap	Unit	
Mobil	Unit	
Motor	Unit	2
Sepeda	Unit	
TV	Unit	1
Kulkas	Unit	
HP	Unit	1
Tabungan	Rp	
Emas	Gram	
Lainnya		

Profil Pertanian

Profil	Jawaban
Luas Lahan (m2)	3500
Jenis Kerjasama/Izin	Lainnya (Harap Sebutkan)
Lama Penggunaan Lahan	25
Menerima Kompensasi dan Kesesuaian	Ya dan Sesuai
Jumlah Kompensasi	
Menerima Pemberitahuan Proyek	Ya
Usaha di Lahan Tsb	Lainnya (Harap Sebutkan)- Padi dan cabai

Kesehatan

1. Kartu Jaminan Kesehatan : BPJS
2. Upaya jika ada keluarga yang sakit : Lainnya (Harap Sebutkan) - dibawa ke puskesmas
3. Fasilitas Kesehatan :

Fasilitas Kesehatan	1. Ada / 2. Tidak ada	Kondisi
Rumah sakit	Ya	Cukup
Puskesmas	Ya	Cukup
Pustu	Tidak	
Posyandu	Ya	Cukup
Bidan	Ya	Cukup
Klinik	Ya	Cukup
Lainnya……..		

Persepsi dan Pengetahuan

1. Mengetahui Pembangunan TPST : Ya
2. Sumber Informasi : Kepala desa atau perangkat desa
3. Tanggapan TPST : Sangat mendukung
4. Kekhawatiran TPST : Tidak
5. Kondisi Lingkungan Saat Ini : Nyaman
6. Harapan : mengurangi lalat, mengurangi bau, mendapat kompensasi, menampung pengangguran, mendapat kompensasi

Profil Rumah Tangga di wilayah Studi Temanggung

INFORMASI RESPONDEN

1. Nama Responden : **Sulistyowati**
2. Jenis Kelamin : **Perempuan**
3. Umur : **41**
4. Agama : **Islam**
5. Suku : Jawa
6. Status Perkawinan : **Janda/Duda**
7. Pendidikan Formal : Tamat SMA/SMK/MA
8. Nama Kepala Keluarga : Sukirman
9. Tempat Tinggal : Di luar lokasi proyek, Sebutkan Desa - Rowokulon
10. Bekerja dalam sehari : 6 -9 jam

INFORMASI KK

1. Jumlah Anggota Keluarga : 4
2. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sukirman	Kepala Keluarga	70	Tamat SMP/MTs	Menikah	Petani (pemilik lahan)	Menyetir
Kasmita	Istri	68	Tamat SD	Menikah	Lainnya	Memasak
Sulistyowati	Anak	41	Tamat SMA/SMK/MA	Janda/Duda	Lainnya	Memasak
Derendra	Cucu	10	Tamat SD	Belum Menikah	Lainnya	

3. Penyakit Kronis : -
4. Penghasilan dalam Sebulan :

Sumber	Rp
Utama	Rp. 1.000.000,- s.d. < Rp 2.036.947- (UMP Jateng 2024)
Sampingan	< Rp. 1.000.000,-
Kiriman	

5. Pengeluaran

Sumber	Rp
Makanan	600000
Non Makanan	930000

6. Pengeluaran Khusus :

Sumber	Rp
Biaya kegiatan agama (Idul Fitri, Natal)	167000
Biaya sumbangan acara pernikahan, kematian, khitanan, kelahiran, dll	600000
Pembayaran PBB Retribusi	16700

Pemeliharaan Rumah	0
Rekreasi	0
Lainnya	0

7. Besaran Pinjaman : 2500000 tiap bulan dari total 20000000
8. Program Pemerintah yang didapatkan : BPJS

Fasilitas Layanan

1. Kebutuhan Air
   a. Minum : Lainnya (Harap Sebutkan) - PAMSIMAS
   b. Mandi : Lainnya (Harap Sebutkan)
   c. Masak : Lainnya (Harap Sebutkan)
2. Kondisi Rumah : Tembok
3. Bahan Bakar yang digunakan : Gas
4. Sumber Listrik : Listrik PLN
5. Kepemilikan Aset

Kepemilikan Aset	Satuan	Jumlah
Rumah	m2	200
Tanah	m2	400
Tambak	m2	0
Sawah	m2	3000
Perahu	Unit	0
Bagan Tancap	Unit	0
Mobil	Unit	2
Motor	Unit	2
Sepeda	Unit	1
TV	Unit	1
Kulkas	Unit	1
HP	Unit	3
Tabungan	Rp	0
Emas	Gram	0
Lainnya		5000

Profil Pertanian

Profil	Jawaban
Luas Lahan (m2)	3700
Jenis Kerjasama/Izin	Lainnya (Harap Sebutkan)- Bengkok
Lama Penggunaan Lahan	0
Menerima Kompensasi dan Kesesuaian	Ya dan Sesuai
Jumlah Kompensasi	
Menerima Pemberitahuan Proyek	Ya
Usaha di Lahan Tsb	

Kesehatan

1. Kartu Jaminan Kesehatan : BPJS
2. Upaya jika ada keluarga yang sakit : Memberi obat yang dibeli di warung/toko obat
3. Fasilitas Kesehatan :

Fasilitas Kesehatan	1. Ada / 2. Tidak ada	Kondisi
Rumah sakit	Ya	Cukup
Puskesmas	Ya	Cukup
Pustu	Tidak	
Posyandu	Ya	Cukup
Bidan	Ya	Cukup
Klinik		
Lainnya.....		

Persepsi dan Pengetahuan

1. Mengetahui Pembangunan TPST : Ya
2. Sumber Informasi : Kepala desa atau perangkat desa
3. Tanggapan TPST : Mendukung
4. Kekhawatiran TPST : Ya (Harap Sebutkan) - Truk sampah terkadang mengganggu (sampah terbang)
5. Kondisi Lingkungan Saat Ini : Nyaman
6. Harapan : Pengelolaan sampah agar dampaknya tidak mengganggu masyarakat
7. Masyarakat merasa dampak positif TPST
8. Masyarakat Tegalombo dapat kompensasi (terdampak langsung)

Profil Rumah Tangga di wilayah Studi Temanggung

INFORMASI RESPONDEN

1. Nama Responden : PARDI
2. Jenis Kelamin : Laki-Laki
3. Umur : 56
4. Agama : Islam
5. Suku : JAWA
6. Status Perkawinan : Menikah
7. Pendidikan Formal : Tamat SD
8. Nama Kepala Keluarga : PARDI
9. Tempat Tinggal : Di luar lokasi proyek, Sebutkan Desa - SANGGRAHAN
10. Bekerja dalam sehari : 6 -9 jam

INFORMASI KK

1. Jumlah Anggota Keluarga : 3
2. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
PARDI	Kepala Keluarga	56	Tamat SD	Menikah	Lainnya	Lainnya
MARMINAH	Istri	55	Tamat SD	Menikah	Lainnya	
NURJANAH	Anak	17	Tamat SMA/SMK/MA	Belum Menikah	Lainnya	

3. Penyakit Kronis : SAKIT JANTUNG - ISTRI
4. Penghasilan dalam Sebulan :

Sumber	Rp
Utama	Rp. 1.000.000,- s.d. < Rp 2.036.947- (UMP Jateng 2024)
Sampingan	< Rp. 1.000.000,-
Kiriman	

5. Pengeluaran

Sumber	Rp
Makanan	700000
Non Makanan	1185000

6. Pengeluaran Khusus :

Sumber	Rp
Biaya kegiatan agama (Idul Fitri, Natal)	167000
Biaya sumbangan acara pernikahan, kematian, khitanan, kelahiran, dll	600000
Pembayaran PBB Retribusi	12500
Pemeliharaan Rumah	
Rekreasi	
Lainnya	

7. Besaran Pinjaman : 1000000 tiap bulan dari total 50000000

8. Program Pemerintah yang didapatkan : **BPJS**

Fasilitas Layanan

1. Kebutuhan Air
   a. Minum : **Lainnya (Harap Sebutkan) - pamsimas**
   b. Mandi : **Lainnya (Harap Sebutkan) - pamsimas**
   c. Masak : **Lainnya (Harap Sebutkan) - pamsimas**
2. Kondisi Rumah : **Separuh Tembok/gedek/kayu**
3. Bahan Bakar yang digunakan : **Gas**
4. Sumber Listrik : **Listrik PLN**
5. Kepemilikan Aset

Kepemilikan Aset	Satuan	Jumlah
Rumah	m2	112
Tanah	m2	272
Tambak	m2	
Sawah	m2	1000
Perahu	Unit	
Bagan Tancap	Unit	
Mobil	Unit	
Motor	Unit	5
Sepeda	Unit	
TV	Unit	1
Kulkas	Unit	1
HP	Unit	7
Tabungan	Rp	
Emas	Gram	
Lainnya		6000

Profil Pertanian

Profil	Jawaban
Luas Lahan (m2)	3500
Jenis Kerjasama/Izin	Lainnya (Harap Sebutkan)- bengkok
Lama Penggunaan Lahan	20
Menerima Kompensasi dan Kesesuaian	Ya tapi tidak sesuai
Jumlah Kompensasi	7000000
Menerima Pemberitahuan Proyek	Ya
Usaha di Lahan Tsb	Pertanian (tanaman tahunan) atau pohon

Kesehatan

1. Kartu Jaminan Kesehatan **: BPJS**
2. Upaya jika ada keluarga yang sakit : **Membawa ke petugas kesehatan**
3. Fasilitas Kesehatan :

Fasilitas Kesehatan	1. Ada / 2. Tidak ada	Kondisi
Rumah sakit	Ya	Memadai
Puskesmas	Ya	Cukup
Pustu	Tidak	
Posyandu	Ya	Cukup
Bidan	Ya	Cukup
Klinik		
Lainnya……..		

Persepsi dan Pengetahuan

1. Mengetahui Pembangunan TPST : Tidak
2. Sumber Informasi :
3. Tanggapan TPST : Mendukung
4. Kekhawatiran TPST : Tidak
5. Kondisi Lingkungan Saat Ini : Nyaman
6. Harapan : masyarakat dapat menjadi tenaga kerja dan pengelolaan sampah tidak terganggu

Appendix G Baseline Data (Analytical Reports/Existing Local Permit)

Statement of Readiness to Provide Land for Temporary Landfill

BUPATI TEMANGGUNG

SURAT PERNYATAAN
KESIAPAN MENYEDIAKAN LAHAN TPA SEMENTARA
Nomor : 660.1 / 574 / 2024

Yang bertanda tangan dibawah ini :

Nama : HARY AGUNG PRABOWO
Jabatan : Pj. BUPATI TEMANGGUNG
Alamat : Jl. AHMAD YANI 32 TEMANGGUNG

Dalam hal ini bertindak untuk dan atas nama Pemerintah Kabupaten Temanggung, menyatakan bahwa :

1. Lahan TPA Sementara yang akan digunakan untuk loading sampah sementara guna menunjang kegiatan konstruksi Penataan TPA Eksisting dan Pembangunan TPST Sanggrahan yang berada di Zona V area TPA Sanggrahan berdasarkan Sertifikat Hak Pakai No. 136 dengan luas ± 22.000 m^2 (kurang lebih dua puluh dua ribu meter persegi).
2. Berkomitmen memenuhi kebutuhan anggaran untuk Pembangunan TPA Sementara.

Pernyataan ini dibuat dalam rangka memenuhi persyaratan *Readiness Criteria* untuk kegiatan Penataan TPA Eksisting dan Pembangunan TPST Sanggrahan melalui Pendanaan Hibah Luar Negeri (PHLN) Program *Solid Waste Management for Sustainable Urban Development* (SWM-SUD).

Demikian surat pernyataan ini digunakan untuk sebagaimana mestinya.

Temanggung, 07 Agustus 2024

Pj. Bupati Temanggung,

Hary Agung Prabowo

Jalan A.Yani No. 32 Temanggung 56216 Provinsi Jawa Tengah
Telepon (0293) 491004 Fax (0293) 491040 Surat Elektronik : info@temanggungkab.go.id website www.temanggungkab.go.id

Dipindai dengan CamScanner

Statement of Readiness of Land that is Certified and Not in Dispute

BUPATI TEMANGGUNG

SURAT PERNYATAAN
KESIAPAN LAHAN YANG BERSERTIFIKAT DAN TIDAK DALAM SENGKETA
Nomor : 660.1/573/2024

Yang bertanda tangan dibawah ini :

Nama	:	HARY AGUNG PRABOWO
Jabatan	:	Pj. BUPATI TEMANGGUNG
Alamat	:	Jl. AHMAD YANI 32 TEMANGGUNG

Dalam hal ini bertindak untuk dan atas nama Pemerintah Kabupaten Temanggung, menyatakan bahwa:
Lahan yang digunakan untuk kegiatan Penataan TPA dan Pembangunan TPST Sanggrahan Kabupaten Temanggung adalah benar milik Pemerintah Kabupaten Temanggung dengan luas 60.278 m^2 (enam puluh ribu dua ratus tujuh puluh delapan meter persegi), yang terletak di Desa Sanggrahan Kecamatan Kranggan Kabupaten Temanggung dan tidak dalam sengketa dengan pihak manapun berdasarkan :

1. Sertifikat Hak Pakai No. 131;
2. Sertifikat Hak Pakai No. 132;
3. Sertifikat Hak Pakai No. 133;
4. Sertifikat Hak Pakai No. 134;
5. Sertifikat Hak Pakai No. 135;
6. Sertifikat Hak Pakai No. 136;
7. Sertifikat Hak Pakai No. 144;
8. Sertifikat Hak Pakai No. 145; dan
9. Sertifikat Hak Pakai No. 146.

Demikian surat pernyataan ini digunakan untuk sebagaimana mestinya.

Temanggung, 07 Agustus 2024
Pj. Bupati Temanggung,

BUPATI TEMANGGUNG

Hary Agung Prabowo

Jalan A.Yani No. 32 Temanggung 56216 Provinsi Jawa Tengah
Telepon (0293) 491004 Fax (0293) 491040 Surat Elektronik : Info@temanggungkab.go.id website www.temanggungkab.go.id

Dipindai dengan CamScanner

Letter of Approval of Suitability of Space Utilization Activities for Non-Business Activities (Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang)

PEMERINTAH DAERAH KABUPATEN TEMANGGUNG
PERSETUJUAN KESESUAIAN KEGIATAN PEMANFAATAN RUANG
UNTUK KEGIATAN NON BERUSAHA
NOMOR: 053 / KKPR / 2023

Berdasarkan Undang-Undang Republik Indonesia Nomor 6 Tahun 2023 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 2 Tahun 2022 Tentang Cipta Kerja Menjadi Undang-Undang, atas permohonan pelaku usaha, Bupati Temanggung menerbitkan Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang untuk Kegiatan Non Berusaha kepada:

1. Nama Pemohon : Bappeda Kabupaten Temanggung
2. NPWP :
3. Alamat : Jl. Kadar Maron No 12 Temanggung
4. No Telpon : (0293) 492154
5. Email :
6. Kode Klasifikasi Baku lapangan Usaha Indonesia (KBLI) :
7. Judul KBLI : Penataan TPA eksisting dan Pembangunan TPST Sanggrahan
8. Lokasi Kegiatan
   a. Alamat : Sanggrahan
   b. Desa /Kelurahan : Sanggrahan
   c. Kecamatan : Kranggan
   d. Kabupaten : Temanggung
   e. Provinsi : Jawa Tengah
   f. Koordinat Geografis yang di mohon : 110.225791927762, -7.32619024198702
9. Luas tanah yang dimohon :

No	Sertifikat	Luas (m^2)	Tahun
1	SHP No 135	1.055	2014
2	SHP No 134	3.590	2014
3	SHP No 131	26.717	2008
4	SHP No 133	3.685	2013
5	SHP No 132	3.548	2013
6	SHP No 136	8.986	2016
7	SHP No 145	1.855	2023
8	SHP No 144	6.516	2023
9	SHP No 146	4.326	2023
Luat Total		**60.278**	

Dinyatakan disetujui seluruhnya dengan ketentuan

1. Koordinat Geografis yang disetujui : (terlampir)
2. Luas tanah yang disetujui seluas : ± 48.975 m^2

   Disetujui bersyarat seluas : ± 11.303 m^2, mengingat lokasi yang dimohon masuk:
   a. Masuk Lahan Sawah yang Dilindungi (LSD) seluas ± 448 m^2 sehingga untuk menggunakan dan memanfaatkan tanah tersebut menjadi TPA harus mendapat rekomendasi pengeluaran LSD dari Menteri ATR/BPN;
   b. Masuk Lahan Pertanian Pangan Berkelanjutan (LP2B) seluas ± 852 m^2 sehingga harus dikeluarkan dari Peta Lahan LP2B sebagaimana maksud Berita Acara Forum Penataan Ruang

Nomor: 050/107/BA.KKPR/VII/2023 tanggal 31 Juli 2023;

c. Bertampalan antara Lahan Sawah yang Dilindungi (LSD) dengan Lahan Pertanian Pangan Berkelanjutan (LP2B) seluas ± 10.003 m^2 sehingga harus dikeluarkan dari LSD dan LP2B.

3. Jenis peruntukan pemanfaatan Ruang : Sebagian Kawasan Peruntukan Perkebunan, Sebagian Kawasan pertanian sawah bukan irigasi, sebagian Lahan Sawah yang Dilindungi (LSD), Sebagian Lahan Pertanian Pangan Berkelanjutan (LP2B)
4. Kode klasifikasi baku lapangan usaha Indonesia (KBLI) : -
5. Judul KBLI : Penataan TPA eksisting dan Pembangunan TPST Sanggrahan
6. Koefisien Dasar Bangunan maksimum : 70 %
7. Koefisien Lantai Bangunan maksimum : -
8. Indikasi Program Pemanfaatan Ruang : -
9. Persyaratan Pelaksanaan kegiatan pemanfaatan Ruang :

I. Ketentuan umum Peraturan Zonasi Kawasan Peruntukan Perkebunan
   a. diizinkan pengembangan ekowisata;
   b. diizinkan pembangunan fasilitas gudang pertanian;
   c. diizinkan pembangunan fasilitas pengolah hasil pertanian;
   d. diizinkan pengembangan budidaya tumpang sari dengan peternakan dan perikanan; dan
   e. dilarang melakukan peremajaan secara bersamaan untuk mengurangi erosi lapisan atas tanah.

II. Ketentuan umum Peraturan Zonasi Peruntukan Kawasan pertanian sawah bukan irigasi
   a. diarahkan untuk budidaya tanaman pangan;
   b. diizinkan pembangunan fasilitas gudang pertanian;
   c. diizinkan pembangunan fasilitas pengolah hasil pertanian;
   d. diizinkan mendirikan rumah tunggal dengan syarat sesuai dengan rencana rinci tata ruang; dan
   e. diizinkan pemanfaatan ruang untuk permukiman petani.

III. Lahan Sawah yang Dilindungi

IV. LP2B

10. Informasi tambahan (apabila tersedia)
    a. Garis Sempadan Bangunan minimum : 6,75 dari as Jalan Sanggrahan-Kwarakan
    b. GSB terhadap saluran irigasi :
       - Bertanggul
         - Ketinggian < dari 1 m: Paling sedikit 1 mater dari sisi luar kaki tanggul
         - Ketinggian > dari 1 m: sama dengan ketinggian saluran irigasi dari sisi luar kaki tanggul
       - Tidak Bertanggul
         - Kedalaman < dari 1 m: Paling sedikit 1 mater dari tepi luar parit drainase di kanan dan kiri saluran irigasi
         - Kedalaman > dari 1 m: Paling sedikit sama dengan kedalaman saluran irigasi diukur dari tepi luar parit drainase di kanan dan kiri saluran irigasi

c. Garis Sempadan Bangunan Terhadap Sungai (Di luar Kawasan Perkotaan)		- Bertanggul • 5 dari tepi luar kaki tanggul sepanjang alur sungai - Tidak Bertanggul • 50 m dari tepi kiri dan kanan palung sungai sepanjang alur sungai (Sungai kecil dengan luas DAS kurang dari 500 Km2)
d. Jarak Bebas Bangunan minimum	:	-
e. Koefisien dasar Hijau minimum	:	-
f. Koefisien Tapak Basement maksimum	:	-
g. Jaringan utilitas kota	:	-

Dengan mempertimbangkan:

1. Peraturan Pemerintah Nomor 19 Tahun 2021 tentang Penyelenggaraan Pengadaan Tanah Bagi Pembangunan Untuk Kepentingan Umum;
2. Peraturan Daerah Provinsi Jawa Tengah Nomor 11 Tahun 2004 tentang Garis Sempadan sebagaimana telah diubah dengan Peraturan Daerah Provinsi Jawa Tengah Nomor 9 Tahun 2013 tentang Perubahan Atas Peraturan Daerah Provinsi Jawa Tengah Nomor 11 Tahun 2004 tentang Garis Sempadan;
3. Peraturan Daerah Kabupaten Temanggung Nomor 9 Tahun 2023 tentang Bangunan Gedung;
4. Peraturan Daerah Kabupaten Temanggung Nomor 1 Tahun 2012 tentang Rencana Tata Ruang Wilayah Kabupaten Temanggung Tahun 2011 – 2031;
5. Peraturan Daerah Kabupaten Temanggung Nomor 2 Tahun 2014 tentang Perlindungan Lahan Pertanian Pangan Berkelanjutan sebagaimana telah diubah dengan Peraturan Daerah Kabupaten Temanggung Nomor 4 Tahun 2017 tentang Perubahan atas Peraturan Daerah Kabupaten Temanggung Nomor 2 tahun 2014 tentang Perlindungan Lahan Pertanian Pangan Berkelanjutan;
6. Keputusan Bupati Temanggung No. 050/405 Tahun 2018 tentang Ruas-Ruas Jalan yang Berstatus Sebagai Jalan Kabupaten;
7. Keputusan Bupati Temanggung No. 050/507 Tahun 2019 tentang Ruas Jalan yang Berstatus Sebagai Jalan Lingkungan Permukiman, Jalan Desa, dan Jalan Kawasan Khusus;
8. Keputusan Kepala Dinas Pekerjaan Umum Kabupaten Temanggung Nomor : 050/794/2016 tentang Ruas-Ruas Jalan Kabupaten Sesuai Dengan Fungsinya;
9. Keputusan Menteri ATR/BPN Nomor 1589/SK-HK.02.01/XII/2021 tentang Penetapan Lahan Sawah yang Dilindungi pada Kabupaten/Kota di 8 Provinsi;
10. Pertimbangan Teknis Pertanahan Dalam Rangka Penerbitan Kesesuaian Kegiatan Pemanfaatan Ruang untuk Kegiatan Non Usaha Nomor 284 / 2023 tanggal 29 Desember 2023.

Ketentuan Lainya:

1. Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang diberikan dengan pertimbangan sebagaimana tercantum dalam lampiran;
2. Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang ini sebagai dokumen yang menyatakan kesesuaian antara rencana kegiatan Pemanfaatan Ruang dengan RTR selain RDTR, dan sebagai dasar pemrosesan Perizinan Non Berusaha sesuai ketentuan peraturan perundang-undangan;
3. Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang ini berlaku selama 3 (tiga) tahun terhitung sejak penerbitan dan dapat diperpanjang sesuai peraturan perundang-terhitung perundang-undangan yang berlaku;
4. Dalam hal telah dilakukan pemutakhiran, masa berlaku Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang mengikuti jangka waktu penguasaan atas tanah yang telah diperoleh;
5. Dalam hal pemohon Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang untuk kegiatan berusaha telah memperoleh tanah untuk kegiatan berusahanya, masa berlaku Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang mengikuti jangka waktu penguasaan atas tanah yang telah diperoleh oleh pemohon serta sesuai dengan luas tanah yang diperoleh dan disetujui dalam Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang;

6. Pemegang Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang hanya dapat melakukan permohonan Perizinan Non Berusaha sesuai dengan lokasi yang disetujui;
7. Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang merupakan dasar perolehan tanah yang diperlukan untuk kegiatan non berusaha dan berlaku pula sebagai izin pemindahan hak atas tanah, serta untuk mengurus perizinan selanjutnya pada instansi yang berwenang;
8. Pemegang Persetujuan Kesesuaian Kegiatan Pemanfaatan Ruang wajib mematuhi peraturan perundang-undangan yang berlaku.

Diterbitkan Tanggal ....29 DESEMBER 2023

a.n. BUPATI TEMANGGUNG
KEPALA DINAS PENANAMAN MODAL
DAN PELAYANAN TERPADU SATU PINTU
KABUPATEN TEMANGGUNG

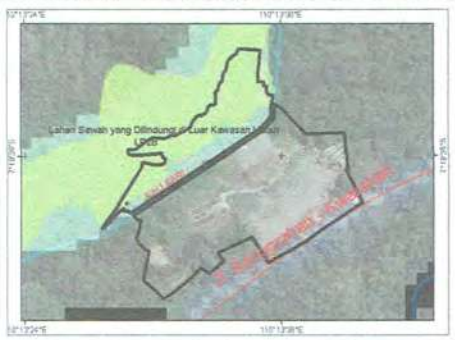
PEMERINTAH KABUPATEN TEMANGGUNG DPMPTSP

Ir. SUMINAR BUDI SETIAWAN, MM
NIP. 19641114 199003 1 005

PETA PERSETUJUAN KESESUAIAN KEGIATAN PEMANFAATAN RUANG

PKKPR dinyatakan disetujui seluruhnya dengan pertimbangan:

1. Menurut Peraturan Daerah Kabupaten Temanggung Nomor 1 Tahun 2012 tentang Rencana Tata Ruang Wilayah Kabupaten Temanggung Tahun 2011-2031;
2. Pertimbangan Teknis Pertanahan Dalam Rangka Penerbitan Kesesuaian Kegiatan Pemanfaatan Ruang untuk Kegiatan Non Usaha Nomor 284 / 2023 tanggal 29 Desember 2023.



Legenda/Keterangan Peta:

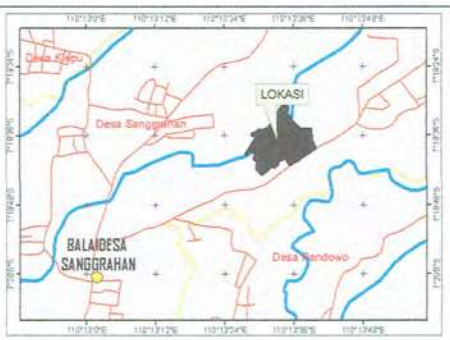
: Lokasi Yang dimohon

Jalan Berdasarkan Fungsi

: Jalan

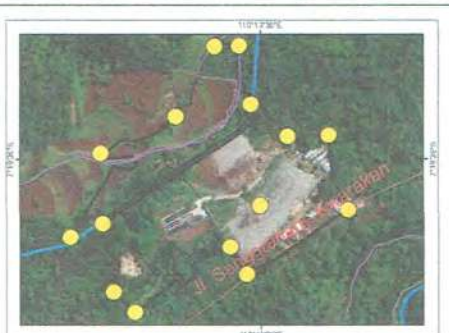
Perairan

: Perairan



Katerangan Letak Peta

1. Berdasarkan Sistem koordinat UTM 49 S lokasi yang dimohon berada pada koordinat: 110.225791927762, -7.32619024198702
2. Lokasi yang dimohon berada di dalam wilayah Desa Sanggrahan Kecamatan Kranggan



Koordinat batas bidang rencana lokasi kegiatan:

Titik	x	Y
1	110.227737922978	-7.32727378823094
2	110.226503642841	-7.32805580988367
3	110.226300066551	-7.32772293402511
4	110.225145148342	-7.32851582860113
5	110.224890157075	-7.32827094708014
6	110.224754793555	-7.32743900602498
7	110.224359607638	-7.3276026855103
8	110.224733665786	-7.32658763266416
9	110.225650896535	-7.32614538987915
10	110.226117421669	-7.3253045164598
11	110.226416331701	-7.32529584683145
12	110.226561271738	-7.3259974046851
13	110.227006517445	-7.32638728214583
14	110.227507026698	-7.32637316292586

Keterangan lain yang dianggap perlu:

- Luas tanah yang disetujui seluas ± 48.975 m^2
- Disetujui bersyarat seluas ± 11.303 m^2 , mengingat lokasi yang dimohon masuk:
  a. Masuk Lahan Sawah yang Dilindungi (LSD) seluas ± 448 m^2 sehingga untuk menggunakan dan memanfaatkan tanah tersebut menjadi TPA

harus mendapat rekomendasi pengeluaran LSD dari Menteri ATR/BPN; b. Masuk Lahan Pertanian Pangan Berkelanjutan (LP2B) seluas ± 852 m^2 sehingga harus dikeluarkan dari Peta Lahan LP2B sebagaimana maksud Berita Acara Forum Penataan Ruang Nomor: 050/107/BA.KKPR/VII/2023 tanggal 31 Juli 2023; c. Bertampalan antara Lahan Sawah yang Dilindungi (LSD) dengan Lahan Pertanian Pangan Berkelanjutan (LP2B) seluas ± 10.003 m^2 sehingga harus dikeluarkan dari LSD dan LP2B.	a.n. BUPATI TEMANGGUNG KEPALA DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU KABUPATEN TEMANGGUNG Ir. SUMINAR BUDI SETIAWAN, MM NIP. 19641111 199003 1 005

Landfill Monitoring Report: River Water and Leachate

PEMERINTAH KABUPATEN TEMANGGUNG
DINAS PERUMAHAN RAKYAT, KAWASAN PERMUKIMAN DAN LINGKUNGAN HIDUP
UPT LABORATORIUM LINGKUNGAN
Jalan Gerilya Nomor 20 Maron Sidorejo Temanggung Kode Pos 56221
Telepon/Faximili (0293) 4901569 Surat Elektronik : dprkplh.temanggungkab@gmail.com

HASIL UJI LABORATORIUM

Nama Sampel	: Inlet IPAL TPA Sanggrahan	Kode Sampel	: FZ/03/01
Alamat	: Desa Sanggrahan, Kec. Kranggan, Kab. Temanggung		
Jenis Sampel	: Air Limbah Lindi		
Tanggal Pengambilan	: 4 Maret 2024	Waktu	: 10.20
Musim	: Hujan		
Cuaca	: Cerah		
Titik Koordinat	: S : $07^0$19.601'		
	: E : $110^0$13.533'		

NO	Parameter	Sat	Hasil Analisa	Baku Mutu	Metode Uji
1	pH	-	8,26	6 - 9	SNI 6989.11:2019
2	BOD	mg/L	126,17	150	SNI 6989.72:2009
3	COD	mg/L	**7219,6**	300	SNI 6989.2:2019
4	TSS	mg/L	38	100	SNI 6989.3:2019
5	N Total	mg/L	-	60	-
6	Merkuri	mg/L	-	0,005	-
7	Kadmium	mg/L	-	0,1	-

Keterangan :

1. Baku Mutu berdasarkan Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.59/Menlhk/Setjen/Kum.1/7/2017 tentang Baku Mutu Lindi bagi Usaha dan/atau Kegiatan Tempat Pemprosesan Akhir Sampah
2. Parameter yang tidak memenuhi baku mutu, adalah :
   a. COD
3. (-) = Tidak dilakukan pengambilan sampel.

Temanggung, 12 Maret 2024
Koordinator Teknis

HERLINA PUJI ASTUTI, ST
Penata Tingkat I
NIP. 198112 07201001 2 021

PEMERINTAH KABUPATEN TEMANGGUNG
DINAS PERUMAHAN RAKYAT, KAWASAN PERMUKIMAN DAN LINGKUNGAN HIDUP
UPT LABORATORIUM LINGKUNGAN
Jalan Gerilya Nomor 20 Maron Sidorejo Temanggung Kode Pos 56221
Telepon/Faximili (0293) 4901569 Surat Elektronik : dprkplh.temanggungkab@gmail.com

HASIL UJI LABORATORIUM

Nama Sampel	: Outlet IPAL TPA Sanggrahan	Kode Sampel	: FZ/03/02
Alamat	: Desa Sanggrahan, Kec. Kranggan, Kab. Temanggung		
Jenis Sampel	: Air Limbah Lindi		
Tanggal Pengambilan	: 4 Maret 2024	Waktu	: 10.35
Musim	: Hujan		
Cuaca	: Cerah		
Titik Koordinat	: S : $07^0$19.601'		
	: E : $110^0$13.533'		

NO	Parameter	Sat	Hasil Analisa	Baku Mutu	Metode Uji
1	pH	-	8,5	6 - 9	SNI 6989.11:2019
2	BOD	mg/L	73,89	150	SNI 6989.72:2009
3	COD	mg/L	**6268,3**	300	SNI 6989.2:2019
4	TSS	mg/L	23	100	SNI 6989.3:2019
5	N Total	mg/L	-	60	-
6	Merkuri	mg/L	-	0,005	-
7	Kadmium	mg/L	-	0,1	-

Keterangan :

1. Baku Mutu berdasarkan Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.59/Menlhk/Setjen/Kum.1/7/2017 tentang Baku Mutu Lindi bagi Usaha dan/atau Kegiatan Tempat Pemprosesan Akhir Sampah
2. Parameter yang tidak memenuhi baku mutu, adalah :
   a. COD
3. (-) = Tidak dilakukan pengambilan sampel.

Temanggung, 12 Maret 2024
Koordinator Teknis

HERLINA PUJI ASTUTI, ST
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PEMERINTAH KABUPATEN TEMANGGUNG
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UPT LABORATORIUM LINGKUNGAN
Jalan Gerilya Nomor 20 Maron Sidorejo Temanggung Kode Pos 56221
Telepon/Faximili (0293) 4901569 Surat Elektronik : dprkplh.temanggungkab@gmail.com

HASIL UJI LABORATORIUM

Nama Sampel : Sumur Pantau TPA Sanggrahan — Kode Sampel : FZ/03/03
Alamat : Desa Sanggrahan, Kec. Kranggan, Kab. Temanggung
Jenis Sampel : Air bersih (Sumur Pantau)
Tanggal Pengambilan : 4 Maret 2024 — Waktu : 10.10
Musim : Hujan
Cuaca : Cerah
Titik Koordinat : S : $07^0$19.601'
: E : $110^0$13.533'

NO	Parameter	Sat	Hasil Analisa	Metode Uji
A	Fisika			
1	Bau	-	Tidak berbau	
2	TDS	mg/L	245	SNI 6989.27:2019
3	Rasa	-	Tidak berasa	
4	Suhu	°C	21	SNI 06-6989.23-2005
B	Kimia			
1	pH	-	6,8	SNI 6989.11:2019

Keterangan :

1. Baku Mutu berdasarkan Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.59/Menlhk/Setjen/Kum.1/7/2016 tentang Baku Mutu Lindi bagi Usaha dan/atau Kegiatan Tempat Pemprosesan Akhir Sampah (Parameter Kualitas Air Tanah yang dipantau pada Sumur Pantau/ Sumur Uji)

Temanggung, 12 Maret 2024
Koordinator Teknis

HERLINA PUJI ASTUTI, ST
Penata Tingkat I
NIP. 198112 07201001 2 021

PEMERINTAH KABUPATEN TEMANGGUNG
DINAS PERUMAHAN RAKYAT, KAWASAN PERMUKIMAN DAN LINGKUNGAN HIDUP
UPT LABORATORIUM LINGKUNGAN
Jalan Gerilya Nomor 20 Maron Sidorejo Temanggung Kode Pos 56221
Telepon/Faximili (0293) 4901569 Surat Elektronik : dprkplh.temanggungkab@gmail.com

HASIL UJI LABORATORIUM

Nama Sampel	: Sumur Pantau TPA Sanggrahan	Kode Sampel	: FZ/03/03
Alamat	: Desa Sanggrahan, Kec. Kranggan, Kab. Temanggung		
Jenis Sampel	: Air bersih (Sumur Pantau)		
Tanggal Pengambilan	: 4 Maret 2024	Waktu	: 10.10
Musim	: Hujan		
Cuaca	: Cerah		
Titik Koordinat	: S: $07^0$19.601'		
	: E : $110^0$13.533'		

NO	Parameter	Sat	Hasil Analisa	Baku Mutu	Metode Uji
A	Fisika				
1	Bau	-	Tidak Berbau	Tidak berbau	-
2	TDS	mg/L	245	1000	SNI 6989.27:2019
3	Rasa	-	Tidak berasa	Tidak berasa	-
4	Suhu	°C	21	Suhu udara ± 3	-
B	Kimia				
1	pH	-	6,79	6,5 - 8,5	SNI 6989.11:2019

Keterangan :

1. Baku Mutu berdasarkan Peraturan Menteri Kesehatan Republik Indonesia No. 2 tahun 2023 tentang Peraturan Pelaksanaan PP Nomor 66 tahun 2014 tentang Kesehatan Lingkungan
2. Parameter yang tidak memenuhi baku mutu, adalah : tidak ada

Temanggung, 12 Maret 2024
Koordinator Teknis

HERLINA PUJI ASTUTI, ST
Penata Tingkat I
NIP. 198112 07201001 2 021

PEMERINTAH KABUPATEN TEMANGGUNG
DINAS PERUMAHAN RAKYAT, KAWASAN PERMUKIMAN DAN LINGKUNGAN HIDUP
UPT LABORATORIUM LINGKUNGAN
Jalan Gerilya Nomor 20 Maron Sidorejo Temanggung Kode Pos 56221
Telepon/Faximili (0293) 4901569 Surat Elektronik : dprkplh.temanggungkab@gmail.com

HASIL UJI LABORATORIUM

Nama Sampel	: Sungai Bono	Kode Sampel	: AN/02/02
Alamat	: Sanggrahan Kec. Kranggan		
Jenis Sampel	: Air permukaan		
Tanggal Pengambilan	: 28 Februari 2024	Waktu	: 10.00
Musim	: Hujan		
Cuaca	: Cerah		
Titik Koordinat	: S : $07^0$19.785'		
	: E : $110^0$13.051'		

NO	Parameter	Sat	Hasil Analisa	Baku Mutu	Metode Uji
1	Temperatur	° C	26,5	Dev 3	SNI 06-6989.23-2005
2	TDS	mg/L	219	1000	SNI 6989.27-2019
3	TSS	mg/L	**62**	50	SNI 6989.3-2019
4	pH	-	6,62	6 - 9	SNI 6989.11-2019
5	BOD	mg/L	**11,96**	3	SNI 6989.72_2009
6	COD	mg/L	**2630,4**	25	SNI 6989.2-2019
7	DO	mg/L	4,5	>4	SNI 06-6989.14-2004
8	Amonia	mg/L	13,32	0,2	SNI 06-6989.30-2005

Keterangan :

1. Baku mutu berdasarkan Peraturan Pemerintah Republik Indonesia Nomor 22 tahun 2021 tentang Penyelanggara Perlindungan dan Pengelolaan Lingkungan Hidup, Baku Mutu Air Nasional : Baku Mutu Air Sungai dan sejenisnya Klasifikasi Kelas 2
2. Parameter yang tidak memenuhi baku mutu, adalah :
   a. TSS b. BOD c. COD

Temanggung, 7 Maret 2024
Koordinator Teknis

HERLINA RUJI ASTUTI, ST
Penata Tingkat I
NIP. 198112 07201001 2 021

Appendix H Household Profile

1 WASTEPICKERS HOUSEHOLD PROFILE

Profil Rumah Tangga di wilayah Studi Temanggung

1. Nama Responden : **Munarsih**
2. Jenis Kelamin : **Perempuan**
3. Umur : **60**
4. Agama : **Islam**
5. Suku : **Jawa**
6. Status Perkawinan : **Janda/Duda**
7. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**
8. Nama Kepala Keluarga : **Munarsih**
9. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**
10. Jarak Tempat Tinggal : **0-1 Km**
11. Transportasi : **Jalan kaki**
12. Jumlah Anggota Keluarga : **1**
13. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Munarsih	**Kepala Keluarga**	**60**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

14. Penghasilan dalam Sebulan : **300000**

15. Jam bekerja dalam sehari : **6 -9 jam**

16. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya				

17. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya	**400000**	**4800000**

18. Bangunan dalam TPA:

    a. Jenis Bangunan : **Gubuk penyimpanan**

    b. Kondisi Bangunan : **Gedek/bilik bambu**

    c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

    d. Sumber Listrik : **Tidak Ada**

    e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	
Septitank	
Lainnya	

19. Informasi Kesehatan :

    a. Penyakit Kronis : **Darah Tinggi**

    b. Kebutuhan Khusus :

    c. Kartu Jaminan Kesehatan : **Tidak Ada**

    d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**1. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Ya**	
Lainnya		

20. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

21. Nama Responden : **Muridah**

22. Jenis Kelamin : **Perempuan**

23. Umur : **55**

24. Agama : **Islam**

25. Suku : **Jawa**

26. Status Perkawinan : **Menikah**

27. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

28. Nama Kepala Keluarga : **Maryanto**

29. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Sanggrahan**

30. Jarak Tempat Tinggal : **0-1 Km**

31. Transportasi : **Jalan kaki**

32. Jumlah Anggota Keluarga : **3**

33. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Maryanto	**Kepala Keluarga**	**60**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Muridah	**Istri**	**58**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Lainnya**	
Lestari	**Anak**	**21**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Karyawan Swasta**	

34. Penghasilan dalam Sebulan : **2775000**

35. Jam bekerja dalam sehari : **6 -9 jam**

36. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..	**1**			**300000**

37. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

38. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	**Memadai**
Lainnya	**Memadai**

39. Informasi Kesehatan :

    a. Penyakit Kronis : **Maryanto**

    b. Kebutuhan Khusus :

    c. Kartu Jaminan Kesehatan : **KIS**

    d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**2. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik		
Lainnya		

40. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

41. Nama Responden : **Maridah**

42. Jenis Kelamin : **Perempuan**

43. Umur : **61**

44. Agama : **Islam**

45. Suku : **Jawa**

46. Status Perkawinan : **Janda/Duda**

47. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

48. Nama Kepala Keluarga : **Suwarto (ALM)**

49. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Sanggrahan**

50. Jarak Tempat Tinggal : **0-1 Km**

51. Transportasi : **Jalan kaki**

52. Jumlah Anggota Keluarga : **5**

53. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Maridah	**Kepala Keluarga**	**61**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Lainnya**	

54. Penghasilan dalam Sebulan : **400000**

55. Jam bekerja dalam sehari : **6 -9 jam**

56. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..	**0**	**0**	**0**	**0**

57. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

58. Bangunan dalam TPA:

    a. Jenis Bangunan : **Gubuk penyimpanan**

    b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

    c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

    d. Sumber Listrik : **Tidak Ada**

    e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	**Memadai**

59. Informasi Kesehatan :

    a. Penyakit Kronis :

    b. Kebutuhan Khusus :

    c. Kartu Jaminan Kesehatan : **KIS**

    d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**3. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Tidak**	
Lainnya	**Tidak**	

60. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

61. Nama Responden : **Marsini**

62. Jenis Kelamin : **Perempuan**

63. Umur : **55**

64. Agama : **Islam**

65. Suku : **Jawa**

66. Status Perkawinan : **Menikah**

67. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

68. Nama Kepala Keluarga : **Kamit**

69. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Sanggrahan**

70. Jarak Tempat Tinggal : **0-1 Km**

71. Transportasi : **Jalan kaki**

72. Jumlah Anggota Keluarga : **3**

73. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Kamit	**Kepala Keluarga**	**56**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Marsini	**Istri**	**52**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Lainnya**	
Heri Prastyo	**Anak**	**22**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Lainnya**	

74. Penghasilan dalam Sebulan : **2700000**

75. Jam bekerja dalam sehari : **6 -9 jam**

76. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

77. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga	**100000**	**1200000**
Sedekah		
Lainnya……		

78. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	**Memadai**
Lainnya	

79. Informasi Kesehatan :

    a. Penyakit Kronis :

    b. Kebutuhan Khusus :

    c. Kartu Jaminan Kesehatan : **KIS**

    d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**4. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan		
Klinik		
Lainnya		

80. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

81. Nama Responden : **Ruwani**

82. Jenis Kelamin : **Perempuan**

83. Umur : **59**

84. Agama : **Islam**

85. Suku : **Jawa**

86. Status Perkawinan : **Menikah**

87. Pendidikan Formal : **Tamat SD**

88. Nama Kepala Keluarga : **Yadi**

89. Tempat Tinggal : **Di dalam lokasi proyek**

90. Jarak Tempat Tinggal : **0-1 Km**

91. Transportasi : **Jalan kaki**

92. Jumlah Anggota Keluarga : **3**

93. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Yadi	**Kepala Keluarga**	**71**	**Tamat SD**	**Menikah**	**Lainnya**	**Lainnya**
Ruwani	**Istri**	**59**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**
Yantono	**Anak**	**26**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	**Lainnya**

94. Penghasilan dalam Sebulan : **2600000**

95. Jam bekerja dalam sehari : **6 -9 jam**

96. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

97. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

98. Bangunan dalam TPA:

    a. Jenis Bangunan :

    b. Kondisi Bangunan :

    c. Sumber Air :

    d. Sumber Listrik :

    e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Sangat Memadai**
Toilet	**Sangat Memadai**
Sumber Air Bersih	**Sangat Memadai**
Septitank	**Sangat Memadai**
Lainnya	

99. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**5. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Tidak**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Ya**	**Memadai**
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Cukup**
Klinik	**Ya**	**Cukup**
Lainnya		

100. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Air sumur**
Air Mandi	**Air sumur**
Air Memasak	**Air sumur**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

101. Nama Responden : **Markun dan Rantiyah**

102.Jenis Kelamin : **Laki-Laki**

103. Umur : **52**

104. Agama : **Islam**

105. Suku : **Jawa**

106.Status Perkawinan : **Menikah**

107. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

108.Nama Kepala Keluarga : **Markun**

109. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

110. Jarak Tempat Tinggal : **0-1 Km**

111.Transportasi : **Jalan kaki**

112.Jumlah Anggota Keluarga : **2**

113.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Markun	**Kepala Keluarga**	**52**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**
Rantiyah	**Istri**	**51**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

114. Penghasilan dalam Sebulan : **600000**

115. Jam bekerja dalam sehari : **6 -9 jam**

116. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

117.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……	**200000**	**2400000**

118.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Memadai**
Septitank	
Lainnya	

119.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**6. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Ya**	
Lainnya		

120.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

121. Nama Responden : **Parsini**

122.Jenis Kelamin : **Perempuan**

123. Umur : **65**

124. Agama : **Islam**

125. Suku : **Temanggung/Jawa**

126.Status Perkawinan : **Menikah**

127. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

128.Nama Kepala Keluarga : **Tulus**

129. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

130. Jarak Tempat Tinggal : **0-1 Km**

131.Transportasi : **Jalan kaki**

132.Jumlah Anggota Keluarga : **2**

133.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Tulus	**Kepala Keluarga**	**67**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**		
Parsini	**Istri**	**65**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

134. Penghasilan dalam Sebulan : **320000**

135. Jam bekerja dalam sehari : **4-6 jam**

136. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

137.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

138.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil air dari UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Lainnya	

139. Informasi Kesehatan :

a. Penyakit Kronis : **Komplikasi**

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**7. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	
Klinik		
Lainnya		

140. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

141. Nama Responden : **SARTIMAH**

142.Jenis Kelamin : **Perempuan**

143. Umur : **70**

144. Agama : **Islam**

145. Suku : **JAWA**

146.Status Perkawinan : **Menikah**

147. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

148.Nama Kepala Keluarga : **PARWIYOTO**

149. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - KRAMAT**

150. Jarak Tempat Tinggal : **3-4 Km**

151.Transportasi : **Jalan kaki**

152.Jumlah Anggota Keluarga : **2**

153.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
PARWIYOTO	**Kepala Keluarga**	**75**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
SARTIMAH	**Istri**	**70**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Lainnya**	

154. Penghasilan dalam Sebulan : **200000**

155. Jam bekerja dalam sehari : **6 -9 jam**

156. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

157.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga	**200000**	
Sedekah		
Lainnya……		

158.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	**Memadai**
Lainnya	

159. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**8. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya	**Tidak**	

160. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - MATA AIR**
Air Mandi	**Lainnya (Harap Sebutkan) - MATA AIR**
Air Memasak	**Lainnya (Harap Sebutkan) - MATA AIR**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

161. Nama Responden : **Sarmi**

162.Jenis Kelamin : **Perempuan**

163. Umur : **58**

164. Agama : **Islam**

165. Suku : **Jawa**

166.Status Perkawinan : **Janda/Duda**

167. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

168.Nama Kepala Keluarga : **Sarmi**

169. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Pendowo**

170. Jarak Tempat Tinggal : **1-2 Km**

171.Transportasi : **Jalan kaki**

172.Jumlah Anggota Keluarga : **1**

173.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sarmi	**Kepala Keluarga**	**58**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	

174. Penghasilan dalam Sebulan : **400000**

175. Jam bekerja dalam sehari : **10 – 12 Jam**

176. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

177. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

178. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	**Memadai**

179.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**9. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik		
Lainnya		

180.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

181. Nama Responden : **Mukadi dan Sarjilah**

182.Jenis Kelamin : **Laki-Laki**

183. Umur : **42**

184. Agama : **Islam**

185. Suku : **Jawa**

186.Status Perkawinan : **Menikah**

187. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

188.Nama Kepala Keluarga : **Mukadi**

189. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

190. Jarak Tempat Tinggal : **0-1 Km**

191.Transportasi : **Motor**

192.Jumlah Anggota Keluarga : **4**

193.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Mukadi	**Kepala Keluarga**	**42**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**
Sarjilah	**Istri**	**35**	**Tamat SMP/MTs**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**
Angga Wardana	**Anak**	**18**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	
Ressa Ardianto	**Anak**	**12**	**Tamat SD**	**Belum Menikah**	**Lainnya**	

194. Penghasilan dalam Sebulan : **650000**

195. Jam bekerja dalam sehari : **6 -9 jam**

196. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

197.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

198.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Memadai**
Septitank	
Lainnya	

199. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**10. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Ya**	
Lainnya		

200. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

201. Nama Responden : **Sarmi**

202.Jenis Kelamin : **Perempuan**

203. Umur : **38**

204. Agama : **Islam**

205. Suku : **Jawa**

206.Status Perkawinan : **Menikah**

207. Pendidikan Formal : **Tamat SD**

208.Nama Kepala Keluarga : **Saroji**

209. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Desa Losari**

210. Jarak Tempat Tinggal : **0-1 Km**

211.Transportasi : **Jalan kaki**

212.Jumlah Anggota Keluarga : **4**

213.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Saroji	**Kepala Keluarga**	**41**	**Tamat SD**	**Menikah**	**Lainnya**	**Pertukangan**
Sarmi	**Istri**	**38**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**
Prastiyo	**Anak**	**17**	**Tamat SMP/MTs**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Pertukangan**
Putri Aulia	**Anak**	**4**		**Belum Menikah**		

214. Penghasilan dalam Sebulan : **400000**

215. Jam bekerja dalam sehari : **6 -9 jam**

216. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

217. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

218. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Sangat Memadai**
Toilet	**Sangat Memadai**
Sumber Air Bersih	**Sangat Memadai**
Septitank	**Memadai**
Lainnya	

219.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**11. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Tidak**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Ya**	**Memadai**
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Ya**	**Memadai**
Lainnya		

220.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

221. Nama Responden : **Markuwat**

222.Jenis Kelamin : **Laki-Laki**

223. Umur : **47**

224. Agama : **Islam**

225. Suku : **Jawa**

226.Status Perkawinan : **Menikah**

227. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

228.Nama Kepala Keluarga : **Markuwat**

229. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Pendowo**

230. Jarak Tempat Tinggal : **1-2 Km**

231.Transportasi : **Motor**

232.Jumlah Anggota Keluarga : **3**

233.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Markuwat	**Kepala Keluarga**	**47**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Darsih	**Istri**	**42**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Ramdan Wahyu Nugroho	**Anak**	**11**	**Tidak Sekolah/ Tidak Tamat SD**	**Belum Menikah**	**Lainnya**	

234. Penghasilan dalam Sebulan : **1500000**

235. Jam bekerja dalam sehari : **6 -9 jam**

236. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

237.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

238.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	**Memadai**

239. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **KIS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**12. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik		
Lainnya		

240. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

241. Nama Responden : **Lelet**

242.Jenis Kelamin : **Perempuan**

243. Umur : **60**

244. Agama : **Islam**

245. Suku : **Temanggung/Jawa**

246.Status Perkawinan : **Janda/Duda**

247. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

248.Nama Kepala Keluarga : **Lelet**

249. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

250. Jarak Tempat Tinggal : **0-1 Km**

251.Transportasi : **Jalan kaki**

252.Jumlah Anggota Keluarga : **3**

253.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Lelet	**Kepala Keluarga**	**60**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Repi	**Anak**	**16**	**Tamat SD**	**Belum Menikah**		
Prendi	**Anak**	**14**	**Tamat SD**	**Belum Menikah**		

254. Penghasilan dalam Sebulan : **450000**

255. Jam bekerja dalam sehari : **6 -9 jam**

256. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

257.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

258.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Lainnya	

259.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**13. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	
Bidan	**Ya**	**Memadai**
Klinik	**Tidak**	
Lainnya		

260.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Air sumur**
Air Mandi	**Air sumur**
Air Memasak	**Air sumur**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

261. Nama Responden : **Suratmi**

262.Jenis Kelamin : **Perempuan**

263. Umur : **65**

264. Agama : **Islam**

265. Suku : **Temanggung/Jawa**

266.Status Perkawinan : **Menikah**

267. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

268.Nama Kepala Keluarga : **Ruwadi**

269. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

270. Jarak Tempat Tinggal : **0-1 Km**

271.Transportasi : **Jalan kaki**

272.Jumlah Anggota Keluarga : **2**

273.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Ruwadi	**Kepala Keluarga**	**53**		**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Suratmi	**Istri**	**61**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

274. Penghasilan dalam Sebulan : **1800000**

275. Jam bekerja dalam sehari : **10 – 12 Jam**

276. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

277.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

278.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	
Lainnya	

279. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **KIS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**14. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Tidak**	
Lainnya		

280. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

281. Nama Responden : **Siyami**

282.Jenis Kelamin : **Perempuan**

283. Umur : **44**

284. Agama : **Islam**

285. Suku : **Jawa**

286.Status Perkawinan : **Menikah**

287. Pendidikan Formal : **Tamat SD**

288.Nama Kepala Keluarga : **Sain**

289. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Sanggrahan**

290. Jarak Tempat Tinggal : **0-1 Km**

291.Transportasi : **Jalan kaki**

292.Jumlah Anggota Keluarga : **3**

293.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sain	**Kepala Keluarga**	**46**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Siyami	**Istri**	**44**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Septi Fitria	**Anak**	**15**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	

294. Penghasilan dalam Sebulan : **600000**

295. Jam bekerja dalam sehari : **4-6 jam**

296. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

297.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga	**150000**	**1800000**
Sedekah		
Lainnya……		

298.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

299.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**15. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Cukup**
Puskesmas	**Ya**	**Cukup**
Pustu		
Posyandu	**Ya**	**Cukup**
Bidan	**Ya**	**Cukup**
Klinik		
Lainnya		

300.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

301. Nama Responden : **Kumpul dan Karsih**

302.Jenis Kelamin : **Laki-Laki**

303. Umur : **55**

304. Agama : **Islam**

305. Suku : **Jawa**

306.Status Perkawinan : **Menikah**

307. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

308.Nama Kepala Keluarga : **Kumpul**

309. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

310. Jarak Tempat Tinggal : **0-1 Km**

311.Transportasi : **Jalan kaki**

312.Jumlah Anggota Keluarga : **3**

313.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Kumpul	**Kepala Keluarga**	**55**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Lainnya**
Karsih	**Istri**	**49**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**
Jefri Dwi	**Anak**	**16**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	**Menyetir**

314. Penghasilan dalam Sebulan : **500000**

315. Jam bekerja dalam sehari : **6 -9 jam**

316. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

317.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……	**200000**	**2400000**

318.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Memadai**
Septitank	
Lainnya	

319.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**16. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Ya**	
Lainnya		

320.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

321. Nama Responden : **Sukoyo**

322.Jenis Kelamin : **Laki-Laki**

323. Umur : **46**

324. Agama : **Islam**

325. Suku : **Jawa**

326.Status Perkawinan : **Menikah**

327. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

328.Nama Kepala Keluarga : **Sukoyo**

329. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Sanggrahan**

330. Jarak Tempat Tinggal : **0-1 Km**

331.Transportasi : **Motor**

332.Jumlah Anggota Keluarga : **5**

333.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sukoyo	**Kepala Keluarga**	**46**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Mutiah	**Istri**	**45**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Arifin	**Anak**	**26**	**Tamat SMP/MTs**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**
Anang	**Anak**	**20**	**Tidak Sekolah/ Tidak Tamat SD**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Mekanik**
Aditya	**Anak**	**15**	**Tamat SD**	**Belum Menikah**	**Lainnya**	

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

334. Penghasilan dalam Sebulan : **3300000**

335. Jam bekerja dalam sehari : **10 – 12 Jam**

336. Penghasilan Usaha Sampingan :

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun (Freq)	Pendapatan per Tahun (Rp)
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

337.Penghasilan Lainnya :

Pendapatan Lain	Bulanan (Rp)	Tahun (Rp)
Kiriman dari keluarga		
Sedekah		
Lainnya……		

338.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

339. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **KIS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**17. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik		
Lainnya		

340. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

341. Nama Responden : **Juwariyah**

342.Jenis Kelamin : **Perempuan**

343. Umur : **60**

344. Agama : **Islam**

345. Suku : **Temanggung/Jawa**

346.Status Perkawinan : **Janda/Duda**

347. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

348.Nama Kepala Keluarga : **Juwariyah**

349. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

350. Jarak Tempat Tinggal : **0-1 Km**

351.Transportasi : **Jalan kaki**

352.Jumlah Anggota Keluarga : **3**

353.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Juwariyah	**Kepala Keluarga**	**60**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
B. Widodo	**Anak**	**24**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Ristanto	**Anak**	**20**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	

354. Penghasilan dalam Sebulan : **4800000**

355. Jam bekerja dalam sehari : **6 -9 jam**

356. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

357.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

358.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	
Lainnya	

359. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **KIS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**18. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik		
Lainnya		

360. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

361. Nama Responden : **Sarwidi**

362.Jenis Kelamin : **Laki-Laki**

363. Umur : **67**

364. Agama : **Islam**

365. Suku : **Jawa**

366.Status Perkawinan : **Menikah**

367. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

368.Nama Kepala Keluarga : **Sarwidi**

369. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

370. Jarak Tempat Tinggal : **0-1 Km**

371.Transportasi : **Motor**

372.Jumlah Anggota Keluarga : **2**

373.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sarwidi	**Kepala Keluarga**	**67**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**
Saroyah	**Istri**	**65**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**		

374. Penghasilan dalam Sebulan : **300000**

375. Jam bekerja dalam sehari : **6 -9 jam**

376. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

377.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

378.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	
Sumber Air Bersih	**Memadai**
Septitank	

FASILITTAS SANITASI	KONDISI (Jika Tersedia)
Lainnya	

379.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus : **Saroyah**

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	19. Ada / 2. Tidak ada	Kondisi
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	
Bidan	**Ya**	
Klinik	**Ya**	
Lainnya		

380.Fasilitas Layanan :

Sumber	Jawaban
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

381. Nama Responden : **Budiyani**

382.Jenis Kelamin : **Perempuan**

383. Umur : **39**

384. Agama : **Islam**

385. Suku : **Jawa**

386.Status Perkawinan : **Menikah**

387. Pendidikan Formal : **Tamat SD**

388.Nama Kepala Keluarga : **Sulisman**

389. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Sanggrahan**

390. Jarak Tempat Tinggal : **1-2 Km**

391.Transportasi : **Motor**

392.Jumlah Anggota Keluarga : **4**

393.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sulisman	**Kepala Keluarga**	**40**	**Tamat SMP/MTs**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Budiyani	**Istri**	**39**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Lukman Saefudin	**Anak**	**15**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	
Hudan Nurrokhman	**Anak**	**8**	**Tidak Sekolah/ Tidak Tamat SD**	**Belum Menikah**	**Lainnya**	

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

394. Penghasilan dalam Sebulan : **1110000**

395. Jam bekerja dalam sehari : **6 -9 jam**

396. Penghasilan Usaha Sampingan :

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun (Freq)	Pendapatan per Tahun (Rp)
Berdagang	**7**	**210000**		**2520000**
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

397.Penghasilan Lainnya :

Pendapatan Lain	Bulanan (Rp)	Tahun (Rp)
Kiriman dari keluarga		
Sedekah		
Lainnya……		

398.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Sangat Memadai**
Toilet	**Sangat Memadai**
Sumber Air Bersih	**Sangat Memadai**
Septitank	**Sangat Memadai**
Lainnya	

399. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**20. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik		
Lainnya		

400. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Air sumur**
Air Mandi	**Air sumur**
Air Memasak	**Air sumur**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

401. Nama Responden : **Sukarmi**

402.Jenis Kelamin : **Laki-Laki**

403. Umur : **65**

404. Agama : **Islam**

405. Suku : **Jawa**

406.Status Perkawinan : **Menikah**

407. Pendidikan Formal : **Tamat SD**

408.Nama Kepala Keluarga : **Madiyo**

409. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Pendowo**

410. Jarak Tempat Tinggal : **3-4 Km**

411.Transportasi : **Jalan kaki**

412.Jumlah Anggota Keluarga : **2**

413.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Madiyo	**Kepala Keluarga**	**67**	**Tamat SD**	**Menikah**	**Lainnya**	**Lainnya**
Sukarmi	**Istri**	**65**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**

414. Penghasilan dalam Sebulan : **2420833**

415. Jam bekerja dalam sehari : **6 -9 jam**

416. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang	**7**	**350000**	**365**	**18250000**
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

417.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

418.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Sangat Memadai**
Toilet	**Sangat Memadai**
Sumber Air Bersih	**Sangat Memadai**
Septitank	**Sangat Memadai**
Lainnya	

419. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**21. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Tidak**	
Puskesmas	**Ya**	**Cukup**
Pustu	**Tidak**	
Posyandu	**Ya**	**Cukup**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya		

420. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**Lainnya (Harap Sebutkan) - tidak punya**

Profil Rumah Tangga di wilayah Studi Temanggung

421. Nama Responden : **Mutina**

422.Jenis Kelamin : **Perempuan**

423. Umur : **50**

424. Agama : **Islam**

425. Suku : **Temanggung/Jawa**

426.Status Perkawinan : **Menikah**

427. Pendidikan Formal : **Tamat SD**

428.Nama Kepala Keluarga : **Mujilah**

429. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Tambaksari**

430. Jarak Tempat Tinggal : **0-1 Km**

431.Transportasi : **Jalan kaki**

432.Jumlah Anggota Keluarga : **2**

433.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Mujilah	**Kepala Keluarga**	**61**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Mutina	**Istri**	**50**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	

434. Penghasilan dalam Sebulan : **1750000**

435. Jam bekerja dalam sehari : **10 – 12 Jam**

436. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

437.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

438.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air :

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	
Lainnya	

439.Informasi Kesehatan :

a. Penyakit Kronis : **Ginjal**

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**22. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Cukup**
Pustu	**Tidak**	
Posyandu	**Ya**	
Bidan	**Tidak**	
Klinik		
Lainnya		

440.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

441. Nama Responden : **Rojiah**

442.Jenis Kelamin : **Perempuan**

443. Umur : **58**

444. Agama : **Islam**

445. Suku : **Jawa**

446.Status Perkawinan : **Janda/Duda**

447. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

448.Nama Kepala Keluarga : **Rojiah**

449. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

450. Jarak Tempat Tinggal : **0-1 Km**

451.Transportasi : **Jalan kaki**

452.Jumlah Anggota Keluarga : **2**

453.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Rojiah	**Kepala Keluarga**	**58**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**
Slamet	**Anak**	**34**	**Tamat SD**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**

454. Penghasilan dalam Sebulan : **300000**

455. Jam bekerja dalam sehari : **6 -9 jam**

456. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

457.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

458.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	
Lainnya	

459.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**23. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	
Klinik	**Ya**	
Lainnya		

460.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

461. Nama Responden : **Siri Kotijah**

462.Jenis Kelamin : **Perempuan**

463. Umur : **50**

464. Agama : **Islam**

465. Suku : **Jawa**

466.Status Perkawinan : **Menikah**

467. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

468.Nama Kepala Keluarga : **Suyadi**

469. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Gentan**

470. Jarak Tempat Tinggal : **2-3 Km**

471.Transportasi : **Jalan kaki**

472.Jumlah Anggota Keluarga : **3**

473.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Suyadi	**Kepala Keluarga**	**55**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Siti Kotijah	**Istri**	**50**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Faridatul Khasanah	**Anak**	**19**	**Tamat SD**	**Belum Menikah**		

474. Penghasilan dalam Sebulan : **400000**

475. Jam bekerja dalam sehari : **6 -9 jam**

476. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

477.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

478.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Lainnya (Harap Sebutkan) - Seng**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Air TPA**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	**Memadai**

479.Informasi Kesehatan :

a. Penyakit Kronis : **Suyadi dan Faridatul**

b. Kebutuhan Khusus : **Suyadi dan Faridatul**

c. Kartu Jaminan Kesehatan : **KIS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**24. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu		
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik		
Lainnya		

480.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

481. Nama Responden : **Sutini**

482.Jenis Kelamin : **Perempuan**

483. Umur : **56**

484. Agama : **Islam**

485. Suku : **Temanggung/Jawa**

486.Status Perkawinan : **Janda/Duda**

487. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

488.Nama Kepala Keluarga : **Sutini**

489. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

490. Jarak Tempat Tinggal : **0-1 Km**

491.Transportasi : **Jalan kaki**

492.Jumlah Anggota Keluarga : **1**

493.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sutini	**Kepala Keluarga**	**56**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

494. Penghasilan dalam Sebulan : **400000**

495. Jam bekerja dalam sehari : **6 -9 jam**

496. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

497. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

498. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	
Lainnya	

499.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**25. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	
Bidan	**Ya**	
Klinik	**Tidak**	
Lainnya		

500.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

501. Nama Responden : **Rubet**

502.Jenis Kelamin : **Perempuan**

503. Umur : **56**

504. Agama : **Islam**

505. Suku : **Jawa**

506.Status Perkawinan : **Janda/Duda**

507. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

508.Nama Kepala Keluarga : **Rubet**

509. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Tambaksari**

510. Jarak Tempat Tinggal : **0-1 Km**

511.Transportasi : **Jalan kaki**

512.Jumlah Anggota Keluarga : **3**

513.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Rubet	**Kepala Keluarga**	**56**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**
Miyanto	**Anak**	**25**	**Tamat SMP/MTs**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**
Budi Utomo	**Anak**	**18**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	

514. Penghasilan dalam Sebulan : **750000**

515. Jam bekerja dalam sehari : **6 -9 jam**

516. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

517.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

518.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Sangat Memadai**
Septitank	**Memadai**
Lainnya	

519.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**26. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	
Klinik	**Ya**	
Lainnya		

520.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

521. Nama Responden : **Bariyah**

522.Jenis Kelamin : **Perempuan**

523. Umur : **45**

524. Agama : **Islam**

525. Suku : **Jawa**

526.Status Perkawinan : **Menikah**

527. Pendidikan Formal : **Tamat SD**

528.Nama Kepala Keluarga : **Tunut**

529. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa)**

530. Jarak Tempat Tinggal : **0-1 Km**

531.Transportasi : **Jalan kaki**

532.Jumlah Anggota Keluarga : **3**

533.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Tunut	**Kepala Keluarga**	**43**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Petani (pemilik lahan)**	**Lainnya**
Bariyah	**Istri**	**45**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**
Lia Rahayu	**Anak**	**13**	**Tamat SD**	**Belum Menikah**		

534. Penghasilan dalam Sebulan : **800000**

535. Jam bekerja dalam sehari : **6 -9 jam**

536. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

537. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

538. Bangunan dalam TPA:

a. Jenis Bangunan :

b. Kondisi Bangunan :

c. Sumber Air :

d. Sumber Listrik :

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Kurang Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

539. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**27. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Tidak**	
Puskesmas	**Ya**	**Cukup**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Cukup**
Klinik	**Ya**	**Cukup**
Lainnya		

540. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

541. Nama Responden : **Winarti**

542.Jenis Kelamin : **Perempuan**

543. Umur : **45**

544. Agama : **Islam**

545. Suku : **Temanggung/Jawa**

546.Status Perkawinan : **Menikah**

547. Pendidikan Formal : **Tamat SD**

548.Nama Kepala Keluarga : **Rani Slamet**

549. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

550. Jarak Tempat Tinggal : **0-1 Km**

551.Transportasi : **Jalan kaki**

552.Jumlah Anggota Keluarga : **4**

553.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Rani Slamet	**Kepala Keluarga**	**50**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Winarti	**Istri**	**45**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**
Susanto	**Anak**	**23**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Rechan	**Anak**	**15**	**Tamat SMP/MTs**	**Belum Menikah**		

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

554. Penghasilan dalam Sebulan : **2700000**

555. Jam bekerja dalam sehari : **6 -9 jam**

556. Penghasilan Usaha Sampingan :

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun (Freq)	Pendapatan per Tahun (Rp)
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

557.Penghasilan Lainnya :

Pendapatan Lain	Bulanan (Rp)	Tahun (Rp)
Kiriman dari keluarga	**2000000**	**24000000**
Sedekah		
Lainnya……		

558.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

559. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**28. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Tidak**	
Lainnya		

560. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

561. Nama Responden : **Sarminah**

562.Jenis Kelamin : **Perempuan**

563. Umur : **73**

564. Agama : **Islam**

565. Suku : **Jawa**

566.Status Perkawinan : **Janda/Duda**

567. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

568.Nama Kepala Keluarga : **Sarminah**

569. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Temandang**

570. Jarak Tempat Tinggal : **0-1 Km**

571.Transportasi : **Jalan kaki**

572.Jumlah Anggota Keluarga : **1**

573.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sarminah	**Kepala Keluarga**	**73**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

574. Penghasilan dalam Sebulan : **300000**

575. Jam bekerja dalam sehari : **6 -9 jam**

576. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

577. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

578. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	
Sumber Air Bersih	**Sangat Memadai**
Septitank	
Lainnya	

579.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**29. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu		
Bidan		
Klinik		
Lainnya		

580.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Meminta tetangga**
Air Mandi	**Lainnya (Harap Sebutkan) - Meminta tetangga**
Air Memasak	**Lainnya (Harap Sebutkan) - Meminta tetangga**
Listrik	**Lainnya (Harap Sebutkan) - Menyambung saluran milik tetangga**

Profil Rumah Tangga di wilayah Studi Temanggung

581. Nama Responden : **Marsidah**

582.Jenis Kelamin : **Perempuan**

583. Umur : **60**

584. Agama : **Islam**

585. Suku : **Jawa**

586.Status Perkawinan : **Menikah**

587. Pendidikan Formal : **Tamat SD**

588.Nama Kepala Keluarga : **Suyoto**

589. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa)**

590. Jarak Tempat Tinggal : **0-1 Km**

591.Transportasi : **Jalan kaki**

592.Jumlah Anggota Keluarga : **3**

593.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Suyoto	**Kepala Keluarga**	**67**	**Tamat SD**	**Menikah**	**Petani (pemilik lahan)**	**Lainnya**
Marsidah	**Istri**	**60**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**
Kabul	**Anak**	**35**	**Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Lainnya**

594. Penghasilan dalam Sebulan : **550000**

595. Jam bekerja dalam sehari : **6 -9 jam**

596. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

597.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

598.Bangunan dalam TPA:

a. Jenis Bangunan :

b. Kondisi Bangunan :

c. Sumber Air :

d. Sumber Listrik :

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Lainnya	

599. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**30. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Tidak**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya	**Tidak**	

600. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

601. Nama Responden : **Siyami**

602.Jenis Kelamin : **Perempuan**

603. Umur : **46**

604. Agama : **Islam**

605. Suku : **Jawa**

606.Status Perkawinan : **Janda/Duda**

607. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

608.Nama Kepala Keluarga : **Siyami**

609. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

610. Jarak Tempat Tinggal : **0-1 Km**

611.Transportasi : **Jalan kaki**

612.Jumlah Anggota Keluarga : **1**

613.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Siyami	**Kepala Keluarga**	**46**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

614. Penghasilan dalam Sebulan : **600000**

615. Jam bekerja dalam sehari : **6 -9 jam**

616. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

617. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

618. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	
Lainnya	

619.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**31. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	
Pustu	**Tidak**	
Posyandu	**Ya**	
Bidan		
Klinik		
Lainnya		

620.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

621. Nama Responden : **Suranti**

622.Jenis Kelamin : **Perempuan**

623. Umur : **56**

624. Agama : **Islam**

625. Suku : **Temanggung/Jawa**

626.Status Perkawinan : **Menikah**

627. Pendidikan Formal : **Tamat SD**

628.Nama Kepala Keluarga : **Suyat**

629. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

630. Jarak Tempat Tinggal : **0-1 Km**

631.Transportasi : **Jalan kaki**

632.Jumlah Anggota Keluarga : **3**

633.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Suyat	**Kepala Keluarga**	**60**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Suranti	**Istri**	**56**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Daut	**Anak**	**17**	**Tamat SD**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	

634. Penghasilan dalam Sebulan : **2700000**

635. Jam bekerja dalam sehari : **6 -9 jam**

636. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya…… .				

637.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

638.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

639. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**32. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Tidak**	
Lainnya		

640. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

641. Nama Responden : **Sunarti**

642.Jenis Kelamin : **Perempuan**

643. Umur : **48**

644. Agama : **Islam**

645. Suku : **Jawa**

646.Status Perkawinan : **Menikah**

647. Pendidikan Formal : **Tamat SD**

648.Nama Kepala Keluarga : **Sela**

649. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa)**

650. Jarak Tempat Tinggal : **3-4 Km**

651.Transportasi : **Motor**

652.Jumlah Anggota Keluarga : **4**

653.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sela	**Kepala Keluarga**	**56**	**Tamat SD**	**Menikah**	**Lainnya**	
Sunarti	**Istri**	**48**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**
Muhammad Najib Nashirudin	**Anak**	**18**	**Tamat SMP/MTs**	**Belum Menikah**		
Yusuf Ali Nursam	**Anak**	**7**	**Tidak Sekolah/ Tidak Tamat SD**	**Belum Menikah**		

654. Penghasilan dalam Sebulan : **840000**

655. Jam bekerja dalam sehari : **6 -9 jam**

656. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

657. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

658. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	**Sangat Memadai**
Sumber Air Bersih	
Septitank	**Memadai**
Lainnya	

659.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**33. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Tidak**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik		
Lainnya		

660.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Air sumur**
Air Mandi	**Air sumur**
Air Memasak	**Air sumur**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

661. Nama Responden : **YATIN**

662.Jenis Kelamin : **Laki-Laki**

663. Umur : **59**

664. Agama : **Islam**

665. Suku : **JAWA**

666.Status Perkawinan : **Menikah**

667. Pendidikan Formal : **Tamat SMP/MTs**

668.Nama Kepala Keluarga : **YATIN**

669. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - KRAMAT**

670. Jarak Tempat Tinggal : **2-3 Km**

671.Transportasi : **Jalan kaki**

672.Jumlah Anggota Keluarga : **4**

673.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
YATIN	Kepala Keluarga	59	Tamat SMP/MTs	Menikah	Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)	
SARIYATUN	Istri	48	Tamat SMP/MTs	Menikah	Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)	
SRI LESTARI	Anak	20	Tamat SMP/MTs	Belum Menikah	Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)	
ARDIKA	Anak	8	Tidak Sekolah/ Tidak Tamat SD	Belum Menikah	Lainnya	

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

674. Penghasilan dalam Sebulan : **800000**

675. Jam bekerja dalam sehari : **6 -9 jam**

676. Penghasilan Usaha Sampingan :

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun (Freq)	Pendapatan per Tahun (Rp)
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

677.Penghasilan Lainnya :

Pendapatan Lain	Bulanan (Rp)	Tahun (Rp)
Kiriman dari keluarga		
Sedekah		
Lainnya……		

678.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

679. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**34. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya	**Tidak**	

680. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - MATA AIR**
Air Mandi	**Lainnya (Harap Sebutkan) - MATA AIR**
Air Memasak	**Lainnya (Harap Sebutkan) - MATA AIR**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

681. Nama Responden : **Sarikah**

682.Jenis Kelamin : **Perempuan**

683. Umur : **33**

684. Agama : **Islam**

685. Suku : **Jawa**

686.Status Perkawinan : **Menikah**

687. Pendidikan Formal : **Tamat SD**

688.Nama Kepala Keluarga : **Eko**

689. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

690. Jarak Tempat Tinggal : **0-1 Km**

691.Transportasi : **Jalan kaki**

692.Jumlah Anggota Keluarga : **4**

693.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Eko Anggoro	**Kepala Keluarga**	**38**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Pertukangan**
Sarikah	**Istri**	**33**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**
Devi Artiyani	**Anak**	**17**	**Tamat SD**	**Belum Menikah**	**Pedagang**	
Putra Aldynno	**Anak**	**7**	**Tidak Sekolah/ Tidak Tamat SD**	**Belum Menikah**		

694. Penghasilan dalam Sebulan : **1740000**

695. Jam bekerja dalam sehari : **6 -9 jam**

696. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

697.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

698.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Sangat Memadai**
Toilet	**Sangat Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**

FASILITTAS SANITASI	KONDISI (Jika Tersedia)
Lainnya	

699. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	35. Ada / 2. Tidak ada	Kondisi
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Ya**	**Memadai**
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Ya**	**Memadai**
Lainnya		

700. Fasilitas Layanan :

Sumber	Jawaban
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

701. Nama Responden : **Sri Sutirah**

702.Jenis Kelamin : **Perempuan**

703. Umur : **71**

704. Agama : **Islam**

705. Suku : **Jawa**

706.Status Perkawinan : **Janda/Duda**

707. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

708.Nama Kepala Keluarga : **Ari Yanto**

709. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Temandang**

710. Jarak Tempat Tinggal : **0-1 Km**

711.Transportasi : **Lainnya (Harap Sebutkan) - diantar pakai motor**

712.Jumlah Anggota Keluarga : **5**

713.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Ari Yanto	**Kepala Keluarga**	**36**	**Tamat SMP/MTs**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**
Sri Wahyuni	**Istri**	**33**	**Tamat SMP/MTs**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**
Airin	**Anak**	**12**		**Belum Menikah**		
Adzra	**Anak**	**3**		**Belum Menikah**		
Sri Sutirah	**Ibu**	**71**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

714. Penghasilan dalam Sebulan : **250000**

715. Jam bekerja dalam sehari : **6 -9 jam**

716. Penghasilan Usaha Sampingan :

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun (Freq)	Pendapatan per Tahun (Rp)
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

717.Penghasilan Lainnya :

Pendapatan Lain	Bulanan (Rp)	Tahun (Rp)
Kiriman dari keluarga	**50000**	
Sedekah		
Lainnya……		

718.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	
Toilet	
Sumber Air Bersih	**Memadai**
Septitank	
Lainnya	

719. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**36. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Ya**	
Lainnya		

720. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

721. Nama Responden : **Ispadi**

722.Jenis Kelamin : **Laki-Laki**

723. Umur : **65**

724. Agama : **Islam**

725. Suku : **Temanggung/Jawa**

726.Status Perkawinan : **Menikah**

727. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

728.Nama Kepala Keluarga : **Ispadi**

729. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Temandang**

730. Jarak Tempat Tinggal : **1-2 Km**

731.Transportasi : **Jalan kaki**

732.Jumlah Anggota Keluarga : **2**

733.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Ispadi	**Kepala Keluarga**	**65**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Marsinah	**Istri**	**50**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

734. Penghasilan dalam Sebulan : **750000**

735. Jam bekerja dalam sehari : **6 -9 jam**

736. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

737.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

738.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan :

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	**Memadai**
Lainnya	

739.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**37. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	
Pustu	**Tidak**	
Posyandu	**Ya**	
Bidan	**Ya**	
Klinik	**Tidak**	
Lainnya		

740.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

741. Nama Responden : **Yamini**

742.Jenis Kelamin : **Perempuan**

743. Umur : **42**

744. Agama : **Islam**

745. Suku : **Jawa**

746.Status Perkawinan : **Menikah**

747. Pendidikan Formal : **Tamat SD**

748.Nama Kepala Keluarga : **Iswoyo**

749. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Temandang**

750. Jarak Tempat Tinggal : **1-2 Km**

751.Transportasi : **Motor**

752.Jumlah Anggota Keluarga : **4**

753.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Iswoyo	**Kepala Keluarga**	**45**	**Tamat SD**	**Menikah**	**Lainnya**	**Pertukangan**
Yamini	**Istri**	**42**	**Tamat SD**	**Menikah**	**Lainnya**	**Memasak**
Tasya Ramadani	**Anak**	**13**	**Tamat SD**	**Belum Menikah**		**Memasak**
Sherly Nur Aisah Ramadani	**Anak**	**4**	**Tidak Sekolah/ Tidak Tamat SD**	**Belum Menikah**		

754. Penghasilan dalam Sebulan : **1500000**

755. Jam bekerja dalam sehari : **6 -9 jam**

756. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

757. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

758. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

759.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**38. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Ya**	**Memadai**
Lainnya		

760.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Air sumur**
Air Mandi	**Air sumur**
Air Memasak	**Air sumur**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

761. Nama Responden : **Samini**

762.Jenis Kelamin : **Perempuan**

763. Umur : **70**

764. Agama : **Islam**

765. Suku : **Jawa**

766.Status Perkawinan : **Janda/Duda**

767. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

768.Nama Kepala Keluarga : **Samini**

769. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Temandang**

770. Jarak Tempat Tinggal : **1-2 Km**

771.Transportasi : **Jalan kaki**

772.Jumlah Anggota Keluarga : **1**

773.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Samini	**Kepala Keluarga**	**70**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**

774. Penghasilan dalam Sebulan : **250000**

775. Jam bekerja dalam sehari : **6 -9 jam**

776. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

777. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

778. Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Lainnya (Harap Sebutkan) - Mengambil di kantor UPT**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	**Memadai**

779.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**39. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Cukup**
Puskesmas	**Ya**	**Cukup**
Pustu	**Tidak**	
Posyandu	**Ya**	**Cukup**
Bidan	**Ya**	**Cukup**
Klinik	**Ya**	
Lainnya		

780.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

781. Nama Responden : **TUMINI**

782.Jenis Kelamin : **Perempuan**

783. Umur : **50**

784. Agama : **Islam**

785. Suku : **JAWA**

786.Status Perkawinan : **Menikah**

787. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

788.Nama Kepala Keluarga : **GIMAN**

789. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - SANGGRAHAN**

790. Jarak Tempat Tinggal : **0-1 Km**

791.Transportasi : **Jalan kaki**

792.Jumlah Anggota Keluarga : **2**

793.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
GIMAN	**Kepala Keluarga**	**60**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Lainnya**	
TUMINI	**Istri**	**50**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	

794. Penghasilan dalam Sebulan : **280000**

795. Jam bekerja dalam sehari : **4-6 jam**

796. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

797.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

798.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Lainnya	

799. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**40. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Ya**	**Memadai**
Lainnya	**Tidak**	

800. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

801. Nama Responden : **Samini**

802.Jenis Kelamin : **Perempuan**

803. Umur : **46**

804. Agama : **Islam**

805. Suku : **Temanggung/Jawa**

806.Status Perkawinan : **Janda/Duda**

807. Pendidikan Formal : **Tamat SD**

808.Nama Kepala Keluarga : **Samini**

809. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Tambaksari**

810. Jarak Tempat Tinggal :

811.Transportasi : **Jalan kaki**

812.Jumlah Anggota Keluarga : **3**

813.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Samini	**Kepala Keluarga**	**46**	**Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Hanifa	**Anak**	**24**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Prihatini	**Anak**	**16**	**Tamat SMP/MTs**	**Belum Menikah**		

814. Penghasilan dalam Sebulan : **250000**

815. Jam bekerja dalam sehari : **6 -9 jam**

816. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

817.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

818.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan :

c. Sumber Air :

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

819.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**41. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Tidak**	
Bidan	**Ya**	
Klinik	**Tidak**	
Lainnya		

820.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Mandi	**Lainnya (Harap Sebutkan) - Pamsimas**
Air Memasak	**Lainnya (Harap Sebutkan) - Pamsimas**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

821. Nama Responden : **SUKIR**

822.Jenis Kelamin : **Laki-Laki**

823. Umur : **60**

824. Agama : **Islam**

825. Suku : **JAWA**

826.Status Perkawinan : **Menikah**

827. Pendidikan Formal : **Tamat SD**

828.Nama Kepala Keluarga : **SUKIR**

829. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - SANGGRAHAN**

830. Jarak Tempat Tinggal : **1-2 Km**

831.Transportasi : **Motor**

832.Jumlah Anggota Keluarga : **4**

833.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
SUKIR	**Kepala Keluarga**	**60**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
MARYATI	**Istri**	**58**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
GUNADI	**Anak**	**19**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
YULIANA	**Anak**	**17**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

834. Penghasilan dalam Sebulan : **600000**

835. Jam bekerja dalam sehari : **6 -9 jam**

836. Penghasilan Usaha Sampingan :

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun (Freq)	Pendapatan per Tahun (Rp)
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

837.Penghasilan Lainnya :

Pendapatan Lain	Bulanan (Rp)	Tahun (Rp)
Kiriman dari keluarga		
Sedekah		
Lainnya……		

838.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

839.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**42. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya	**Tidak**	

840.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

841. Nama Responden : **Tumarni**

842.Jenis Kelamin : **Perempuan**

843. Umur : **43**

844. Agama : **Lainnya (Harap Sebutkan)**

845. Suku : **Temanggung/Jawa**

846.Status Perkawinan : **Menikah**

847. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

848.Nama Kepala Keluarga : **Sulaman**

849. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - Losari**

850. Jarak Tempat Tinggal : **0-1 Km**

851.Transportasi : **Jalan kaki**

852.Jumlah Anggota Keluarga : **3**

853.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Sulaman	**Kepala Keluarga**	**45**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Tumarni	**Istri**	**43**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
Vigo	**Anak**	**11**	**Tamat SD**	**Belum Menikah**		

854. Penghasilan dalam Sebulan : **800000**

855. Jam bekerja dalam sehari : **6 -9 jam**

856. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

857.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

858.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

859.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**43. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya		

860.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Air sumur**
Air Mandi	**Air sumur**
Air Memasak	**Air sumur**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

861. Nama Responden : **DAHYONO**

862.Jenis Kelamin : **Laki-Laki**

863. Umur : **52**

864. Agama : **Islam**

865. Suku : **JAWA**

866.Status Perkawinan : **Menikah**

867. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

868.Nama Kepala Keluarga : **DAHYONO**

869. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - SANGGRAHAN**

870. Jarak Tempat Tinggal : **0-1 Km**

871.Transportasi : **Jalan kaki**

872.Jumlah Anggota Keluarga : **4**

873.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
DAHYONO	**Kepala Keluarga**	**52**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
URIP	**Istri**	**50**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
ARIYANTO	**Anak**	**22**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
DIKA	**Anak**	**18**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

874. Penghasilan dalam Sebulan : **600000**

875. Jam bekerja dalam sehari : **6 -9 jam**

876. Penghasilan Usaha Sampingan :

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun (Freq)	Pendapatan per Tahun (Rp)
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

877.Penghasilan Lainnya :

Pendapatan Lain	Bulanan (Rp)	Tahun (Rp)
Kiriman dari keluarga		
Sedekah		
Lainnya……		

878.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

879.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **Tidak Ada**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**44. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya		

880.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

881. Nama Responden : **IMBUH**

882.Jenis Kelamin : **Laki-Laki**

883. Umur : **42**

884. Agama : **Islam**

885. Suku : **JAWA**

886.Status Perkawinan : **Menikah**

887. Pendidikan Formal : **Tamat SD**

888.Nama Kepala Keluarga : **IMBUH**

889. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - SANGGRAHAN**

890. Jarak Tempat Tinggal : **0-1 Km**

891.Transportasi : **Jalan kaki**

892.Jumlah Anggota Keluarga : **4**

893.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
IMBUH	**Kepala Keluarga**	**42**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
URIP	**Istri**	**45**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
FEBRI A	**Anak**	**18**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	
SUMINI	**Nenek**	**80**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Lainnya**	

894. Penghasilan dalam Sebulan : **1200000**

895. Jam bekerja dalam sehari : **10 – 12 Jam**

896. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……				

897.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

898.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**
Septitank	**Memadai**
Lainnya	

899. Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**45. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya		

900. Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

901. Nama Responden : **SUGITO**

902.Jenis Kelamin : **Laki-Laki**

903. Umur : **80**

904. Agama : **Islam**

905. Suku : **JAWA**

906.Status Perkawinan :

907. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

908.Nama Kepala Keluarga : **SUGITO**

909. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - SANGGRAHAN**

910. Jarak Tempat Tinggal : **0-1 Km**

911.Transportasi : **Jalan kaki**

912.Jumlah Anggota Keluarga : **2**

913.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
SUGITO	**Kepala Keluarga**	**80**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
SAIMAH	**Istri**	**75**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	

914. Penghasilan dalam Sebulan : **240000**

915. Jam bekerja dalam sehari : **4-6 jam**

916. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

917.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

918.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	**Memadai**
Lainnya	

919.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**46. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Tidak**	
Klinik	**Tidak**	
Lainnya		

920.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Mandi	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Air Memasak	**Lainnya (Harap Sebutkan) - PAMSIMAS**
Listrik	**PLN**

Profil Rumah Tangga di wilayah Studi Temanggung

921. Nama Responden : **ROMLAH**

922.Jenis Kelamin : **Perempuan**

923. Umur : **55**

924. Agama : **Islam**

925. Suku : **JAWA**

926.Status Perkawinan : **Menikah**

927. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**

928.Nama Kepala Keluarga : **ROMLAH**

929. Tempat Tinggal : **Di luar lokasi proyek (sebutkan nama desa) - PENDOWO**

930. Jarak Tempat Tinggal : **3-4 Km**

931.Transportasi : **Jalan kaki**

932.Jumlah Anggota Keluarga : **2**

933.Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
ROMLAH	**Kepala Keluarga**	**55**	**Tidak Sekolah/ Tidak Tamat SD**	**Janda/Duda**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	
WAHYUS	**Anak**	**24**	**Tamat SMA/SMK/MA**	**Belum Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	

934. Penghasilan dalam Sebulan : **580000**

935. Jam bekerja dalam sehari : **6 -9 jam**

936. Penghasilan Usaha Sampingan :

Kegiatan	**Jumlah Hari per Minggu**	**Pendapatan per Minggu (Rp)**	**Kegiatan dalam Setahun (Freq)**	**Pendapatan per Tahun (Rp)**
Berdagang				
Buruh				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				
Lainnya……..				

937.Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

938.Bangunan dalam TPA:

a. Jenis Bangunan : **Gubuk penyimpanan**

b. Kondisi Bangunan : **Gedek/bilik bambu**

c. Sumber Air : **Tidak Ada**

d. Sumber Listrik : **Tidak Ada**

e. Fasilitas Sanitasi :

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Kamar Mandi	**Memadai**
Toilet	**Memadai**
Sumber Air Bersih	**Memadai**

FASILITTAS SANITASI	**KONDISI (Jika Tersedia)**
Septitank	**Memadai**
Lainnya	

939.Informasi Kesehatan :

a. Penyakit Kronis :

b. Kebutuhan Khusus :

c. Kartu Jaminan Kesehatan : **BPJS**

d. Fasilitas Kesehatan :

Fasilitas Kesehatan	**47. Ada / 2. Tidak ada**	**Kondisi**
Rumah sakit	**Ya**	**Memadai**
Puskesmas	**Ya**	**Memadai**
Pustu	**Tidak**	
Posyandu	**Ya**	**Memadai**
Bidan	**Ya**	**Memadai**
Klinik	**Tidak**	
Lainnya		

940.Fasilitas Layanan :

Sumber	**Jawaban**
Air Minum	**Air sumur**
Air Mandi	**Air sumur**
Air Memasak	**Air sumur**
Listrik	**PLN**

2 WASTE COLLECTOR HOUSEHOLD PROFILE

Profil Rumah Tangga di wilayah Studi Temanggung

Info Responden

1. Nama Responden : **Pujiono**
2. Jenis Kelamin : **Laki-Laki**
3. Umur : **47**
4. Agama : **Islam**
5. Suku : **Temanggung/Jawa**
6. Status Perkawinan : **Menikah**
7. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**
8. Pendidikan Non Formal :**Tidak Ada**
9. Sebutkan Jika Ada :
10. Nama Kepala Keluarga : **Pujiono**
11. Tempat Tinggal : **Di luar lokasi proyek (Sebutkan Nama Desa) - Losari**
12. Apakah Pengepul Pekerjaan Utama : **Iya**

Info KK

1. Jumlah Anggota Keluarga : **3**
2. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Pujiono	**Kepala Keluarga**	**47**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Menyetir**
Mulasih	**Istri**	**44**	**Tamat SD**	**Menikah**	**Buruh (termasuk buruh tani, tukang batu, pembantu rumah tangga)**	**Memasak**
Deni Septia	**Anak**	**16**	**Tamat SMP/MTs**	**Belum Menikah**	**Lainnya**	

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

3. Keluarga Penyakit Kronis : **-**
4. Pengalaman Menjadi Pengepul (Tahun) **: 2017**
5. Berapa kali bekerja dalam seminggu bapak tidak bekerja: **1 kali**
6. Penerimaan sampah dari tempat lain : **TPA dan tempat lain, Sebutkan - orang setor**
7. Pemulung yang ikut bekerja :
8. Kapan saja penjualan barang dilakukan (freq) : Kali dalam Seminggu dan **8** kali dalam sebulan
9. Kendaraan Operasional : **Kendaraan Sendir**

10. Pengeluaran Pengepul :

No	Jenis Pengeluaran	Jumlah	Biaya	Total
1	Tenaga kerja sortir barang	5	100	500000
2	Tenaga kerja kupas barang			
3	Tenaga kerja merapikan barang			
4	Tenaga kerja cuci barang			
5	Supir	1	150000	150000
6	Angkutan barang	2	35000	70000
7	Lainnya 1			
8	Lainnya 2			
9	Lainnya 3			
10	Lainnya 4			

11. Jumlah Tenaga Kerja : **8**

12. Penghasilan Per Bulan **: 4500000**

13. Penghasilan dari mengepul :

Jenis Barang	Jumlah (kg)	Harga Beli per Kg (Rp)	Harga Jual per Kg (Rp)	Nilai Penjualan (Rp/kg)
Plastik	1000	300	1500	2250000
Kardus	500	1000	1400	700000
Kertas	500	400	850	200000
Campuran	600	1300	2000	1000000

14. Penghasilan selain sebagai pengepul (bila ada)

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun	Pendapatan per Tahun (Rp)
Berdagang				

Buruh				
Petani				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir				

15. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……		

Bangunan dalam TPA

16. Bangunan dalam TPA:

    a. Apakah anda memiliki bangunan dalam TPA : **Tidak**

    b. Tahun Mendirikan :

    c. Kondisi Bangunan :

    d. Sumber Air :

    e. Sumber Listrik :

Persepsi dan Pengetahuan

1. Mengetahui Pembangunan TPST :**Tidak**
2. Sumber Informasi :
3. Tanggapan TPST : **Mendukung**
4. Kekhawatiran TPST : **Tidak**
5. Kondisi Lingkungan Saat Ini : **Nyaman**
6. Harapan : **Tetap mendapatkan pemasukan dari pemulung di TPA**

Profil Rumah Tangga di wilayah Studi Temanggung

Info Responden

13. Nama Responden : **Bambang**
14. Jenis Kelamin : **Laki-Laki**
15. Umur : **59**
16. Agama : **Islam**
17. Suku : **Jawa**
18. Status Perkawinan : **Menikah**
19. Pendidikan Formal : **Tamat SMA/SMK/MA**
20. Pendidikan Non Formal :**Tidak Ada**
21. Sebutkan Jika Ada :
22. Nama Kepala Keluarga : **Bambang**
23. Tempat Tinggal : **Di luar lokasi proyek (Sebutkan Nama Desa) - Pendowo**
24. Apakah Pengepul Pekerjaan Utama : **Tidak, Sebutkan Pekerjaan Utama Ibu - Perangkat**

Info KK

17. Jumlah Anggota Keluarga : **4**
18. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Bambang	**Kepala Keluarga**	**59**	**Tamat SMA/SMK/MA**	**Menikah**	**Lainnya**	**Menyetir**
Siti Roqiyah	**Istri**	**57**	**Tamat SMA/SMK/MA**	**Menikah**	**Pedagang**	**Memasak**
Edo	**Anak**	**26**	**Tamat S1/ Perguruan Tinggi**	**Belum Menikah**		
Safa	**Anak**	**15**	**Tamat SMP/MTs**	**Belum Menikah**		

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*

19. Keluarga Penyakit Kronis : **-**
20. Pengalaman Menjadi Pengepul (Tahun) **: 1995**
21. Berapa kali bekerja dalam seminggu bapak tidak bekerja: **0 kali**
22. Penerimaan sampah dari tempat lain : **Hanya dar TPA ini**
23. Pemulung yang ikut bekerja :
24. Kapan saja penjualan barang dilakukan (freq) : **1** Kali dalam Seminggu dan **4** kali dalam sebulan
25. Kendaraan Operasional : **Kendaraan Sendir**

26. Pengeluaran Pengepul :

No	Jenis Pengeluaran	Jumlah	Biaya	Total
1	Tenaga kerja sortir barang	3	210000	630000
2	Tenaga kerja kupas barang			
3	Tenaga kerja merapikan barang			
4	Tenaga kerja cuci barang			
5	Supir			
6	Angkutan barang			
7	Lainnya 1			
8	Lainnya 2			
9	Lainnya 3			
10	Lainnya 4			

27. Jumlah Tenaga Kerja : **3**

28. Penghasilan Per Bulan **: 5500000**

29. Penghasilan dari mengepul :

Jenis Barang	Jumlah (kg)	Harga Beli per Kg (Rp)	Harga Jual per Kg (Rp)	Nilai Penjualan (Rp/kg)
Plastik	200	400	700	140000
Kardus	50	600	800	40000
Kertas	200	300	500	100000
Kaleng	10	3000	5000	50000
Botol bekas	200	1300	2000	400000

30. Penghasilan selain sebagai pengepul (bila ada)

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun	Pendapatan per Tahun (Rp)
Berdagang				

Buruh				
Petani				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan				
Supir	7			2500000

31. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga	**1000000**	**12000000**
Sedekah		
Lainnya……		

Bangunan dalam TPA

32. Bangunan dalam TPA:

    a. Apakah anda memiliki bangunan dalam TPA : **Tidak**

    b. Tahun Mendirikan :

    c. Kondisi Bangunan :

    d. Sumber Air :

    e. Sumber Listrik :

Persepsi dan Pengetahuan

7. Mengetahui Pembangunan TPST :**Ya**

8. Sumber Informasi : **DLH atau UPT**

9. Tanggapan TPST : **Tidak mendukung**

10. Kekhawatiran TPST : **Ya (Harap Sebutkan) - Ppemulung susah mencari rezeki**

11. Kondisi Lingkungan Saat Ini : **Nyaman**

12. Harapan : **Harapannya TPA jangan diolah**

Profil Rumah Tangga di wilayah Studi Temanggung

Info Responden

25. Nama Responden : **Budi**
26. Jenis Kelamin : **Laki-Laki**
27. Umur : **44**
28. Agama : **Islam**
29. Suku : **Jawa**
30. Status Perkawinan : **Menikah**
31. Pendidikan Formal : **Tidak Sekolah/ Tidak Tamat SD**
32. Pendidikan Non Formal :**Tidak Ada**
33. Sebutkan Jika Ada :
34. Nama Kepala Keluarga : **Budi**
35. Tempat Tinggal : **Di luar lokasi proyek (Sebutkan Nama Desa) - Losari**
36. Apakah Pengepul Pekerjaan Utama : **Iya**

Info KK

33. Jumlah Anggota Keluarga : **4**
34. Susunan Anggota Keluarga

Nama	Hubungan Keluarga	Umur	Pendidikan Terakhir	Status Perkawinan	Jenis Pekerjaan	Jenis Keahlian yang DImiliki*
Budi	**Kepala Keluarga**	**44**	**Tidak Sekolah/ Tidak Tamat SD**	**Menikah**	**Lainnya**	**Menyetir**
Harni	**Istri**	**43**	**Tamat SMA/SMK/MA**	**Menikah**	**Lainnya**	
Andi	**Anak**	**22**	**Tidak Sekolah/ Tidak Tamat SD**	**Belum Menikah**		
Frendi	**Anak**	**13**		**Belum Menikah**		

35. Keluarga Penyakit Kronis : **-**
36. Pengalaman Menjadi Pengepul (Tahun) **: 2015**
37. Berapa kali bekerja dalam seminggu bapak tidak bekerja: **1 kali**
38. Penerimaan sampah dari tempat lain : **TPA dan tempat lain, Sebutkan - TPS Wonosobo**
39. Pemulung yang ikut bekerja :
40. Kapan saja penjualan barang dilakukan (freq) : **1** Kali dalam Seminggu dan **4** kali dalam sebulan
41. Kendaraan Operasional : **Kendaraan Sendir**

42. Pengeluaran Pengepul :

No	Jenis Pengeluaran	Jumlah	Biaya	Total
1	Tenaga kerja sortir barang	1		
2	Tenaga kerja kupas barang			
3	Tenaga kerja merapikan barang			
4	Tenaga kerja cuci barang			
5	Supir			
6	Angkutan barang			
7	Lainnya 1			
8	Lainnya 2			
9	Lainnya 3			
10	Lainnya 4			

43. Jumlah Tenaga Kerja : **1**

44. Penghasilan Per Bulan **: 4000000**

45. Penghasilan dari mengepul :

Jenis Barang	Jumlah (kg)	Harga Beli per Kg (Rp)	Harga Jual per Kg (Rp)	Nilai Penjualan (Rp/kg)
Plastik daun	1600	600	1100	500000
Plastik emberan	800	1400	2000	600000
Kertas / duplek	1000	350	700	350000
Kardus	300	800	1300	500000
Kaleng	30	2500	3200	700000

46. Penghasilan selain sebagai pengepul (bila ada)

Kegiatan	Jumlah Hari per Minggu	Pendapatan per Minggu (Rp)	Kegiatan dalam Setahun	Pendapatan per Tahun (Rp)
Berdagang				
Buruh				

Petani				
Asisten rumah tangga				
Bengkel/montir				
Tukang kayu/batu				
Kerajinan	3	500000		24000000
Supir				

47. Penghasilan Lainnya :

Pendapatan Lain	**Bulanan (Rp)**	**Tahun (Rp)**
Kiriman dari keluarga		
Sedekah		
Lainnya……	**2000000**	**24000000**

Bangunan dalam TPA

48. Bangunan dalam TPA:

    a. Apakah anda memiliki bangunan dalam TPA : **Tidak**

    b. Tahun Mendirikan :

    c. Kondisi Bangunan :

    d. Sumber Air :

    e. Sumber Listrik :

Persepsi dan Pengetahuan

13. Mengetahui Pembangunan TPST :**Ya**

14. Sumber Informasi : **Lainnya (Harap Sebutkan) - Pemulung**

15. Tanggapan TPST : **Mendukung**

16. Kekhawatiran TPST : **Tidak**

17. Kondisi Lingkungan Saat Ini : **Nyaman**

18. Harapan : **Tidak memiliki harapan**

Appendix I Secondary Data for Temanggung

Environmental Baseline

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan :
18244316

Nama Pelanggan :

TPA Temanggung

Nama Pemohon :
-

Tanggal :
26 Agustus 2024

Disahkan Oleh
Nama : Leni Marliani, ST.P
Jabatan : Manajer Teknis

Laporan ini dibuat berdasarkan hasil observasi yang objektif dan independen terhadap sampel pelanggan yang bersifat khusus dan rahasia. Data hasil pengujian, interpretasi, dan pendapat-pendapat yang ada di dalamnya mewakili penilaian terbaik dari PT Global Quality Analitical. PT Global Quality Analitical tidak membuat jaminan secara tersirat maupun tersurat dan tidak bertanggung jawab terhadap produktivitas, kegiatan operasional, ataupun kerugian lainnya yang bersifat material maupun imaterial. Laporan ini tidak diperbolehkan untuk digandakan, kecuali secara utuh keseluruhannya dan atas persetujuan tertulis dari PT Global Quality Analitical.

INFORMASI CONTOH UJI

Nomor Pekerjaan : 18244316
Nama Pelanggan : TPA Temanggung
Nama Pemohon : -
Tanggal Dilaporkan : 26 Agustus 2024

ID Sampel Laboratorium	Identitas Contoh Uji	Matriks	Tanggal Pengambilan	Waktu Pengambilan	Tanggal Penerimaan	Waktu Analisis
18244316-1	AQ-1 Area TPA Sanggrahan	Udara Ambien	5-Agu-24	10:10	12-Agu-24	12 Agu - 26 Agu
18244316-2	AQ-2 Pemukiman Dusun Losari	Udara Ambien	6-Agu-24	09:30	12-Agu-24	12 Agu - 26 Agu
18244316-3	AQ-3 Pemukiman Dusun Temandang 2	Udara Ambien	7-Agu-24	10:00	12-Agu-24	12 Agu - 26 Agu
18244316-4	AQ-4 Pemukiman Dusun Tegal Ombo	Udara Ambien	8-Agu-24	10:30	12-Agu-24	12 Agu - 26 Agu
18244316-5	SW-1 Hulu Sungai TPA	Air Sungai	7-Agu-24	15:41	12-Agu-24	12 Agu - 26 Agu
18244316-6	SW-2 Sungai Dekat Outlet IPAL	Air Sungai	8-Agu-24	15:10	12-Agu-24	12 Agu - 26 Agu
18244316-7	SW-3 Sungai Setelah Outlet IPAL	Air Sungai	8-Agu-24	15:25	12-Agu-24	12 Agu - 26 Agu
18244316-8	SW-4 Hilir Sungai TPA	Air Sungai	7-Agu-24	14:32	12-Agu-24	12 Agu - 26 Agu
18244316-9	GW-1 Pemukiman Dusun Temandang 2	Air Bersih	7-Agu-24	10:35	12-Agu-24	12 Agu - 26 Agu
18244316-10	GW-2 Sumur Pantau Barat	Air Bersih	8-Agu-24	13:35	12-Agu-24	12 Agu - 26 Agu
18244316-11	GW-3 Pemukiman Dusun Tegal Ombo	Air Bersih	7-Agu-24	13:55	12-Agu-24	12 Agu - 26 Agu
18244316-12	GW-4 Sumur Pantau Timur	Air Bersih	8-Agu-24	16:15	12-Agu-24	12 Agu - 26 Agu
18244316-13	LD-1 Inlet Lindi	Air Limbah	8-Agu-24	14:12	12-Agu-24	12 Agu - 26 Agu
18244316-14	LD-2 Outlet Lindi	Air Limbah	8-Agu-24	13:56	12-Agu-24	12 Agu - 26 Agu
18244316-15	LD-3 Aliran Lindi	Air Limbah	8-Agu-24	14:30	12-Agu-24	12 Agu - 26 Agu
18244316-16	LD-4 Gorong-Gorong TPA	Air Limbah	8-Agu-24	14:38	12-Agu-24	12 Agu - 26 Agu
18244316-17	SQ-1 Perkebunan Depan TPA	Tanah	7-Agu-24	13:32	12-Agu-24	12 Agu - 26 Agu
18244316-18	SQ-2 Dekat IPAL	Tanah	8-Agu-24	14:55	12-Agu-24	12 Agu - 26 Agu
18244316-19	SQ-3 Jembatan Hulu Sungai TPA	Tanah	7-Agu-24	16:09	12-Agu-24	12 Agu - 26 Agu
18244316-20	SQ-4 Persawahan Hilir Sungai TPA	Tanah	7-Agu-24	15:10	12-Agu-24	12 Agu - 26 Agu
18244316-21	K-1 Area TPA Sanggrahan	Kebisingan	05 Agu - 07 Agu 24	-	12-Agu-24	12 Agu - 26 Agu
18244316-22	K-2 Pemukiman Dusun Losari	Kebisingan	05 Agu - 07 Agu 24	-	12-Agu-24	12 Agu - 26 Agu
18244316-23	K-3 Pemukiman Dusun Temandang 2	Kebisingan	07 Agu - 09 Agu 24	-	12-Agu-24	12 Agu - 26 Agu
18244316-24	K-4 Pemukiman Dusun Tegal Ombo	Kebisingan	07 Agu - 09 Agu 24	-	12-Agu-24	12 Agu - 26 Agu
18244316-25	SW-1 Hulu Sungai TPA	Biota	7-Agu-24	15:41	12-Agu-24	12 Agu - 26 Agu
18244316-26	SW-2 Sungai Dekat Outlet IPAL	Biota	8-Agu-24	15:10	12-Agu-24	12 Agu - 26 Agu
18244316-27	SW-3 Sungai Setelah Outlet IPAL	Biota	8-Agu-24	15:25	12-Agu-24	12 Agu - 26 Agu
18244316-28	SW-4 Hilir Sungai TPA	Biota	7-Agu-24	14:32	12-Agu-24	12 Agu - 26 Agu
18244316-29	UK-1 Area TPA Sanggrahan	Kebauan	5-Agu-24	10:10	12-Agu-24	12 Agu - 26 Agu
18244316-30	UK-2 Pemukiman Dusun Losari	Kebauan	6-Agu-24	09:30	12-Agu-24	12 Agu - 26 Agu
18244316-31	UK-3 Pemukiman Dusun Temandang 2	Kebauan	7-Agu-24	10:00	12-Agu-24	12 Agu - 26 Agu
18244316-32	UK-4 Pemukiman Dusun Tegal Ombo	Kebauan	8-Agu-24	10:30	12-Agu-24	12 Agu - 26 Agu
18244316-33	G-1 Area TPA Sanggrahan	Getaran	6-Agu-24	08:13	12-Agu-24	12 Agu - 26 Agu
18244316-34	G-2 Pemukiman Dusun Losari	Getaran	7-Agu-24	08:35	12-Agu-24	12 Agu - 26 Agu
18244316-35	G-3 Pemukiman Dusun Temandang 2	Getaran	9-Agu-24	08:50	12-Agu-24	12 Agu - 26 Agu
18244316-36	G-4 Pemukiman Dusun Tegal Ombo	Getaran	8-Agu-25	08:05	12-Agu-24	12 Agu - 26 Agu

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 38.9"
		BT	: 110° 13' 38.0"
Identitas Contoh Uji	: **AQ-1 Area TPA Sanggrahan**		
Tanggal Pengambilan	: 5-Agu-24	ID Sampel Laboratorium	: 18244316-1
Waktu Pengambilan	: 10:10	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Udara Ambien	Waktu Analisis	: 12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	WAKTU SAMPLING	REGULASI**	SATUAN	METODE
	Kualitas Udara Ambien:						
1	Sulfur Dioksida, SO_2*	< 20	< 20	1 Jam	150/1H	µg/Nm^3	SNI 7119-7:2017
2	Karbon Monoksida, CO	< 185	2821	1 Jam	10000/1H	µg/Nm^3	6.4-IK-GQA-040
3	Nitrogen Diksida, NO_2*	< 13	42.2	1 Jam	200/1H	µg/Nm^3	SNI 7119-2:2017
4	Oksidan, O_3*	< 12	18.4	1 Jam	150/1H	µg/Nm^3	SNI 7119-8:2017
5	Total Partikel Tersuspensi, TSP*	-	74.2	24 Jam	230/24H	µg/Nm^3	SNI 7119-3:2017
6	Timbal, Pb*	< 0.01	< 0.01	24 Jam	2/24H	µg/Nm^3	SNI 7119-4:2017
7	Non Metana Hidrokarbon, NMHC	< 5.23	< 5.23	3 Jam	160/3H	µg/Nm^3	SNI 7119.13:2009
8	Partikel < 10 µm, PM10*	-	28.3	24 Jam	75/24H	µg/Nm^3	SNI 7119.15:2016
9	Partikel < 2.5 µm, PM2.5*	-	19.5	24 Jam	55/24H	µg/Nm^3	SNI 7119.14:2016

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No. 22/2021 Lampiran VII Tentang Baku Mutu Udara Ambien.

- Sampling oksidan dilakukan 2 x 30 menit menggunakan larutan penjerap yang berbeda

- Sampling dilakukan sesuai metode SNI 19.7119.6-2005

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

DATA METEOROLOGI			
NO	DEKSRIPSI	HASIL	SATUAN
1	Temperature	31.2	°C
2	Kelembaban	48.0	%
3	Kecepatan Angin Minimum	0.1	m/s
4	Kecepatan Angin Maksimum	1.5	m/s
5	Arah Angin	Timur	-
6	Tekanan	757	mmHg

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 31.9"
		BT	: 110° 13' 47.8"
Identitas Contoh Uji	: **AQ-2 Pemukiman Dusun Losari**		
Tanggal Pengambilan	: 6-Agu-24	ID Sampel Laboratorium	: 18244316-2
Waktu Pengambilan	: 09:30	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Udara Ambien	Waktu Analisis	: 12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	WAKTU SAMPLING	REGULASI**	SATUAN	METODE
	Kualitas Udara Ambien:						
1	Sulfur Dioksida, SO_2*	< 20	< 20	1 Jam	150/1H	µg/Nm^3	SNI 7119-7:2017
2	Karbon Monoksida, CO	< 185	277	1 Jam	10000/1H	µg/Nm^3	6.4-IK-GQA-040
3	Nitrogen Diksida, NO_2*	< 13	18.6	1 Jam	200/1H	µg/Nm^3	SNI 7119-2:2017
4	Oksidan, O_3*	< 12	20.4	1 Jam	150/1H	µg/Nm^3	SNI 7119-8:2017
5	Total Partikel Tersuspensi, TSP*	-	76.5	24 Jam	230/24H	µg/Nm^3	SNI 7119-3:2017
6	Timbal, Pb*	< 0.01	< 0.01	24 Jam	2/24H	µg/Nm^3	SNI 7119-4:2017
7	Non Metana Hidrokarbon, NMHC	< 5.23	< 5.23	3 Jam	160/3H	µg/Nm^3	SNI 7119.13:2009
8	Partikel < 10 µm, PM10*	-	20.4	24 Jam	75/24H	µg/Nm^3	SNI 7119.15:2016
9	Partikel < 2.5 µm, PM2.5*	-	13.2	24 Jam	55/24H	µg/Nm^3	SNI 7119.14:2016

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No. 22/2021 Lampiran VII Tentang Baku Mutu Udara Ambien.

- Sampling oksidan dilakukan 2 x 30 menit menggunakan larutan penjerap yang berbeda

- Sampling dilakukan sesuai metode SNI 19.7119.6-2005

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

DATA METEOROLOGI			
NO	**DEKSRIPSI**	**HASIL**	**SATUAN**
1	Temperature	30.3	°C
2	Kelembaban	62.1	%
3	Kecepatan Angin Minimum	0.1	m/s
4	Kecepatan Angin Maksimum	1.3	m/s
5	Arah Angin	Selatan	-
6	Tekanan	757	mmHg

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 55.0"
		BT	: 110° 13' 28.6"
Identitas Contoh Uji	: **AQ-3 Pemukiman Dusun Temandang 2**		
Tanggal Pengambilan	: 7-Agu-24	ID Sampel Laboratorium	: 18244316-3
Waktu Pengambilan	: 10:00	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Udara Ambien	Waktu Analisis	: 12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	WAKTU SAMPLING	REGULASI**	SATUAN	METODE
	Kualitas Udara Ambien:						
1	Sulfur Dioksida, SO_2*	< 20	< 20	1 Jam	150/1H	µg/Nm^3	SNI 7119-7:2017
2	Karbon Monoksida, CO	< 185	1022	1 Jam	10000/1H	µg/Nm^3	6.4-IK-GQA-040
3	Nitrogen Diksida, NO_2*	< 13	28.5	1 Jam	200/1H	µg/Nm^3	SNI 7119-2:2017
4	Oksidan, O_3*	< 12	19.6	1 Jam	150/1H	µg/Nm^3	SNI 7119-8:2017
5	Total Partikel Tersuspensi, TSP*	-	57.6	24 Jam	230/24H	µg/Nm^3	SNI 7119-3:2017
6	Timbal, Pb*	< 0.01	< 0.01	24 Jam	2/24H	µg/Nm^3	SNI 7119-4:2017
7	Non Metana Hidrokarbon, NMHC	< 5.23	< 5.23	3 Jam	160/3H	µg/Nm^3	SNI 7119.13:2009
8	Partikel < 10 µm, PM10*	-	19.4	24 Jam	75/24H	µg/Nm^3	SNI 7119.15:2016
9	Partikel < 2.5 µm, PM2.5*	-	10.3	24 Jam	55/24H	µg/Nm^3	SNI 7119.14:2016

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No. 22/2021 Lampiran VII Tentang Baku Mutu Udara Ambien.

- Sampling oksidan dilakukan 2 x 30 menit menggunakan larutan penjerap yang berbeda

- Sampling dilakukan sesuai metode SNI 19.7119.6-2005

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

DATA METEOROLOGI			
NO	**DEKSRIPSI**	**HASIL**	**SATUAN**
1	Temperature	32.5	°C
2	Kelembaban	50.3	%
3	Kecepatan Angin Minimum	0.1	m/s
4	Kecepatan Angin Maksimum	0.8	m/s
5	Arah Angin	Timur	-
6	Tekanan	756.5	mmHg

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 32.9"
		BT	: 110° 13' 19.7"
Identitas Contoh Uji	: **AQ-4 Pemukiman Dusun Tegal Ombo**		
Tanggal Pengambilan	: 8-Agu-24	ID Sampel Laboratorium	: 18244316-4
Waktu Pengambilan	: 10:30	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Udara Ambien	Waktu Analisis	: 12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	WAKTU SAMPLING	REGULASI**	SATUAN	METODE
	Kualitas Udara Ambien:						
1	Sulfur Dioksida, SO_2*	< 20	26.0	1 Jam	150/1H	µg/Nm^3	SNI 7119-7:2017
2	Karbon Monoksida, CO	< 185	< 185	1 Jam	10000/1H	µg/Nm^3	6.4-IK-GQA-040
3	Nitrogen Diksida, NO_2*	< 13	47.3	1 Jam	200/1H	µg/Nm^3	SNI 7119-2:2017
4	Oksidan, O_3*	< 12	30.5	1 Jam	150/1H	µg/Nm^3	SNI 7119-8:2017
5	Total Partikel Tersuspensi, TSP*	-	83.1	24 Jam	230/24H	µg/Nm^3	SNI 7119-3:2017
6	Timbal, Pb*	< 0.01	< 0.01	24 Jam	2/24H	µg/Nm^3	SNI 7119-4:2017
7	Non Metana Hidrokarbon, NMHC	< 5.23	< 5.23	3 Jam	160/3H	µg/Nm^3	SNI 7119.13:2009
8	Partikel < 10 µm, PM10*	-	28.4	24 Jam	75/24H	µg/Nm^3	SNI 7119.15:2016
9	Partikel < 2.5 µm, PM2.5*	-	18.5	24 Jam	55/24H	µg/Nm^3	SNI 7119.14:2016

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No. 22/2021 Lampiran VII Tentang Baku Mutu Udara Ambien.

- Sampling oksidan dilakukan 2 x 30 menit menggunakan larutan penjerap yang berbeda

- Sampling dilakukan sesuai metode SNI 19.7119.6-2005

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

DATA METEOROLOGI			
NO	DEKSRIPSI	HASIL	SATUAN
1	Temperature	31.2	°C
2	Kelembaban	58.2	%
3	Kecepatan Angin Minimum	0.1	m/s
4	Kecepatan Angin Maksimum	0.4	m/s
5	Arah Angin	Timur	-
6	Tekanan	756.5	mmHg

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.3"
			BT	:	110° 13' 35.9"
Identitas Contoh Uji	:	**SW-1 Hulu Sungai TPA**			
Tanggal Pengambilan	:	7-Agu-24	ID Sampel Laboratorium	:	18244316-5
Waktu Pengambilan	:	15:41	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Sungai	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI**				SATUAN	METODE
				Kelas I	Kelas II	Kelas III	Kelas IV		
I	**FISIKA**								
1	Temperature•*	-	30.0	deviasi 3	deviasi 3	deviasi 3	deviasi 3	-	6.4/IK/GQA/003
2	Total Padatan Terlarut, TDS*	< 2	129	1000	1000	1000	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS*	< 2	16	40	50	100	400	mg/L	SNI 6989.3:2019
4	Warna	< 1.2	3.0	15	50	100	-	Pt-Co Unit	7.2/IK/GQA/WQ/046
5	Debit	-	0.023	-	-	-	-	m^3/detik	PENGUKURAN
6	Sampah	-	N/A	None	None	None	None	-	6.4/IK/GQA/036
II	**KIMIA**								
1	pH•*	-	6.9	6 - 9	6 - 9	6 - 9	6 - 9	-	SNI 6989.11:2019
2	Kebutuhan Oksigen Biologi, BOD_5*	< 0.4	1.2	2	3	6	12	mg/L	SNI 6989.72:2009
3	Kebutuhan Oksigen Kimia, COD*	< 1.6	3.82	10	25	40	80	mg/L	SNI 6989.2:2019
4	Oksigen Terlarut, DO•*	-	4.6	6	4	3	1	mg/L	6.4/IK/GQA/015
5	Total Posfat, sebagai P*	< 0.02	0.036	0.2	0.2	1	-	mg/L	7.2/IK/GQA/WQ/062
6	Nitrogen, Nitrat sebagai N (NO_3-N)*	< 0.004	1.2	10	10	20	20	mg/L	7.2/IK/GQA/WQ/043
7	Amonia, NH_3-N*	< 0.017	0.036	0.1	0.2	0.5	-	mg/L	SNI 06-6989.30-2005
8	Boron, B*	< 0.07	0.080	1	1	1	1	mg/L	7.2/IK/GQA/WQ/060
9	Krom Heksavalen, Cr^{6+}*	< 0.003	0.003	0.05	0.05	0.05	1	mg/L	ASTM D1687-86 Vol. 11.01
10	Klorida, Cl^-*	< 0.3	26.9	300	300	300	600	mg/L	SNI 6989.19:2009
11	Sianida, CN*	< 0.001	< 0.001	0.02	0.02	0.02	-	mg/L	7.2/IK/GQA/WQ/058
12	Florida, F^-*	< 0.014	0.045	1	1.5	1.5	-	mg/L	SNI 06-6989.29-2005
13	Total Nitrogen	< 0.1	1.5	15	15	25	-	mg/L	7.2/IK/GQA/WQ/064
14	Nitrogen, Nitrit sebagai N (NO_2-N)*	< 0.002	0.0050	0.06	0.06	0.06	-	mg/L	SNI 06-6989.9-2004
15	Sulfat, SO_4^{2-}*	< 0.14	20.8	300	300	300	400	mg/L	SNI 6989.20:2019
16	Klorin Bebas, Cl_2*	< 0.01	0.028	0.03	0.03	0.03	-	mg/L	7.2/IK/GQA/WQ/044
17	Hidrogen Sulfida, H_2S*	< 0.001	0.0016	0.002	0.002	0.002	-	mg/L	SNI 6989.70:2009
18	Minyak dan Lemak	< 0.6	< 0.6	1	1	1	10	mg/L	SNI 6989.10-2011
19	Senyawa aktif biru metilen (MBAS)*	< 0.006	0.029	0.2	0.2	0.2	-	mg/L	SNI 06-6989.51-2005
20	Fenol, C_6H_5OH	< 0.001	< 0.001	0.002	0.005	0.01	0.02	mg/L	7.2/IK/GQA/WQ/045
III	**LOGAM**								
1	Arsen, As Terlarut*	< 0.0002	0.00028	0.05	0.05	0.05	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
2	Kobal, Co Terlarut*	< 0.02	< 0.02	0.2	0.2	0.2	0.2	mg/L	SNI 6989.68:2009 (AAS)
3	Barium, Ba Terlarut*	< 0.277	< 0.277	1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	< 0.0002	0.01	0.05	0.05	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
5	Kadmium Cd Terlarut	< 0.002	< 0.002	0.01	0.01	0.01	0.01	mg/L	SNI 6989.84:2019 (AAS)
6	Tembaga, Cu Terlarut*	< 0.006	< 0.006	0.02	0.02	0.02	0.2	mg/L	SNI 6989.84:2019 (AAS)
7	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.03	0.03	0.03	0.5	mg/L	SNI 6989.84:2019 (AAS
9	Mangan, Mn Terlarut	< 0.007	< 0.007	0.1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
10	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	0.002	0.002	0.005	mg/L	SNI 6989-78:2019 (MA)
11	Seng, Zn Terlarut*	< 0.004	< 0.004	0.05	0.05	0.05	2	mg/L	SNI 6989.84:2019 (AAS)
12	Nikel, Ni Terlarut	< 0.022	< 0.022	0.05	0.05	0.05	0.1	mg/L	SNI 6989.84:2019 (AAS)
IV	**MIKROBIOLOGI**								
1	Koliform Total*	< 1.8	210	1000	5000	10000	10000	MPN/100 mL	APHA 9221B ed 23rd
2	Fecal Koliform*	< 1.8	94	100	1000	2000	2000	MPN/100 mL	APHA 9221E ed 23rd

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No.22 Tahun 2021 Lampiran VI.I Tentang Baku Mutu Air Sungai.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 36.35"
			BT	:	110° 13' 31.45"
Identitas Contoh Uji	:	**SW-2 Sungai Dekat Outlet IPAL**			
Tanggal Pengambilan	:	8-Agu-24	ID Sampel Laboratorium	:	18244316-6
Waktu Pengambilan	:	15:10	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Sungai	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI**				SATUAN	METODE
				Kelas I	Kelas II	Kelas III	Kelas IV		
I	**FISIKA**								
1	Temperature•*	-	30.8	deviasi 3	deviasi 3	deviasi 3	deviasi 3	-	6.4/IK/GQA/003
2	Total Padatan Terlarut, TDS*	< 2	142	1000	1000	1000	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS*	< 2	22	40	50	100	400	mg/L	SNI 6989.3:2019
4	Warna	< 1.2	5.0	15	50	100	-	Pt-Co Unit	7.2/IK/GQA/WQ/046
5	Debit	-	0.012	-	-	-	-	m^3/detik	PENGUKURAN
6	Sampah	-	N/A	None	None	None	None	-	6.4/IK/GQA/036
II	**KIMIA**								
1	pH•*	-	7.2	6 - 9	6 - 9	6 - 9	6 - 9	-	SNI 6989.11:2019
2	Kebutuhan Oksigen Biologi, BOD_5*	< 0.4	2.9	2	3	6	12	mg/L	SNI 6989.72:2009
3	Kebutuhan Oksigen Kimia, COD*	< 1.6	5.22	10	25	40	80	mg/L	SNI 6989.2:2019
4	Oksigen Terlarut, DO•*	-	4.3	6	4	3	1	mg/L	6.4/IK/GQA/015
5	Total Posfat, sebagai P*	< 0.02	0.059	0.2	0.2	1	-	mg/L	7.2/IK/GQA/WQ/062
6	Nitrogen, Nitrat sebagai N (NO_3-N)*	< 0.004	1.5	10	10	20	20	mg/L	7.2/IK/GQA/WQ/043
7	Amonia, NH_3-N*	< 0.017	0.059	0.1	0.2	0.5	-	mg/L	SNI 06-6989.30-2005
8	Boron, B*	< 0.07	0.10	1	1	1	1	mg/L	7.2/IK/GQA/WQ/060
9	Krom Heksavalen, Cr^{6+}*	< 0.003	0.005	0.05	0.05	0.05	1	mg/L	ASTM D1687-86 Vol. 11.01
10	Klorida, Cl^-*	< 0.3	34.9	300	300	300	600	mg/L	SNI 6989.19:2009
11	Sianida, CN*	< 0.001	0.0016	0.02	0.02	0.02	-	mg/L	7.2/IK/GQA/WQ/058
12	Florida, F^-*	< 0.014	0.069	1	1.5	1.5	-	mg/L	SNI 06-6989.29-2005
13	Total Nitrogen	< 0.1	1.8	15	15	25	-	mg/L	7.2/IK/GQA/WQ/064
14	Nitrogen, Nitrit sebagai N (NO_2-N)*	< 0.002	0.0030	0.06	0.06	0.06	-	mg/L	SNI 06-6989.9-2004
15	Sulfat, SO_4^{2-}*	< 0.14	35.6	300	300	300	400	mg/L	SNI 6989.20:2019
16	Klorin Bebas, Cl_2*	< 0.01	0.030	0.03	0.03	0.03	-	mg/L	7.2/IK/GQA/WQ/044
17	Hidrogen Sulfida, H_2S*	< 0.001	0.0016	0.002	0.002	0.002	-	mg/L	SNI 6989.70:2009
18	Minyak dan Lemak	< 0.6	< 0.6	1	1	1	10	mg/L	SNI 6989.10-2011
19	Senyawa aktif biru metilen (MBAS)*	< 0.006	0.040	0.2	0.2	0.2	-	mg/L	SNI 06-6989.51-2005
20	Fenol, C_6H_5OH	< 0.001	< 0.001	0.002	0.005	0.01	0.02	mg/L	7.2/IK/GQA/WQ/045
III	**LOGAM**								
1	Arsen, As Terlarut*	< 0.0002	0.00033	0.05	0.05	0.05	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
2	Kobal, Co Terlarut*	< 0.02	< 0.02	0.2	0.2	0.2	0.2	mg/L	SNI 6989.68:2009 (AAS)
3	Barium, Ba Terlarut*	< 0.277	< 0.277	1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	< 0.0002	0.01	0.05	0.05	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
5	Kadmium Cd Terlarut	< 0.002	< 0.002	0.01	0.01	0.01	0.01	mg/L	SNI 6989.84:2019 (AAS)
6	Tembaga, Cu Terlarut*	< 0.006	< 0.006	0.02	0.02	0.02	0.2	mg/L	SNI 6989.84:2019 (AAS)
7	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.03	0.03	0.03	0.5	mg/L	SNI 6989.84:2019 (AAS
9	Mangan, Mn Terlarut	< 0.007	< 0.007	0.1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
10	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	0.002	0.002	0.005	mg/L	SNI 6989-78:2019 (MA)
11	Seng, Zn Terlarut*	< 0.004	< 0.004	0.05	0.05	0.05	2	mg/L	SNI 6989.84:2019 (AAS)
12	Nikel, Ni Terlarut	< 0.022	< 0.022	0.05	0.05	0.05	0.1	mg/L	SNI 6989.84:2019 (AAS)
IV	**MIKROBIOLOGI**								
1	Koliform Total*	< 1.8	350	1000	5000	10000	10000	MPN/100 mL	APHA 9221B ed 23rd
2	Fecal Koliform*	< 1.8	170	100	1000	2000	2000	MPN/100 mL	APHA 9221E ed 23rd

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No.22 Tahun 2021 Lampiran VI.I Tentang Baku Mutu Air Sungai.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 36.50"
			BT	:	110° 13' 30.88"
Identitas Contoh Uji	:	**SW-3 Sungai Setelah Outlet IPAL**			
Tanggal Pengambilan	:	8-Agu-24	ID Sampel Laboratorium	:	18244316-7
Waktu Pengambilan	:	15:25	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Sungai	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI**				SATUAN	METODE
				Kelas I	Kelas II	Kelas III	Kelas IV		
I	**FISIKA**								
1	Temperature•*	-	30.2	deviasi 3	deviasi 3	deviasi 3	deviasi 3	-	6.4/IK/GQA/003
2	Total Padatan Terlarut, TDS*	< 2	155	1000	1000	1000	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS*	< 2	28	40	50	100	400	mg/L	SNI 6989.3:2019
4	Warna	< 1.2	6.0	15	50	100	-	Pt-Co Unit	7.2/IK/GQA/WQ/046
5	Debit	-	0.016	-	-	-	-	m^3/detik	PENGUKURAN
6	Sampah	-	N/A	None	None	None	None	-	6.4/IK/GQA/036
II	**KIMIA**								
1	pH•*	-	7.2	6 - 9	6 - 9	6 - 9	6 - 9	-	SNI 6989.11:2019
2	Kebutuhan Oksigen Biologi, BOD_5*	< 0.4	2.4	2	3	6	12	mg/L	SNI 6989.72:2009
3	Kebutuhan Oksigen Kimia, COD*	< 1.6	7.2	10	25	40	80	mg/L	SNI 6989.2:2019
4	Oksigen Terlarut, DO•*	-	4.1	6	4	3	1	mg/L	6.4/IK/GQA/015
5	Total Posfat, sebagai P*	< 0.02	0.072	0.2	0.2	1	-	mg/L	7.2/IK/GQA/WQ/062
6	Nitrogen, Nitrat sebagai N (NO_3-N)*	< 0.004	1.8	10	10	20	20	mg/L	7.2/IK/GQA/WQ/043
7	Amonia, NH_3-N*	< 0.017	0.089	0.1	0.2	0.5	-	mg/L	SNI 06-6989.30-2005
8	Boron, B*	< 0.07	0.15	1	1	1	1	mg/L	7.2/IK/GQA/WQ/060
9	Krom Heksavalen, Cr^{6+}*	< 0.003	0.010	0.05	0.05	0.05	1	mg/L	ASTM D1687-86 Vol. 11.01
10	Klorida, Cl^-*	< 0.3	60.8	300	300	300	600	mg/L	SNI 6989.19:2009
11	Sianida, CN*	< 0.001	0.0018	0.02	0.02	0.02	-	mg/L	7.2/IK/GQA/WQ/058
12	Florida, F^-*	< 0.014	0.088	1	1.5	1.5	-	mg/L	SNI 06-6989.29-2005
13	Total Nitrogen	< 0.1	2.2	15	15	25	-	mg/L	7.2/IK/GQA/WQ/064
14	Nitrogen, Nitrit sebagai N (NO_2-N)*	< 0.002	0.0020	0.06	0.06	0.06	-	mg/L	SNI 06-6989.9-2004
15	Sulfat, SO_4^{2-}*	< 0.14	28.9	300	300	300	400	mg/L	SNI 6989.20:2019
16	Klorin Bebas, Cl_2*	< 0.01	0.032	0.03	0.03	0.03	-	mg/L	7.2/IK/GQA/WQ/044
17	Hidrogen Sulfida, H_2S*	< 0.001	0.0013	0.002	0.002	0.002	-	mg/L	SNI 6989.70:2009
18	Minyak dan Lemak	< 0.6	< 0.6	1	1	1	10	mg/L	SNI 6989.10-2011
19	Senyawa aktif biru metilen (MBAS)*	< 0.006	0.029	0.2	0.2	0.2	-	mg/L	SNI 06-6989.51-2005
20	Fenol, C_6H_5OH	< 0.001	< 0.001	0.002	0.005	0.01	0.02	mg/L	7.2/IK/GQA/WQ/045
III	**LOGAM**								
1	Arsen, As Terlarut*	< 0.0002	0.00029	0.05	0.05	0.05	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
2	Kobal, Co Terlarut*	< 0.02	0.020	0.2	0.2	0.2	0.2	mg/L	SNI 6989.68:2009 (AAS)
3	Barium, Ba Terlarut*	< 0.277	< 0.277	1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	0.00023	0.01	0.05	0.05	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
5	Kadmium Cd Terlarut	< 0.002	< 0.002	0.01	0.01	0.01	0.01	mg/L	SNI 6989.84:2019 (AAS)
6	Tembaga, Cu Terlarut*	< 0.006	< 0.006	0.02	0.02	0.02	0.2	mg/L	SNI 6989.84:2019 (AAS)
7	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.03	0.03	0.03	0.5	mg/L	SNI 6989.84:2019 (AAS
9	Mangan, Mn Terlarut	< 0.007	< 0.007	0.1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
10	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	0.002	0.002	0.005	mg/L	SNI 6989-78:2019 (MA)
11	Seng, Zn Terlarut*	< 0.004	< 0.004	0.05	0.05	0.05	2	mg/L	SNI 6989.84:2019 (AAS)
12	Nikel, Ni Terlarut	< 0.022	< 0.022	0.05	0.05	0.05	0.1	mg/L	SNI 6989.84:2019 (AAS)
IV	**MIKROBIOLOGI**								
1	Koliform Total*	< 1.8	480	1000	5000	10000	10000	MPN/100 mL	APHA 9221B ed 23rd
2	Fecal Koliform*	< 1.8	220	100	1000	2000	2000	MPN/100 mL	APHA 9221E ed 23rd

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No.22 Tahun 2021 Lampiran VI.I Tentang Baku Mutu Air Sungai.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
				LS :	07° 19' 41.8"
				BT :	110° 13' 18.2"
Identitas Contoh Uji	:	**SW-4 Hilir Sungai TPA**			
Tanggal Pengambilan	:	7-Agu-24	ID Sampel Laboratorium	:	18244316-8
Waktu Pengambilan	:	14:32	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Sungai	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI**				SATUAN	METODE
				Kelas I	Kelas II	Kelas III	Kelas IV		
I	**FISIKA**								
1	Temperature•*	-	29.2	deviasi 3	deviasi 3	deviasi 3	deviasi 3	-	6.4/IK/GQA/003
2	Total Padatan Terlarut, TDS*	< 2	134	1000	1000	1000	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS*	< 2	20	40	50	100	400	mg/L	SNI 6989.3:2019
4	Warna	< 1.2	4.0	15	50	100	-	Pt-Co Unit	7.2/IK/GQA/WQ/046
5	Debit	-	0.025	-	-	-	-	m^3/detik	PENGUKURAN
5	Sampah	-	N/A	None	None	None	None	-	6.4/IK/GQA/036
II	**KIMIA**								
1	pH•*	-	7.6	6 - 9	6 - 9	6 - 9	6 - 9	-	SNI 6989.11:2019
2	Kebutuhan Oksigen Biologi, BOD_5*	< 0.4	1.9	2	3	6	12	mg/L	SNI 6989.72:2009
3	Kebutuhan Oksigen Kimia, COD*	< 1.6	6.3	10	25	40	80	mg/L	SNI 6989.2:2019
4	Oksigen Terlarut, DO•*	-	4.0	6	4	3	1	mg/L	6.4/IK/GQA/015
5	Total Posfat, sebagai P*	< 0.02	0.090	0.2	0.2	1	-	mg/L	7.2/IK/GQA/WQ/062
6	Nitrogen, Nitrat sebagai N (NO_3-N)*	< 0.004	2.0	10	10	20	20	mg/L	7.2/IK/GQA/WQ/043
7	Amonia, NH_3-N*	< 0.017	0.10	0.1	0.2	0.5	-	mg/L	SNI 06-6989.30-2005
8	Boron, B*	< 0.07	0.16	1	1	1	1	mg/L	7.2/IK/GQA/WQ/060
9	Krom Heksavalen, Cr^{6+}*	< 0.003	0.012	0.05	0.05	0.05	1	mg/L	ASTM D1687-86 Vol. 11.01
10	Klorida, Cl^-*	< 0.3	49.6	300	300	300	600	mg/L	SNI 6989.19:2009
11	Sianida, CN*	< 0.001	0.0013	0.02	0.02	0.02	-	mg/L	7.2/IK/GQA/WQ/058
12	Florida, F^-*	< 0.014	0.060	1	1.5	1.5	-	mg/L	SNI 06-6989.29-2005
13	Total Nitrogen	< 0.1	2.9	15	15	25	-	mg/L	7.2/IK/GQA/WQ/064
14	Nitrogen, Nitrit sebagai N (NO_2-N)*	< 0.002	0.0028	0.06	0.06	0.06	-	mg/L	SNI 06-6989.9-2004
15	Sulfat, SO_4^{2-}*	< 0.14	39.2	300	300	300	400	mg/L	SNI 6989.20:2019
16	Klorin Bebas, Cl_2*	< 0.01	0.041	0.03	0.03	0.03	-	mg/L	7.2/IK/GQA/WQ/044
17	Hidrogen Sulfida, H_2S*	< 0.001	0.0015	0.002	0.002	0.002	-	mg/L	SNI 6989.70:2009
18	Minyak dan Lemak	< 0.6	< 0.6	1	1	1	10	mg/L	SNI 6989.10-2011
19	Senyawa aktif biru metilen (MBAS)*	< 0.006	0.051	0.2	0.2	0.2	-	mg/L	SNI 06-6989.51-2005
20	Fenol, C_6H_5OH	< 0.001	< 0.001	0.002	0.005	0.01	0.02	mg/L	7.2/IK/GQA/WQ/045
III	**LOGAM**								
1	Arsen, As Terlarut*	< 0.0002	0.00036	0.05	0.05	0.05	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
2	Kobal, Co Terlarut*	< 0.02	0.026	0.2	0.2	0.2	0.2	mg/L	SNI 6989.68:2009 (AAS)
3	Barium, Ba Terlarut*	< 0.277	< 0.277	1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	< 0.0002	0.01	0.05	0.05	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
5	Kadmium Cd Terlarut	< 0.002	< 0.002	0.01	0.01	0.01	0.01	mg/L	SNI 6989.84:2019 (AAS)
6	Tembaga, Cu Terlarut*	< 0.006	< 0.006	0.02	0.02	0.02	0.2	mg/L	SNI 6989.84:2019 (AAS)
7	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.03	0.03	0.03	0.5	mg/L	SNI 6989.84:2019 (AAS
9	Mangan, Mn Terlarut	< 0.007	< 0.007	0.1	-	-	-	mg/L	SNI 6989.84:2019 (AAS)
10	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	0.002	0.002	0.005	mg/L	SNI 6989-78:2019 (MA)
11	Seng, Zn Terlarut*	< 0.004	< 0.004	0.05	0.05	0.05	2	mg/L	SNI 6989.84:2019 (AAS)
12	Nikel, Ni Terlarut	< 0.022	< 0.022	0.05	0.05	0.05	0.1	mg/L	SNI 6989.84:2019 (AAS)
IV	**MIKROBIOLOGI**								
1	Koliform Total*	< 1.8	580	1000	5000	10000	10000	MPN/100 mL	APHA 9221B ed 23rd
2	Fecal Koliform*	< 1.8	310	100	1000	2000	2000	MPN/100 mL	APHA 9221E ed 23rd

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Pemerintah Republik Indonesia No.22 Tahun 2021 Lampiran VI.I Tentang Baku Mutu Air Sungai.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
				LS :	07° 19' 53.56"
				BT :	110° 13' 28.93"
Identitas Contoh Uji	:	**GW-1 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	7-Agu-24	ID Sampel Laboratorium	:	18244316-9
Waktu Pengambilan	:	10:35	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Bersih	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI	SATUAN	METODE
I	**FISIKA**					
1	Bau	-	Tidak berbau	Tidak berbau	-	Organoleptik
2	Warna*	< 1.2	2	15	TCU	7.2/IK/GQA/WQ/046
3	Total Padatan Terlarut, TDS*	< 2	60	500	mg/L	SNI 6989.27:2019
4	Kekeruhan*	< 0.1	0.45	5	NTU	6.4/IK/GQA/027
5	Rasa	-	N/A	Tidak berasa	-	Organoleptik
6	Temperature•*	-	28.9	Suhu udara ± 3	-	SNI 06-6989.23:2005
II	**KIMIA***					
1	pH•	-	6.9	6.5 - 8.5	-	SNI 6989.11:2019
2	Florida, F^-	< 0.014	0.025	1.5	mg/L	SNI 06-6989.29-2005
3	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.010	10	mg/L	7.2/IK/GQA/WQ/043
4	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.0050	1	mg/L	SNI 06-6989.9-2004
5	Krom, Heksavalen, Cr^{6+}	< 0.003	< 0.003	0.05	mg/L	7.2/IK/GQA/WQ/098
6	Sianida, CN	< 0.001	0.0016	0.1	mg/L	7.2/IK/GQA/WQ/058
7	Kesadahan Total sebagai $CaCO_3$	< 3.6	9.56	500	mg/L	SNI 06-6989.29-2005
8	Sulfat, SO_4^{2-}	< 0.140	20.6	400	mg/L	SNI 6989.20:2019
9	Klorida, Cl^-	< 0.3	8.56	-	mg/L	SNI 06-6989.22-2004
10	Hidrogen Sulfida, H_2S	< 0.001	< 0.001	-	mg/L	SNI 06-6989.51-2005
III	**LOGAM**					
1	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	mg/L	SNI 6989-78:2019
2	Arsen, As Terlarut*	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-81-2018
3	Kadmium, Cd Terlarut	< 0.002	< 0.002	0.005	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	< 0.0002	0.01	mg/L	SNI 6989-83:2018 (Hydrid)
5	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	mg/L	SNI 6989.84:2019 (AAS)
6	Mangan, Mn Terlarut*	< 0.007	< 0.007	0.4	mg/L	SNI 6989.84:2019 (AAS)
7	Seng, Zn Terlarut*	< 0.004	< 0.004	15	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.05	mg/L	SNI 6989.84:2019 (AAS)
9	Barium, Ba Terlarut	< 0.277	< 0.277	-	mg/L	SNI 6989.84:2019 (AAS)
10	Tembaga, Cu Terlarut	< 0.006	< 0.006	-	mg/L	SNI 6989.84:2019 (AAS)
11	Alumunium, Al Terlarut	< 0.1	< 0.1	-	mg/L	APHA 3111B ed 23rd (AAS)
12	Perak, Ag Total	< 0.003	< 0.003	-	mg/L	SNI 6989.63-2009 (GFA)
13	Natrium, Na	-	ND	-	mg/L	SNI 06-6989.12-2004
IV	**MIKROBIOLOGI***					
1	E. Coli	0	0	0	CFU/100 mL	7.2/IK/GQA/MQ/021
2	Koliform Total	0	0	50	CFU/100 mL	7.2/IK/GQA/MQ/022

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Kesehatan RI No.32 Tahun 2017 Tentang Baku Mutu Air Bersih.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 36.0"
			BT	:	110° 13' 32.2"
Identitas Contoh Uji	:	**GW-2 Sumur Pantau Barat**			
Tanggal Pengambilan	:	8-Agu-24	ID Sampel Laboratorium	:	18244316-10
Waktu Pengambilan	:	13:35	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Bersih	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI	SATUAN	METODE
I	**FISIKA**					
1	Bau	-	Tidak berbau	Tidak berbau	-	Organoleptik
2	Warna*	< 1.2	< 1.2	15	TCU	7.2/IK/GQA/WQ/046
3	Total Padatan Terlarut, TDS*	< 2	28	500	mg/L	SNI 6989.27:2019
4	Kekeruhan*	< 0.1	0.19	5	NTU	6.4/IK/GQA/027
5	Rasa	-	N/A	Tidak berasa	-	Organoleptik
6	Temperature•*	-	28.8	Suhu udara ± 3	-	SNI 06-6989.23:2005
II	**KIMIA***					
1	pH•	-	7.1	6.5 - 8.5	-	SNI 6989.11:2019
2	Florida, F^-	< 0.014	0.018	1.5	mg/L	SNI 06-6989.29-2005
3	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.008	10	mg/L	7.2/IK/GQA/WQ/043
4	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.0020	1	mg/L	SNI 06-6989.9-2004
5	Krom, Heksavalen, Cr^{6+}	< 0.003	< 0.003	0.05	mg/L	7.2/IK/GQA/WQ/098
6	Sianida, CN	< 0.001	< 0.001	0.1	mg/L	7.2/IK/GQA/WQ/058
7	Kesadahan Total sebagai $CaCO_3$	< 3.6	7.56	500	mg/L	SNI 06-6989.29-2005
8	Sulfat, SO_4^{2-}	< 0.140	15.2	400	mg/L	SNI 6989.20:2019
9	Klorida, Cl^-	< 0.3	5.98	-	mg/L	SNI 06-6989.22-2004
10	Hidrogen Sulfida, H_2S	< 0.001	< 0.001	-	mg/L	SNI 06-6989.51-2005
III	**LOGAM**					
1	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	mg/L	SNI 6989-78:2019
2	Arsen, As Terlarut*	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-81-2018
3	Kadmium, Cd Terlarut	< 0.002	< 0.002	0.005	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	< 0.0002	0.01	mg/L	SNI 6989-83:2018 (Hydrid)
5	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	mg/L	SNI 6989.84:2019 (AAS)
6	Mangan, Mn Terlarut*	< 0.007	< 0.007	0.4	mg/L	SNI 6989.84:2019 (AAS)
7	Seng, Zn Terlarut*	< 0.004	< 0.004	15	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.05	mg/L	SNI 6989.84:2019 (AAS)
9	Barium, Ba Terlarut	< 0.277	< 0.277	-	mg/L	SNI 6989.84:2019 (AAS)
10	Tembaga, Cu Terlarut	< 0.006	< 0.006	-	mg/L	SNI 6989.84:2019 (AAS)
11	Alumunium, Al Terlarut	< 0.1	< 0.1	-	mg/L	APHA 3111B ed 23rd (AAS)
12	Perak, Ag Total	< 0.003	< 0.003	-	mg/L	SNI 6989.63-2009 (GFA)
13	Natrium, Na	-	ND	-	mg/L	SNI 06-6989.12-2004
IV	**MIKROBIOLOGI***					
1	E. Coli	0	0	0	CFU/100 mL	7.2/IK/GQA/MQ/021
2	Koliform Total	0	0	50	CFU/100 mL	7.2/IK/GQA/MQ/022

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Kesehatan RI No.32 Tahun 2017 Tentang Baku Mutu Air Bersih.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 36.5"
			BT	:	110° 13' 18.5"
Identitas Contoh Uji	:	**GW-3 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	7-Agu-24	ID Sampel Laboratorium	:	18244316-11
Waktu Pengambilan	:	13:55	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Bersih	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI	SATUAN	METODE
I	**FISIKA**					
1	Bau	-	Tidak berbau	Tidak berbau	-	Organoleptik
2	Warna*	< 1.2	4	15	TCU	7.2/IK/GQA/WQ/046
3	Total Padatan Terlarut, TDS*	< 2	79	500	mg/L	SNI 6989.27:2019
4	Kekeruhan*	< 0.1	0.66	5	NTU	6.4/IK/GQA/027
5	Rasa	-	N/A	Tidak berasa	-	Organoleptik
6	Temperature•*	-	29.2	Suhu udara ± 3	-	SNI 06-6989.23:2005
II	**KIMIA***					
1	pH•	-	7.1	6.5 - 8.5	-	SNI 6989.11:2019
2	Florida, F^-	< 0.014	0.033	1.5	mg/L	SNI 06-6989.29-2005
3	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.029	10	mg/L	7.2/IK/GQA/WQ/043
4	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.016	1	mg/L	SNI 06-6989.9-2004
5	Krom, Heksavalen, Cr^{6+}	< 0.003	0.0030	0.05	mg/L	7.2/IK/GQA/WQ/098
6	Sianida, CN	< 0.001	0.029	0.1	mg/L	7.2/IK/GQA/WQ/058
7	Kesadahan Total sebagai $CaCO_3$	< 3.6	16.20	500	mg/L	SNI 06-6989.29-2005
8	Sulfat, SO_4^{2-}	< 0.140	46.2	400	mg/L	SNI 6989.20:2019
9	Klorida, Cl^-	< 0.3	18.8	-	mg/L	SNI 06-6989.22-2004
10	Hidrogen Sulfida, H_2S	< 0.001	< 0.001	-	mg/L	SNI 06-6989.51-2005
III	**LOGAM**					
1	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	mg/L	SNI 6989-78:2019
2	Arsen, As Terlarut*	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-81-2018
3	Kadmium, Cd Terlarut	< 0.002	< 0.002	0.005	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	< 0.0002	0.01	mg/L	SNI 6989-83:2018 (Hydrid)
5	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	mg/L	SNI 6989.84:2019 (AAS)
6	Mangan, Mn Terlarut*	< 0.007	< 0.007	0.4	mg/L	SNI 6989.84:2019 (AAS)
7	Seng, Zn Terlarut*	< 0.004	< 0.004	15	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.05	mg/L	SNI 6989.84:2019 (AAS)
9	Barium, Ba Terlarut	< 0.277	< 0.277	-	mg/L	SNI 6989.84:2019 (AAS)
10	Tembaga, Cu Terlarut	< 0.006	< 0.006	-	mg/L	SNI 6989.84:2019 (AAS)
11	Alumunium, Al Terlarut	< 0.1	< 0.1	-	mg/L	APHA 3111B ed 23rd (AAS)
12	Perak, Ag Total	< 0.003	< 0.003	-	mg/L	SNI 6989.63-2009 (GFA)
13	Natrium, Na	-	ND	-	mg/L	SNI 06-6989.12-2004
IV	**MIKROBIOLOGI***					
1	E. Coli	0	0	0	CFU/100 mL	7.2/IK/GQA/MQ/021
2	Koliform Total	0	0	50	CFU/100 mL	7.2/IK/GQA/MQ/022

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Kesehatan RI No.32 Tahun 2017 Tentang Baku Mutu Air Bersih.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 31.96"
			BT	:	110° 13' 38.74"
Identitas Contoh Uji	:	**GW-4 Sumur Pantau Timur**			
Tanggal Pengambilan	:	8-Agu-24	ID Sampel Laboratorium	:	18244316-12
Waktu Pengambilan	:	16:15	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Bersih	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER	LIMIT DETEKSI	HASIL	REGULASI	SATUAN	METODE
I	**FISIKA**					
1	Bau	-	Tidak berbau	Tidak berbau	-	Organoleptik
2	Warna*	< 1.2	2	15	TCU	7.2/IK/GQA/WQ/046
3	Total Padatan Terlarut, TDS*	< 2	60	500	mg/L	SNI 6989.27:2019
4	Kekeruhan*	< 0.1	0.49	5	NTU	6.4/IK/GQA/027
5	Rasa	-	N/A	Tidak berasa	-	Organoleptik
6	Temperature•*	-	29	Suhu udara ± 3	-	SNI 06-6989.23:2005
II	**KIMIA***					
1	pH•	-	6.9	6.5 - 8.5	-	SNI 6989.11:2019
2	Florida, F^-	< 0.014	0.020	1.5	mg/L	SNI 06-6989.29-2005
3	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.005	10	mg/L	7.2/IK/GQA/WQ/043
4	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.019	1	mg/L	SNI 06-6989.9-2004
5	Krom, Heksavalen, Cr^{6+}	< 0.003	< 0.003	0.05	mg/L	7.2/IK/GQA/WQ/098
6	Sianida, CN	< 0.001	< 0.001	0.1	mg/L	7.2/IK/GQA/WQ/058
7	Kesadahan Total sebagai $CaCO_3$	< 3.6	11.2	500	mg/L	SNI 06-6989.29-2005
8	Sulfat, SO_4^{2-}	< 0.140	38.2	400	mg/L	SNI 6989.20:2019
9	Klorida, Cl^-	< 0.3	15.6	-	mg/L	SNI 06-6989.22-2004
10	Hidrogen Sulfida, H_2S	< 0.001	< 0.001	-	mg/L	SNI 06-6989.51-2005
III	**LOGAM**					
1	Merkuri, Hg Terlarut*	< 0.00009	< 0.00009	0.001	mg/L	SNI 6989-78:2019
2	Arsen, As Terlarut*	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-81-2018
3	Kadmium, Cd Terlarut	< 0.002	< 0.002	0.005	mg/L	SNI 6989.84:2019 (AAS)
4	Selenium, Se Terlarut*	< 0.0002	< 0.0002	0.01	mg/L	SNI 6989-83:2018 (Hydrid)
5	Besi, Fe Terlarut*	< 0.013	< 0.013	0.3	mg/L	SNI 6989.84:2019 (AAS)
6	Mangan, Mn Terlarut*	< 0.007	< 0.007	0.4	mg/L	SNI 6989.84:2019 (AAS)
7	Seng, Zn Terlarut*	< 0.004	< 0.004	15	mg/L	SNI 6989.84:2019 (AAS)
8	Timbal, Pb Terlarut	< 0.05	< 0.05	0.05	mg/L	SNI 6989.84:2019 (AAS)
9	Barium, Ba Terlarut	< 0.277	< 0.277	-	mg/L	SNI 6989.84:2019 (AAS)
10	Tembaga, Cu Terlarut	< 0.006	< 0.006	-	mg/L	SNI 6989.84:2019 (AAS)
11	Alumunium, Al Terlarut	< 0.1	< 0.1	-	mg/L	APHA 3111B ed 23rd (AAS)
12	Perak, Ag Total	< 0.003	< 0.003	-	mg/L	SNI 6989.63-2009 (GFA)
13	Natrium, Na	-	ND	-	mg/L	SNI 06-6989.12-2004
IV	**MIKROBIOLOGI***					
1	E. Coli	0	0	0	CFU/100 mL	7.2/IK/GQA/MQ/021
2	Koliform Total	0	0	50	CFU/100 mL	7.2/IK/GQA/MQ/022

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Kesehatan RI No.32 Tahun 2017 Tentang Baku Mutu Air Bersih.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 36.01"
		BT	: 110° 13' 32.27"
Identitas Contoh Uji	: **LD-1 Inlet Lindi**		
Tanggal Pengambilan	: 8-Agu-24	ID Sampel Laboratorium	: 18244316-13
Waktu Pengambilan	: 14:12	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Air Limbah	Waktu Analisis	: 12 Agu - 26 Agu

NO	PARAMETER*	LIMIT DETEKSI	HASIL	REGULASI**	SATUAN	METODE
I	**FISIKA**					
1	Temperature•	-	30	38	-	SNI 06-6989.23:2005
2	Total Padatan Terlarut, TDS	< 2	160	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS	< 2	39	200	mg/L	SNI 6989.3:2019
II	**KIMIA**					
1	pH•	-	6.9	6 - 9	-	SNI 6989.11:2019
2	Krom Heksavalen, Cr^{6+}	< 0.003	0.010	0.1	mg/L	ASTM D1687-86 Vol. 11.01
3	Sianida, CN	< 0.001	0.009	0.05	mg/L	7.2/IK/GQA/WQ/058
4	Sulfida, sebagai S^{2-}	< 0.004	0.012	0.05	mg/L	SNI 6989.70:2009
5	Florida, F^-	< 0.014	0.050	2	mg/L	SNI 06-6989.29-2005
6	Klorin Bebas, Cl_2	< 0.01	0.029	1	mg/L	7.2/IK/GQA/WQ/044
7	Ammonia, NH_3-N	< 0.017	0.028	1	mg/L	SNI 06-6989.30-2005
8	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.029	20	mg/L	7.2/IK/GQA/WQ/043
9	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.002	1	mg/L	SNI 06-6989.9-2004
10	Total Nitrogen	< 0.1	1.2	-	mg/L	7.2/IK/GQA/WQ/064
11	Kebutuhan Oksigen Biologi, BOD_5	< 0.4	8.6	50	mg/L	SNI 6989.72:2009
12	Kebutuhan Oksigen Kimia, COD	< 1.6	20.6	100	mg/L	SNI 6989.2:2019
13	Senyawa aktif biru metilen (MBAS)	< 0.006	0.010	5	mg/L	SNI 06-6989.51-2005
14	Fenol, C_6H_5OH	< 0.001	< 0.001	0.5	mg/L	7.2/IK/GQA/WQ/045
15	Minyak dan Lemak	< 0.6	< 0.6	10	mg/L	SNI 6989.10-2011
III	**LOGAM**					
1	Besi, Fe Terlarut	< 0.013	0.015	5	mg/L	SNI 6989.84:2019 (AAS)
2	Mangan, Mn Terlarut	< 0.007	< 0.007	2	mg/L	SNI 6989.84:2019 (AAS)
3	Barium, Ba Total	< 0.277	< 0.277	2	mg/L	SNI 6989.84:2019 (AAS)
4	Tembaga, Cu Total	< 0.006	< 0.006	2	mg/L	SNI 6989.84:2019 (AAS)
5	Seng, Zn Total	< 0.004	< 0.004	5	mg/L	SNI 6989.84:2019 (AAS)
6	Kromium, Cr Total	< 0.022	< 0.022	0.5	mg/L	SNI 6989.84:2019 (AAS)
7	Kadmium Cd Total	< 0.00004	0.00010	0.05	mg/L	SNI 06-6989.38-2005 (GFA)
8	Merkuri, Hg Total	< 0.0003	< 0.0003	0.002	mg/L	SNI 6989-78:2019 (MA)
9	Timbal, Pb Total	< 0.0002	0.0022	0.1	mg/L	SNI 6989.46:2009 (GFA)
10	Timah, Sn Total	< 0.00004	< 0.00004	2	mg/L	SNI 6989.64-2009 (GFA)
11	Arsen, As Total	< 0.0002	< 0.0002	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
12	Selenium, Se Total	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
13	Nikel, Ni Total	< 0.022	< 0.022	0.2	mg/L	SNI 6989.84:2019 (AAS)
14	Kobal, Co Total	< 0.02	< 0.02	0.4	mg/L	SNI 6989.68:2009 (AAS)

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Lingkungan Hidup dan Kehutanan RI No. 6 Tahun 2021 (Lampiran XIX) Tentang Baku Mutu Air Lindi.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 36.24"
		BT	: 110° 13' 31.37"
Identitas Contoh Uji	: **LD-2 Outlet Lindi**		
Tanggal Pengambilan	: 8-Agu-24	ID Sampel Laboratorium	: 18244316-14
Waktu Pengambilan	: 13:56	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Air Limbah	Waktu Analisis	: 12 Agu - 26 Agu

NO	PARAMETER*	LIMIT DETEKSI	HASIL	REGULASI**	SATUAN	METODE
I	**FISIKA**					
1	Temperature•	-	29	38	-	SNI 06-6989.23:2005
2	Total Padatan Terlarut, TDS	< 2	133	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS	< 2	28	200	mg/L	SNI 6989.3:2019
II	**KIMIA**					
1	pH•	-	6.7	6 - 9	-	SNI 6989.11:2019
2	Krom Heksavalen, Cr^{6+}	< 0.003	0.006	0.1	mg/L	ASTM D1687-86 Vol. 11.01
3	Sianida, CN	< 0.001	0.005	0.05	mg/L	7.2/IK/GQA/WQ/058
4	Sulfida, sebagai S^{2-}	< 0.004	0.008	0.05	mg/L	SNI 6989.70:2009
5	Florida, F^-	< 0.014	0.028	2	mg/L	SNI 06-6989.29-2005
6	Klorin Bebas, Cl_2	< 0.01	0.030	1	mg/L	7.2/IK/GQA/WQ/044
7	Ammonia, NH_3-N	< 0.017	0.045	1	mg/L	SNI 06-6989.30-2005
8	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.025	20	mg/L	7.2/IK/GQA/WQ/043
9	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.0022	1	mg/L	SNI 06-6989.9-2004
10	Total Nitrogen	< 0.1	1.0	-	mg/L	7.2/IK/GQA/WQ/064
11	Kebutuhan Oksigen Biologi, BOD_5	< 0.4	5.6	50	mg/L	SNI 6989.72:2009
12	Kebutuhan Oksigen Kimia, COD	< 1.6	17.2	100	mg/L	SNI 6989.2:2019
13	Senyawa aktif biru metilen (MBAS)	< 0.006	0.013	5	mg/L	SNI 06-6989.51-2005
14	Fenol, C_6H_5OH	< 0.001	< 0.001	0.5	mg/L	7.2/IK/GQA/WQ/045
15	Minyak dan Lemak	< 0.6	0.67	10	mg/L	SNI 6989.10-2011
III	**LOGAM**					
1	Besi, Fe Terlarut	< 0.013	0.019	5	mg/L	SNI 6989.84:2019 (AAS)
2	Mangan, Mn Terlarut	< 0.007	< 0.007	2	mg/L	SNI 6989.84:2019 (AAS)
3	Barium, Ba Total	< 0.277	< 0.277	2	mg/L	SNI 6989.84:2019 (AAS)
4	Tembaga, Cu Total	< 0.006	< 0.006	2	mg/L	SNI 6989.84:2019 (AAS)
5	Seng, Zn Total	< 0.004	< 0.004	5	mg/L	SNI 6989.84:2019 (AAS)
6	Kromium, Cr Total	< 0.022	< 0.022	0.5	mg/L	SNI 6989.84:2019 (AAS)
7	Kadmium Cd Total	< 0.00004	0.00016	0.05	mg/L	SNI 06-6989.38-2005 (GFA)
8	Merkuri, Hg Total	< 0.0003	< 0.0003	0.002	mg/L	SNI 6989-78:2019 (MA)
9	Timbal, Pb Total	< 0.0002	0.0029	0.1	mg/L	SNI 6989.46:2009 (GFA)
10	Timah, Sn Total	< 0.00004	< 0.00004	2	mg/L	SNI 6989.64-2009 (GFA)
11	Arsen, As Total	< 0.0002	< 0.0002	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
12	Selenium, Se Total	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
13	Nikel, Ni Total	< 0.022	< 0.022	0.2	mg/L	SNI 6989.84:2019 (AAS)
14	Kobal, Co Total	< 0.02	< 0.02	0.4	mg/L	SNI 6989.68:2009 (AAS)

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Lingkungan Hidup dan Kehutanan RI No. 6 Tahun 2021 (Lampiran XIX) Tentang Baku Mutu Air Lindi.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 36.14"
			BT	:	110° 13' 32.16"
Identitas Contoh Uji	:	**LD-3 Aliran Lindi**			
Tanggal Pengambilan	:	8-Agu-24	ID Sampel Laboratorium	:	18244316-15
Waktu Pengambilan	:	14:30	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Limbah	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER*	LIMIT DETEKSI	HASIL	REGULASI**	SATUAN	METODE
I	**FISIKA**					
1	Temperature•	-	31	38	-	SNI 06-6989.23:2005
2	Total Padatan Terlarut, TDS	< 2	150	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS	< 2	33	200	mg/L	SNI 6989.3:2019
II	**KIMIA**					
1	pH•	-	6.9	6 - 9	-	SNI 6989.11:2019
2	Krom Heksavalen, Cr^{6+}	< 0.003	0.012	0.1	mg/L	ASTM D1687-86 Vol. 11.01
3	Sianida, CN	< 0.001	0.016	0.05	mg/L	7.2/IK/GQA/WQ/058
4	Sulfida, sebagai S^{2-}	< 0.004	0.010	0.05	mg/L	SNI 6989.70:2009
5	Florida, F^-	< 0.014	0.040	2	mg/L	SNI 06-6989.29-2005
6	Klorin Bebas, Cl_2	< 0.01	0.032	1	mg/L	7.2/IK/GQA/WQ/044
7	Ammonia, NH_3-N	< 0.017	0.052	1	mg/L	SNI 06-6989.30-2005
8	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.028	20	mg/L	7.2/IK/GQA/WQ/043
9	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.0030	1	mg/L	SNI 06-6989.9-2004
10	Total Nitrogen	< 0.1	1.5	-	mg/L	7.2/IK/GQA/WQ/064
11	Kebutuhan Oksigen Biologi, BOD_5	< 0.4	12.2	50	mg/L	SNI 6989.72:2009
12	Kebutuhan Oksigen Kimia, COD	< 1.6	29.6	100	mg/L	SNI 6989.2:2019
13	Senyawa aktif biru metilen (MBAS)	< 0.006	0.028	5	mg/L	SNI 06-6989.51-2005
14	Fenol, C_6H_5OH	< 0.001	< 0.001	0.5	mg/L	7.2/IK/GQA/WQ/045
15	Minyak dan Lemak	< 0.6	< 0.6	10	mg/L	SNI 6989.10-2011
III	**LOGAM**					
1	Besi, Fe Terlarut	< 0.013	0.019	5	mg/L	SNI 6989.84:2019 (AAS)
2	Mangan, Mn Terlarut	< 0.007	< 0.007	2	mg/L	SNI 6989.84:2019 (AAS)
3	Barium, Ba Total	< 0.277	< 0.277	2	mg/L	SNI 6989.84:2019 (AAS)
4	Tembaga, Cu Total	< 0.006	< 0.006	2	mg/L	SNI 6989.84:2019 (AAS)
5	Seng, Zn Total	< 0.004	< 0.004	5	mg/L	SNI 6989.84:2019 (AAS)
6	Kromium, Cr Total	< 0.022	< 0.022	0.5	mg/L	SNI 6989.84:2019 (AAS)
7	Kadmium Cd Total	< 0.00004	0.00014	0.05	mg/L	SNI 06-6989.38-2005 (GFA)
8	Merkuri, Hg Total	< 0.0003	< 0.0003	0.002	mg/L	SNI 6989-78:2019 (MA)
9	Timbal, Pb Total	< 0.0002	0.0029	0.1	mg/L	SNI 6989.46:2009 (GFA)
10	Timah, Sn Total	< 0.00004	< 0.00004	2	mg/L	SNI 6989.64-2009 (GFA)
11	Arsen, As Total	< 0.0002	< 0.0002	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
12	Selenium, Se Total	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
13	Nikel, Ni Total	< 0.022	< 0.022	0.2	mg/L	SNI 6989.84:2019 (AAS)
14	Kobal, Co Total	< 0.02	< 0.02	0.4	mg/L	SNI 6989.68:2009 (AAS)

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Lingkungan Hidup dan Kehutanan RI No. 6 Tahun 2021 (Lampiran XIX) Tentang Baku Mutu Air Lindi.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 36.30"
			BT	:	110° 13' 32.49"
Identitas Contoh Uji	:	**LD-4 Gorong-Gorong TPA**			
Tanggal Pengambilan	:	8-Agu-24	ID Sampel Laboratorium	:	18244316-16
Waktu Pengambilan	:	14:38	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Air Limbah	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER*	LIMIT DETEKSI	HASIL	REGULASI**	SATUAN	METODE
I	**FISIKA**					
1	Temperature•	-	30	38	-	SNI 06-6989.23:2005
2	Total Padatan Terlarut, TDS	< 2	166	2000	mg/L	SNI 6989.27:2019
3	Total Padatan Tersuspensi, TSS	< 2	40	200	mg/L	SNI 6989.3:2019
II	**KIMIA**					
1	pH•	-	6.5	6 - 9	-	SNI 6989.11:2019
2	Krom Heksavalen, Cr^{6+}	< 0.003	0.049	0.1	mg/L	ASTM D1687-86 Vol. 11.01
3	Sianida, CN	< 0.001	0.020	0.05	mg/L	7.2/IK/GQA/WQ/058
4	Sulfida, sebagai S^{2-}	< 0.004	0.012	0.05	mg/L	SNI 6989.70:2009
5	Florida, F^-	< 0.014	0.056	2	mg/L	SNI 06-6989.29-2005
6	Klorin Bebas, Cl_2	< 0.01	0.040	1	mg/L	7.2/IK/GQA/WQ/044
7	Ammonia, NH_3-N	< 0.017	0.069	1	mg/L	SNI 06-6989.30-2005
8	Nitrogen, Nitrat sebagai N (NO_3-N)	< 0.004	0.040	20	mg/L	7.2/IK/GQA/WQ/043
9	Nitrogen, Nitrit sebagai N (NO_2-N)	< 0.002	0.0038	1	mg/L	SNI 06-6989.9-2004
10	Total Nitrogen	< 0.1	2.2	-	mg/L	7.2/IK/GQA/WQ/064
11	Kebutuhan Oksigen Biologi, BOD_5	< 0.4	19.3	50	mg/L	SNI 6989.72:2009
12	Kebutuhan Oksigen Kimia, COD	< 1.6	70.6	100	mg/L	SNI 6989.2:2019
13	Senyawa aktif biru metilen (MBAS)	< 0.006	0.030	5	mg/L	SNI 06-6989.51-2005
14	Fenol, C_6H_5OH	< 0.001	0.001	0.5	mg/L	7.2/IK/GQA/WQ/045
15	Minyak dan Lemak	< 0.6	1.0	10	mg/L	SNI 6989.10-2011
III	**LOGAM**					
1	Besi, Fe Terlarut	< 0.013	< 0.013	5	mg/L	SNI 6989.84:2019 (AAS)
2	Mangan, Mn Terlarut	< 0.007	< 0.007	2	mg/L	SNI 6989.84:2019 (AAS)
3	Barium, Ba Total	< 0.277	< 0.277	2	mg/L	SNI 6989.84:2019 (AAS)
4	Tembaga, Cu Total	< 0.006	< 0.006	2	mg/L	SNI 6989.84:2019 (AAS)
5	Seng, Zn Total	< 0.004	< 0.004	5	mg/L	SNI 6989.84:2019 (AAS)
6	Kromium, Cr Total	< 0.022	< 0.022	0.5	mg/L	SNI 6989.84:2019 (AAS)
7	Kadmium Cd Total	< 0.00004	0.00033	0.05	mg/L	SNI 06-6989.38-2005 (GFA)
8	Merkuri, Hg Total	< 0.0003	< 0.0003	0.002	mg/L	SNI 6989-78:2019 (MA)
9	Timbal, Pb Total	< 0.0002	< 0.0002	0.1	mg/L	SNI 6989.46:2009 (GFA)
10	Timah, Sn Total	< 0.00004	< 0.00004	2	mg/L	SNI 6989.64-2009 (GFA)
11	Arsen, As Total	< 0.0002	0.00021	0.1	mg/L	SNI 6989-81-2018 (Hydrid)
12	Selenium, Se Total	< 0.0002	< 0.0002	0.05	mg/L	SNI 6989-83:2018 (Hydrid)
13	Nikel, Ni Total	< 0.022	< 0.022	0.2	mg/L	SNI 6989.84:2019 (AAS)
14	Kobal, Co Total	< 0.02	< 0.02	0.4	mg/L	SNI 6989.68:2009 (AAS)

- (*) Terakreditasi KAN-756 -IDN

- (**) Peraturan Menteri Lingkungan Hidup dan Kehutanan RI No. 6 Tahun 2021 (Lampiran XIX) Tentang Baku Mutu Air Lindi.

- (•) In Situ

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	August 26, 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 40.7"
			BT	:	110° 13' 35.1"
Identitas Contoh Uji	:	**SQ-1 Perkebunan Depan TPA**			
Tanggal Pengambilan	:	7-Agu-24	ID Sampel Laboratorium	:	18244316-17
Waktu Pengambilan	:	13:32	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Tanah	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER**	HASIL	SATUAN	METODE
	FISIKA:			
1	Bulk Density	1.18	gr/cc	Gravimetrik
2	Ruang Pori Total	55.47	%	Calculation
3	Kadar Air Pada pF			
	1.00	50.4	%	Gravimetrik
	2.00	43.9	%	Gravimetrik
	2.54	40.7	%	Gravimetrik
	4.25	20.8	%	Gravimetrik
4	Pori Drainase			
	Sangat Cepat	-	%	Gravimetrik
	Cepat	3.4	%	Gravimetrik
	Lambat	7.2	%	Gravimetrik
5	Air Tersedia	12.5	%	Gravimetrik
6	Permeabilitas	0.80	cm/jam	Perklorasi
II	**KIMIA**			
1	pH dalam Air (pH H_2O 1:1)	4.8	-	pH-meter
2	pH dalam KCl (pH KCl 1:1)	3.6	-	pH-meter
3	C - Organik	2.2	%	Walkley & Black
4	N Total	0.2	%	Kjehdahl
5	Rasio C:N	10.5	Rasio	Kalkulasi
6	P tersedia	6.5	mg/100g	Bray I
7	Kation Asam Dapat Ditukar			
	Aluminium (Al-dd)	2.18	cmol/Kg	Ekstraksi KCl 1N
	Hidrogen (H-dd)	1.53	cmol/Kg	Ekstraksi KCl 1N
8	Kation Basa Dapat Ditukar			
	Kalsium (Ca)	4.11	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Magnesium (Mg)	1.50	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Kalium (K)	0.69	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Natrium (Na)	0.24	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
9	Kapasitas Tukar Kation (KTK)	20.8	cmol/Kg	Volumetri
10	Kejenuhan Basa	31.4	%	Kalkulasi
11	Logam Berat			
	Tembaga (Cu)	2.4	mg/Kg	AAS
	Seng (Zn)	13.7	mg/Kg	AAS
	Timbal (Pb)	0.3	mg/Kg	AAS
	Kadmium (Cd)	0.3	mg/Kg	AAS
12	Tekstur 3 Fraksi			
	Pasir	18.3	%	Pipet
	Debu	26.8	%	Pipet
	Liat	54.9	%	Pipet
13	Minyak dan Lemak	< 0.05	%	Soklet

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: August 26, 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 36.22"
		BT	: 110° 13' 32.30"
Identitas Contoh Uji	: **SQ-2 Dekat IPAL**		
Tanggal Pengambilan	: 8-Agu-24	ID Sampel Laboratorium	: 18244316-18
Waktu Pengambilan	: 14:55	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Tanah	Waktu Analisis	: 12 Agu - 26 Agu

NO	PARAMETER**	HASIL	SATUAN	METODE
	FISIKA:			
1	Bulk Density	1.21	gr/cc	Gravimetrik
2	Ruang Pori Total	54.34	%	Calculation
3	Kadar Air Pada pF			
	1.00	49.7	%	Gravimetrik
	2.00	43.3	%	Gravimetrik
	2.54	40.2	%	Gravimetrik
	4.25	20.5	%	Gravimetrik
4	Pori Drainase			
	Sangat Cepat	-	%	Gravimetrik
	Cepat	3.1	%	Gravimetrik
	Lambat	7.5	%	Gravimetrik
5	Air Tersedia	13.8	%	Gravimetrik
6	Permeabilitas	0.57	cm/jam	Perklorasi
II	**KIMIA**			
1	pH dalam Air (pH H_2O 1:1)	4.3	-	pH-meter
2	pH dalam KCl (pH KCl 1:1)	3.8	-	pH-meter
3	C - Organik	2.1	%	Walkley & Black
4	N Total	0.3	%	Kjehdahl
5	Rasio C:N	6.8	Rasio	Kalkulasi
6	P tersedia	7.0	mg/100g	Bray I
7	Kation Asam Dapat Ditukar			
	Aluminium (Al-dd)	2.51	cmol/Kg	Ekstraksi KCl 1N
	Hidrogen (H-dd)	1.69	cmol/Kg	Ekstraksi KCl 1N
8	Kation Basa Dapat Ditukar			
	Kalsium (Ca)	4.19	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Magnesium (Mg)	1.65	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Kalium (K)	0.57	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Natrium (Na)	0.19	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
9	Kapasitas Tukar Kation (KTK)	29.5	cmol/Kg	Volumetri
10	Kejenuhan Basa	22.4	%	Kalkulasi
11	Logam Berat			
	Tembaga (Cu)	2.4	mg/Kg	AAS
	Seng (Zn)	10.9	mg/Kg	AAS
	Timbal (Pb)	0.2	mg/Kg	AAS
	Kadmium (Cd)	0.2	mg/Kg	AAS
12	Tekstur 3 Fraksi			
	Pasir	17.7	%	Pipet
	Debu	35.0	%	Pipet
	Liat	47.3	%	Pipet
13	Minyak dan Lemak	< 0.05	%	Soklet

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	August 26, 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.4"
			BT	:	110° 13' 35.6"
Identitas Contoh Uji	:	**SQ-3 Jembatan Hulu Sungai TPA**			
Tanggal Pengambilan	:	7-Agu-24	ID Sampel Laboratorium	:	18244316-19
Waktu Pengambilan	:	16:09	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Tanah	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER**	HASIL	SATUAN	METODE
	FISIKA:			
1	Bulk Density	1.18	gr/cc	Gravimetrik
2	Ruang Pori Total	55.47	%	Calculation
3	Kadar Air Pada pF			
	1.00	49.7	%	Gravimetrik
	2.00	43.3	%	Gravimetrik
	2.54	40.2	%	Gravimetrik
	4.25	20.5	%	Gravimetrik
4	Pori Drainase			
	Sangat Cepat	-	%	Gravimetrik
	Cepat	4.0	%	Gravimetrik
	Lambat	7.4	%	Gravimetrik
5	Air Tersedia	17.7	%	Gravimetrik
6	Permeabilitas	0.88	cm/jam	Perklorasi
II	**KIMIA**			
1	pH dalam Air (pH H_2O 1:1)	4.4	-	pH-meter
2	pH dalam KCl (pH KCl 1:1)	3.6	-	pH-meter
3	C - Organik	3.1	%	Walkley & Black
4	N Total	0.2	%	Kjehdahl
5	Rasio C:N	16.3	Rasio	Kalkulasi
6	P tersedia	7.9	mg/100g	Bray I
7	Kation Asam Dapat Ditukar			
	Aluminium (Al-dd)	2.45	cmol/Kg	Ekstraksi KCl 1N
	Hidrogen (H-dd)	1.66	cmol/Kg	Ekstraksi KCl 1N
8	Kation Basa Dapat Ditukar			
	Kalsium (Ca)	4.26	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Magnesium (Mg)	1.70	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Kalium (K)	0.58	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Natrium (Na)	0.21	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
9	Kapasitas Tukar Kation (KTK)	28.0	cmol/Kg	Volumetri
10	Kejenuhan Basa	24.1	%	Kalkulasi
11	Logam Berat			
	Tembaga (Cu)	2.3	mg/Kg	AAS
	Seng (Zn)	15.0	mg/Kg	AAS
	Timbal (Pb)	0.3	mg/Kg	AAS
	Kadmium (Cd)	0.2	mg/Kg	AAS
12	Tekstur 3 Fraksi			
	Pasir	25.9	%	Pipet
	Debu	27.8	%	Pipet
	Liat	46.3	%	Pipet
13	Minyak dan Lemak	< 0.05	%	Soklet

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	August 26, 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 41.57"
			BT	:	110° 13' 18.00"
Identitas Contoh Uji	:	**SQ-4 Persawahan Hilir Sungai TPA**			
Tanggal Pengambilan	:	7-Agu-24	ID Sampel Laboratorium	:	18244316-20
Waktu Pengambilan	:	15:10	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Tanah	Waktu Analisis	:	12 Agu - 26 Agu

NO	PARAMETER**	HASIL	SATUAN	METODE
	FISIKA:			
1	Bulk Density	1.19	gr/cc	Gravimetrik
2	Ruang Pori Total	55.09	%	Calculation
3	Kadar Air Pada pF			
	1.00	49.6	%	Gravimetrik
	2.00	43.2	%	Gravimetrik
	2.54	40.1	%	Gravimetrik
	4.25	20.5	%	Gravimetrik
4	Pori Drainase			
	Sangat Cepat	-	%	Gravimetrik
	Cepat	3.8	%	Gravimetrik
	Lambat	7.5	%	Gravimetrik
5	Air Tersedia	23.3	%	Gravimetrik
6	Permeabilitas	0.89	cm/jam	Perklorasi
II	**KIMIA**			
1	pH dalam Air (pH H_2O 1:1)	5.0	-	pH-meter
2	pH dalam KCl (pH KCl 1:1)	3.8	-	pH-meter
3	C - Organik	2.4	%	Walkley & Black
4	N Total	0.2	%	Kjehdahl
5	Rasio C:N	10.9	Rasio	Kalkulasi
6	P tersedia	8.5	mg/100g	Bray I
7	Kation Asam Dapat Ditukar			
	Aluminium (Al-dd)	2.57	cmol/Kg	Ekstraksi KCl 1N
	Hidrogen (H-dd)	1.35	cmol/Kg	Ekstraksi KCl 1N
8	Kation Basa Dapat Ditukar			
	Kalsium (Ca)	4.25	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Magnesium (Mg)	1.54	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Kalium (K)	0.60	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
	Natrium (Na)	0.20	cmol/Kg	Ekstraksi NH_4OAc 1N (pH 7)
9	Kapasitas Tukar Kation (KTK)	28.3	cmol/Kg	Volumetri
10	Kejenuhan Basa	23.3	%	Kalkulasi
11	Logam Berat			
	Tembaga (Cu)	2.2	mg/Kg	AAS
	Seng (Zn)	13.5	mg/Kg	AAS
	Timbal (Pb)	0.2	mg/Kg	AAS
	Kadmium (Cd)	0.3	mg/Kg	AAS
12	Tekstur 3 Fraksi			
	Pasir	19.6	%	Pipet
	Debu	24.8	%	Pipet
	Liat	55.6	%	Pipet
13	Minyak dan Lemak	< 0.05	%	Soklet

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

NO	HARI	RESULT										SATUAN	METODE
		L1	L2	L3	L4	L5	L6	L7	Ls	Lm	Lsm		
		09:00 - 14:00	14:00 - 17:00	17:00 - 22:00	22:00 - 00:00	00:00 - 03:00	03:00 - 06:00	06:00 - 09:00					
1	Hari Pertama	57.1	55.5	47.0	40.2	40.6	43.6	49.7	**54.2**	**41.9**	**52.8**	dBA	SNI 8427-2017
2	Hari Kedua	56.8	54.0	47.1	40.0	39.9	42.4	49.7	**53.6**	**41.0**	**52.2**	dBA	SNI 8427-2017

No	Agustus,5 2024 - Agustus, 5 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	57.3	57.6	62.3	53.5	56.4	57.7	59.4	57.3	54.1	51.3	52.1	50.0	47.6	49.1	55.9	56.6
2	54.9	57.5	59.8	55.0	58.9	53.4	55.3	52.9	58.6	55.5	58.2	57.1	53.2	53.0	50.9	47.1
3	58.6	53.2	57.1	62.5	57.1	56.2	58.4	53.8	51.4	58.3	54.4	56.5	53.8	54.0	52.9	50.2
4	56.1	58.3	53.5	61.4	53.9	58.8	53.2	54.9	56.2	49.8	57.6	54.5	52.4	47.5	47.2	48.1
5	58.4	61.4	55.4	59.3	58.1	57.7	54.7	54.0	56.4	54.5	59.5	51.1	55.8	53.8	47.7	55.8
6	59.6	53.3	59.2	56.1	58.6	53.3	56.7	59.2	49.9	52.0	52.3	52.6	63.1	46.2	53.9	48.2
7	62.1	55.2	58.8	58.2	53.5	59.4	52.6	57.1	53.1	58.0	52.6	52.8	63.2	54.6	50.5	51.7
8	61.8	57.9	61.8	62.4	55.0	56.2	56.1	55.1	55.1	52.5	53.1	52.4	53.7	46.8	52.2	49.3
9	52.9	52.5	61.0	55.1	52.5	57.3	59.7	58.1	55.2	55.9	51.4	51.9	54.8	52.5	46.0	57.0
10	58.9	53.8	61.2	52.5	57.7	55.6	55.7	59.3	51.5	58.0	58.8	54.4	45.7	52.3	52.6	48.9
11	53.5	53.1	54.7	54.9	58.6	56.1	56.9	56.2	56.8	52.9	50.0	59.0	49.4	49.0	55.5	50.8
12	54.5	54.9	62.1	61.9	56.9	55.5	55.2	53.0	49.9	52.8	62.8	59.6	48.6	51.2	50.2	53.0
13	59.3	61.3	53.2	55.7	57.4	56.7	57.2	53.2	55.1	55.1	67.1	50.1	57.2	52.8	54.9	46.8
14	60.1	56.7	55.9	57.1	59.0	53.8	56.6	55.1	55.5	51.4	58.7	58.8	45.5	55.3	48.8	51.6
15	60.2	61.1	58.4	57.7	57.5	57.4	53.8	56.6	51.1	50.4	56.1	58.3	55.9	49.3	46.6	51.5
16	55.7	61.7	58.5	55.7	55.3	56.7	57.3	56.4	50.8	49.8	57.7	56.0	49.6	56.7	56.6	47.5
17	62.5	53.7	53.7	61.8	56.2	55.4	52.4	52.9	57.1	59.7	50.1	57.0	52.9	47.8	54.6	50.9
18	55.8	52.7	62.5	55.6	57.8	54.1	58.0	59.1	54.4	54.6	55.3	58.9	48.3	46.8	49.7	46.6
19	61.6	56.3	62.3	60.9	53.5	53.4	58.6	59.5	59.4	53.4	54.1	54.1	46.9	46.4	48.5	51.9
20	53.9	53.2	62.3	55.8	53.9	54.1	58.9	56.5	57.6	57.2	53.7	50.1	49.1	47.6	55.4	57.1
21	55.5	54.1	53.3	58.2	54.1	54.9	54.4	55.0	55.1	51.3	57.4	55.1	53.1	53.7	48.8	45.8
22	57.2	54.1	60.2	52.8	58.6	54.3	58.3	57.8	56.7	53.6	58.4	50.1	45.8	54.9	49.5	53.2
23	58.5	54.7	60.9	56.9	55.5	58.7	58.2	58.8	50.9	57.2	52.0	55.7	56.4	55.1	55.5	45.7
24	54.1	58.9	53.7	53.6	58.4	53.1	53.3	59.4	53.7	52.6	52.6	58.3	56.8	46.0	53.8	54.0
25	54.2	57.0	54.9	53.0	59.0	52.8	54.9	54.8	56.5	51.5	49.8	53.3	53.3	52.1	47.4	46.6
26	59.7	62.4	56.8	61.9	59.7	59.7	57.2	55.8	58.9	55.3	54.2	52.4	45.9	52.3	50.0	51.9
27	60.5	59.0	52.5	61.0	53.7	58.4	58.9	55.9	53.2	53.0	51.9	56.9	53.3	55.9	50.1	46.8
28	61.5	52.6	58.0	60.0	56.9	58.2	57.0	55.5	59.7	50.5	52.6	59.5	45.9	56.3	52.5	47.5
29	59.8	56.0	56.5	58.7	58.6	58.4	58.2	54.2	59.3	54.1	55.3	55.1	47.5	52.8	50.3	51.0
30	61.5	55.1	59.2	53.5	52.5	58.5	57.8	58.9	50.0	49.9	58.2	56.7	51.3	49.7	49.0	46.9

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,5 2024 - Agustus, 6 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	43.2	46.6	42.2	43.9	41.0	41.9	43.9	43.1	39.9	39.6	41.3	40.2	41.1	41.1	41.2	39.2
2	43.6	43.0	45.8	44.4	41.3	42.0	42.1	43.5	40.5	40.6	39.9	39.1	40.6	38.8	41.7	40.3
3	41.4	44.1	45.8	43.2	41.6	44.6	41.4	41.1	40.6	39.3	40.1	40.4	41.4	40.8	39.6	41.9
4	42.7	47.0	45.3	41.5	43.8	40.4	41.6	42.7	40.5	40.6	40.1	39.9	40.5	39.4	39.0	40.1
5	43.1	43.8	42.1	43.0	43.9	44.9	42.9	43.6	40.1	39.4	40.8	40.0	39.2	40.1	41.6	39.9
6	43.4	41.6	41.7	45.2	43.9	42.3	42.5	40.2	41.2	39.5	40.1	39.5	38.8	42.1	39.3	39.2
7	43.3	43.0	46.2	45.0	42.8	42.6	41.1	41.6	40.9	40.5	39.2	39.7	39.8	42.0	41.2	40.7
8	41.7	43.6	46.6	42.3	44.2	41.5	43.7	41.5	39.4	39.6	40.4	39.6	40.4	41.7	41.6	41.5
9	45.9	43.0	42.9	42.0	40.9	43.4	43.1	44.0	41.1	40.6	39.9	40.7	41.6	41.5	41.3	39.3
10	42.2	46.6	46.8	41.6	43.5	40.4	40.6	40.4	41.0	41.0	39.2	40.1	41.2	41.7	39.8	41.9
11	46.3	44.9	43.0	46.6	41.2	40.5	40.7	43.5	39.2	40.8	40.8	40.4	41.0	38.6	39.2	40.6
12	42.6	43.9	42.5	42.0	41.8	44.5	41.3	40.4	40.8	40.3	40.7	40.9	41.4	38.5	41.5	42.1
13	45.3	43.2	45.2	42.5	43.6	43.5	44.1	44.5	39.4	39.7	40.0	41.0	40.1	39.7	40.0	40.5
14	45.1	42.6	42.3	42.6	44.6	42.1	43.2	44.6	40.4	40.2	40.3	40.3	41.3	41.2	40.3	38.7
15	42.3	44.1	44.5	44.7	40.4	42.4	44.7	44.5	41.3	39.2	40.7	39.5	40.2	40.2	39.3	40.4
16	46.4	42.8	47.0	42.2	41.8	41.0	41.9	41.5	39.1	40.8	39.9	41.2	38.5	38.9	40.5	41.1
17	41.3	45.3	44.8	43.1	40.7	42.9	41.7	44.5	39.7	41.0	39.2	39.7	38.9	40.2	39.8	38.9
18	44.8	42.4	41.3	42.2	43.5	43.2	44.4	40.9	39.5	40.0	39.8	40.6	41.6	41.2	40.2	41.5
19	43.8	44.0	42.9	45.3	41.0	43.5	43.6	41.0	39.2	40.4	40.1	41.2	38.7	38.8	42.1	39.9
20	44.1	47.0	46.5	41.7	44.2	40.4	41.4	41.1	40.7	41.3	40.4	40.5	39.1	38.9	39.1	38.7
21	42.7	41.7	42.4	41.9	42.8	43.5	40.4	42.1	40.1	41.1	39.3	40.8	40.2	40.6	41.6	40.0
22	43.2	45.2	42.8	43.3	42.0	42.9	40.8	42.2	39.1	40.4	40.8	39.6	41.2	39.6	40.8	39.2
23	45.6	46.8	46.1	44.0	44.1	41.6	42.3	43.4	40.7	40.0	39.7	40.8	39.9	40.7	40.5	38.8
24	42.9	44.8	43.0	41.8	43.8	44.5	40.3	42.2	39.4	41.1	39.6	39.6	42.1	41.9	38.7	41.9
25	44.9	43.1	44.6	42.4	44.8	43.6	41.9	41.4	40.7	40.3	40.6	40.8	41.1	40.0	38.8	40.6
26	42.5	43.5	45.1	42.4	42.0	42.9	42.6	43.9	39.1	40.5	39.4	39.3	39.5	39.6	40.2	42.1
27	45.1	43.1	46.1	44.0	44.5	42.0	44.2	40.6	39.1	40.0	39.9	40.4	41.6	41.6	39.3	38.5
28	45.1	44.0	44.6	42.7	41.3	42.9	43.7	41.5	41.0	40.7	41.3	40.3	40.6	39.3	39.6	39.3
29	46.0	45.2	46.7	44.2	44.4	43.2	40.9	42.4	39.5	40.8	41.3	39.6	40.5	40.6	39.9	39.8
30	42.5	43.7	43.0	45.5	40.3	41.7	40.9	43.6	41.3	40.5	39.1	39.5	41.6	39.8	41.4	41.2

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,6 2024 - Agustus, 6 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	41.9	41.9	39.6	39.2	43.6	43.5	42.4	43.9	47.3	45.8	45.7	45.5	52.8	55.0	52.1	55.1
2	40.7	40.4	39.3	42.2	44.8	44.1	43.8	44.3	44.8	47.5	46.5	46.9	49.7	54.9	53.7	50.4
3	42.1	41.4	39.6	41.9	44.2	44.6	44.5	43.6	46.0	45.9	45.0	45.7	54.1	48.9	49.0	48.3
4	39.5	39.9	39.9	41.2	43.0	42.5	44.9	43.8	45.0	47.0	47.1	44.6	47.9	53.2	46.9	49.9
5	41.3	39.5	39.4	42.2	44.2	44.3	45.0	42.2	45.1	44.9	44.5	45.1	46.2	54.2	48.6	53.6
6	38.7	41.5	40.8	39.5	43.7	42.3	45.1	43.8	46.8	47.0	46.5	46.7	53.1	50.8	49.9	57.0
7	40.8	40.6	39.1	40.8	44.4	43.2	42.2	43.3	47.9	48.1	47.3	45.9	48.4	46.0	56.3	51.6
8	38.5	38.9	40.3	39.8	43.1	44.3	44.2	44.3	46.8	46.3	45.9	47.9	49.1	52.9	57.5	49.4
9	40.5	42.5	42.6	39.9	43.6	43.0	42.8	44.6	47.4	45.6	47.8	44.2	49.6	50.6	46.9	45.9
10	41.7	42.3	40.5	40.0	43.8	44.0	42.5	43.9	44.3	45.9	45.5	48.2	48.0	53.5	57.7	57.3
11	42.4	39.6	40.4	40.2	45.1	43.3	42.8	43.6	46.2	48.1	45.3	48.5	51.8	52.1	57.9	48.3
12	40.1	39.8	42.4	39.1	43.7	42.8	45.1	42.8	47.8	45.8	45.1	44.4	50.5	55.4	47.0	49.5
13	38.5	41.1	38.6	40.0	44.0	44.6	44.1	42.8	46.3	45.7	45.1	45.9	47.6	57.5	50.6	48.8
14	41.6	39.1	38.6	41.5	43.1	42.3	44.5	44.4	48.7	47.9	47.9	46.7	55.9	52.1	50.6	52.2
15	41.5	41.6	38.6	42.4	42.3	43.5	43.1	42.3	47.9	44.7	45.5	46.6	46.0	48.4	49.6	55.4
16	40.9	39.9	40.6	42.1	42.3	42.3	42.2	42.6	48.1	45.9	44.4	46.9	45.9	46.5	46.4	46.4
17	42.0	39.8	38.5	41.5	42.2	42.6	43.9	42.2	45.0	48.1	46.6	47.1	51.3	54.6	58.0	56.9
18	39.9	40.0	40.5	41.5	43.5	44.2	43.3	42.1	47.2	45.4	45.8	44.5	47.9	50.5	49.5	54.6
19	38.6	38.8	39.3	40.9	44.0	42.8	42.1	42.8	45.0	47.4	44.3	47.4	52.9	55.2	51.3	47.7
20	39.8	42.3	42.3	39.7	43.7	42.3	45.1	44.1	44.9	44.1	44.7	46.1	56.5	50.2	55.4	52.1
21	41.1	42.4	41.8	41.3	43.0	43.0	44.5	42.5	44.9	44.7	47.3	44.4	51.9	57.0	50.1	52.1
22	40.6	42.5	39.9	42.7	43.5	43.6	42.7	44.9	44.2	45.5	46.0	44.2	50.3	48.1	56.2	53.6
23	39.7	42.7	39.3	41.8	44.3	44.9	43.6	43.3	46.0	47.3	46.1	45.3	56.9	54.0	56.6	50.4
24	38.5	40.7	42.0	41.4	42.5	44.3	44.2	42.4	47.3	45.8	47.1	44.9	48.4	56.1	56.0	56.8
25	42.4	38.7	42.6	41.3	43.2	43.4	44.8	43.2	46.3	47.5	44.5	46.6	48.1	50.7	46.2	56.8
26	38.6	42.0	39.1	39.0	43.4	45.0	43.9	42.4	47.3	46.7	48.5	47.6	55.1	54.7	56.8	48.8
27	42.2	41.9	40.8	39.0	42.5	43.0	43.8	42.7	47.6	46.7	45.0	46.3	48.5	54.4	47.7	46.3
28	41.4	40.4	38.7	39.3	43.9	43.8	44.3	42.9	46.6	45.8	46.7	47.3	56.6	47.9	46.6	48.9
29	40.0	42.4	42.5	39.4	44.4	42.8	44.2	43.1	46.4	46.7	46.2	46.6	47.3	48.1	56.2	57.1
30	41.0	40.8	41.0	41.9	42.6	43.5	42.7	45.0	46.3	46.8	44.4	45.8	54.1	57.1	52.6	57.5

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,6 2024 - Agustus, 6 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	55.7	56.8	54.5	52.1	52.2	55.1	58.6	55.6	56.8	51.7	51.7	56.6	52.8	54.7	47.4	50.3
2	60.8	62.3	54.7	60.0	52.4	58.5	53.1	57.2	52.5	54.7	54.1	51.4	45.9	52.9	50.2	54.7
3	54.9	52.6	61.1	55.4	53.5	57.4	54.0	57.6	56.5	51.8	57.7	58.4	49.9	44.9	49.3	48.1
4	57.8	54.2	53.4	57.2	57.5	55.6	53.0	56.1	50.4	53.3	57.8	52.5	53.3	45.3	53.5	52.6
5	58.7	63.1	58.9	61.6	56.8	52.4	57.4	55.3	51.7	50.9	49.8	57.3	50.9	50.7	55.0	45.8
6	57.5	55.4	57.1	62.9	56.4	54.9	57.8	54.0	51.8	53.0	53.0	50.3	53.0	48.3	53.7	49.4
7	57.2	54.6	60.2	59.7	56.8	53.1	57.6	56.3	57.0	58.3	56.2	54.7	45.0	50.2	55.8	52.6
8	62.5	58.8	52.8	54.5	53.4	54.2	55.6	58.3	52.9	56.2	50.3	50.5	49.6	51.7	53.9	49.2
9	53.6	55.9	55.5	59.9	56.8	56.5	58.2	58.1	51.4	58.1	56.7	53.0	54.6	51.7	52.6	45.2
10	58.3	53.3	56.0	55.1	56.6	54.6	55.6	52.5	50.4	55.4	56.7	54.9	50.2	48.3	49.5	45.9
11	61.6	55.0	58.3	53.0	58.4	58.5	56.1	58.7	54.4	58.2	55.0	53.2	50.7	52.6	45.9	47.2
12	57.7	54.9	59.3	61.3	52.2	56.3	54.7	57.2	50.3	56.2	55.5	50.0	51.2	49.4	53.4	46.9
13	53.6	60.2	57.8	52.3	52.2	57.0	52.9	57.5	51.5	56.7	57.6	51.4	56.1	44.8	46.1	55.5
14	58.5	61.4	60.7	56.1	54.3	55.2	52.8	57.4	55.6	53.7	51.0	51.2	49.3	52.7	48.3	45.0
15	53.9	52.3	52.4	52.7	55.6	52.9	56.8	57.1	51.8	55.9	51.7	57.2	47.4	51.9	55.0	54.5
16	55.7	57.2	61.9	56.9	56.2	52.9	54.4	55.1	51.3	56.4	53.4	50.5	52.1	54.4	46.9	47.3
17	62.4	56.0	57.3	59.7	58.8	57.1	53.6	55.9	51.1	51.4	53.7	50.8	56.1	51.9	50.9	52.9
18	58.9	52.6	55.3	62.3	57.6	57.8	53.3	57.1	58.4	56.4	56.8	52.6	49.4	52.8	54.1	52.6
19	62.2	54.7	54.0	59.6	55.1	56.0	58.1	52.2	51.5	53.7	52.4	57.5	51.6	47.9	54.7	51.7
20	52.8	52.4	58.1	55.9	57.2	56.2	57.0	53.0	50.8	55.8	50.7	53.9	53.7	44.7	46.5	51.0
21	52.6	54.0	52.8	53.3	56.1	58.6	56.0	58.8	50.8	58.2	58.5	58.2	44.7	50.5	54.7	47.9
22	59.7	53.5	54.9	59.4	54.9	53.6	52.8	56.8	57.7	57.8	57.3	52.2	54.9	45.2	47.1	48.5
23	52.8	57.2	58.1	53.4	56.7	55.7	58.6	57.8	55.1	53.6	52.8	50.7	54.2	47.6	47.2	51.4
24	59.1	61.5	58.4	54.1	53.9	57.9	56.8	58.4	53.5	50.7	58.7	56.4	55.8	45.7	45.3	51.1
25	62.8	61.5	54.4	57.3	53.1	54.2	52.1	56.7	53.5	54.5	51.9	58.3	46.3	51.8	52.0	47.6
26	54.2	61.2	53.3	61.2	56.1	55.4	53.3	57.3	53.4	49.8	55.0	51.3	47.4	50.9	45.9	44.6
27	53.1	63.3	55.8	62.1	56.7	52.6	54.6	54.1	57.7	56.6	54.0	56.1	50.9	49.8	50.2	44.8
28	57.1	59.2	56.0	61.8	56.6	57.4	55.8	54.9	53.3	56.4	57.6	57.3	45.6	51.1	56.1	46.7
29	57.4	56.8	62.6	59.4	55.0	52.3	57.7	53.7	57.0	55.4	52.4	51.2	51.3	49.5	55.9	53.8
30	56.3	55.1	55.2	58.9	56.4	56.0	53.7	57.1	52.0	53.3	52.9	50.6	45.9	49.6	50.4	46.4

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,6 2024 - Agustus, 7 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	45.3	42.0	46.6	47.4	41.8	42.9	43.5	41.1	40.2	39.6	40.4	39.5	38.8	39.0	39.7	40.0
2	43.4	42.5	42.0	43.5	43.6	41.9	43.6	43.2	40.8	40.1	40.1	40.0	39.7	39.2	40.0	39.3
3	42.6	43.5	47.5	44.3	41.6	43.4	42.1	41.2	40.5	39.5	40.4	39.4	38.8	39.0	39.1	39.3
4	42.3	44.2	44.1	47.1	40.8	41.7	41.9	43.4	40.5	40.3	40.6	40.5	39.9	39.3	39.2	40.0
5	41.3	56.3	44.8	46.8	42.9	43.8	42.7	42.2	40.6	40.0	40.0	40.1	40.1	39.2	39.2	39.6
6	48.0	57.1	47.0	43.3	41.6	43.8	41.6	42.4	40.5	39.6	40.5	40.6	39.6	39.4	40.0	39.4
7	46.4	45.5	43.7	44.7	41.8	42.4	41.1	42.1	39.8	39.5	39.1	40.5	38.8	40.0	39.6	39.2
8	46.6	47.2	43.7	42.4	43.1	41.9	41.7	41.5	39.3	40.1	39.4	39.8	38.9	39.7	39.2	38.9
9	41.4	44.4	43.3	42.6	40.9	43.1	43.6	43.7	39.4	39.9	39.4	40.8	38.9	39.4	39.4	40.0
10	47.1	46.0	44.1	46.3	42.9	49.2	41.2	41.2	40.8	40.8	39.1	39.4	38.7	39.8	40.1	38.8
11	43.9	44.9	47.5	41.3	40.9	42.4	41.8	42.9	40.6	39.7	39.2	40.7	38.7	39.5	38.9	39.7
12	47.2	45.1	44.1	41.5	41.3	42.6	41.2	43.0	39.8	39.1	40.4	39.1	38.9	39.0	40.0	38.9
13	41.4	45.9	47.1	46.9	42.2	42.7	43.6	43.2	39.5	40.6	39.7	39.1	39.3	39.9	40.1	38.9
14	41.4	46.1	44.2	41.2	42.0	41.6	43.2	42.3	39.5	39.9	40.0	39.2	38.9	39.3	39.9	39.7
15	41.9	46.1	47.3	46.4	43.6	41.4	41.6	43.6	39.7	40.0	40.8	39.9	39.9	39.5	39.7	39.2
16	48.0	48.0	47.1	42.3	43.2	41.4	42.1	41.3	39.4	39.5	39.2	40.7	38.7	38.7	38.9	40.0
17	46.3	46.0	42.2	47.2	41.8	41.8	41.2	41.1	39.1	39.3	39.2	40.8	39.8	38.9	39.5	40.0
18	44.1	42.3	43.6	42.8	42.8	41.5	43.5	41.7	39.1	39.3	39.5	40.2	39.0	39.3	39.7	40.1
19	45.5	44.2	44.4	42.6	42.4	43.7	42.9	40.9	40.9	40.7	40.2	39.7	40.0	39.9	39.4	39.6
20	47.3	46.8	42.0	42.4	42.1	41.5	43.3	42.8	40.1	40.3	39.3	39.9	39.5	39.1	39.7	40.1
21	46.8	47.6	43.4	44.8	43.7	43.9	42.7	43.4	40.5	39.1	39.2	39.3	39.7	39.1	38.9	39.1
22	42.0	43.2	44.2	42.8	41.4	42.3	41.4	41.1	39.1	39.4	40.2	40.9	39.6	39.5	39.4	39.1
23	46.6	45.3	41.6	43.7	42.3	42.1	42.6	42.1	40.7	40.8	39.9	40.2	39.2	39.9	38.7	39.4
24	44.0	45.5	44.6	44.0	42.6	41.2	43.7	43.9	40.3	40.0	40.7	40.9	39.6	38.9	40.0	39.8
25	45.9	46.9	46.5	42.9	42.0	41.2	43.6	42.6	40.8	40.5	40.3	40.1	39.2	39.2	38.7	39.7
26	47.0	42.7	45.0	46.5	42.3	43.7	43.4	42.7	40.5	40.9	39.1	40.4	38.8	39.1	39.1	39.7
27	47.6	45.2	42.0	44.1	41.6	42.6	42.5	43.9	40.5	39.7	40.6	40.5	39.8	39.0	39.5	39.1
28	41.9	43.9	41.6	45.0	42.4	42.4	41.6	41.6	39.9	39.6	40.2	40.2	39.7	39.8	40.1	39.0
29	47.3	46.2	42.6	41.4	43.8	42.4	42.3	43.0	39.3	39.7	40.3	39.2	39.7	39.6	39.9	38.8
30	43.0	46.7	43.2	46.0	41.9	40.8	41.2	41.5	40.4	40.0	39.9	40.7	38.8	39.3	39.7	39.1

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,7 2024 - Agustus, 7 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	39.6	41.6	38.9	38.8	44.2	42.1	41.9	42.6	44.7	46.8	45.7	47.7	48.4	46.7	49.0	50.7
2	41.1	39.3	39.9	41.0	43.4	43.7	41.9	42.2	45.0	46.4	47.0	44.5	46.7	52.5	46.2	47.1
3	39.6	39.6	39.6	41.1	43.9	41.9	43.7	42.9	43.8	45.5	44.8	46.1	55.9	49.0	48.5	56.4
4	41.3	39.6	40.6	40.1	44.1	43.8	42.1	41.8	45.8	45.3	45.8	45.2	55.3	47.5	48.8	51.1
5	40.5	39.2	39.9	39.8	42.0	43.8	43.5	42.6	45.2	47.6	44.3	44.2	47.1	54.2	47.0	54.6
6	38.8	39.7	41.9	41.3	42.3	44.2	43.8	44.0	43.9	44.2	47.5	45.7	49.7	54.3	51.9	53.9
7	41.6	39.6	40.4	41.1	43.7	44.1	42.7	42.9	44.2	43.9	43.6	44.3	56.8	47.4	51.4	54.7
8	41.4	40.8	41.6	41.2	43.9	43.8	43.8	43.8	45.1	45.2	43.8	45.3	51.5	45.9	55.6	47.6
9	39.5	41.8	41.1	41.4	43.5	42.5	42.1	43.3	44.7	45.5	47.2	48.1	53.8	47.7	56.1	56.4
10	41.8	41.5	41.6	39.5	44.2	43.2	42.5	44.2	46.1	44.1	46.5	44.0	55.8	54.0	50.3	47.9
11	41.9	40.4	41.1	40.6	43.8	43.8	43.4	42.4	44.9	47.3	43.7	47.9	53.6	50.6	51.3	46.0
12	39.3	39.8	40.3	41.5	43.7	42.7	42.7	43.2	46.3	45.0	44.6	46.8	46.0	50.3	52.8	54.8
13	40.4	41.2	41.8	40.4	43.9	42.2	43.2	44.2	45.3	44.8	45.0	43.8	50.0	46.5	50.4	57.5
14	40.7	40.4	39.4	39.9	41.9	42.7	44.1	41.8	46.7	45.5	44.9	44.7	57.4	54.6	52.1	48.1
15	40.5	41.5	40.6	39.6	44.0	42.7	44.1	42.9	44.6	44.9	44.7	45.4	46.0	55.8	52.0	57.1
16	39.2	39.9	41.9	40.0	42.0	43.5	42.6	42.0	47.6	46.8	47.6	44.1	55.1	53.3	51.4	50.5
17	39.9	40.8	39.3	39.3	43.8	43.8	44.1	42.6	47.0	44.5	47.7	47.2	54.6	46.4	52.9	49.1
18	39.2	40.0	40.1	39.4	43.6	43.7	41.8	43.6	46.7	44.4	46.2	44.5	51.1	54.4	54.2	47.4
19	40.3	40.9	40.6	41.8	42.5	42.6	43.8	43.4	44.5	47.2	44.0	46.2	51.3	55.8	50.3	53.7
20	39.5	40.6	39.7	39.1	43.9	43.8	43.2	42.5	47.1	43.6	47.7	48.0	47.9	57.2	57.2	56.4
21	41.9	40.0	40.2	41.9	42.5	43.9	42.8	43.1	46.7	46.2	46.6	46.9	52.9	51.1	56.7	56.9
22	38.8	41.6	40.5	39.9	43.3	42.0	42.3	44.2	45.7	47.5	45.4	47.0	51.4	54.8	52.0	55.7
23	41.7	40.5	39.9	38.8	42.8	43.6	42.4	43.3	46.7	46.0	47.2	46.4	46.7	53.9	53.4	48.5
24	41.4	41.7	39.6	41.5	41.8	44.1	43.8	42.2	43.9	44.2	45.9	43.8	52.8	50.2	51.9	48.2
25	39.8	39.0	40.2	40.6	42.6	42.0	43.9	43.1	43.7	46.1	46.9	44.3	57.2	57.2	48.5	55.0
26	39.4	41.2	38.8	39.6	43.5	43.2	43.4	42.8	45.7	46.4	46.9	47.4	48.2	53.7	52.1	46.0
27	41.8	40.3	41.5	39.5	42.3	42.6	42.2	43.3	46.3	47.2	46.7	44.7	56.7	49.6	48.5	51.2
28	40.1	41.9	40.0	39.7	44.1	42.7	43.9	43.6	44.9	45.5	46.9	47.8	54.7	50.6	52.3	50.2
29	41.8	41.4	39.1	39.6	43.7	42.5	43.0	42.1	46.5	47.2	44.9	47.1	53.7	55.0	49.0	45.5
30	41.8	39.7	40.1	40.5	42.0	44.2	42.8	43.1	44.8	44.0	45.9	45.5	52.6	45.8	49.5	53.7

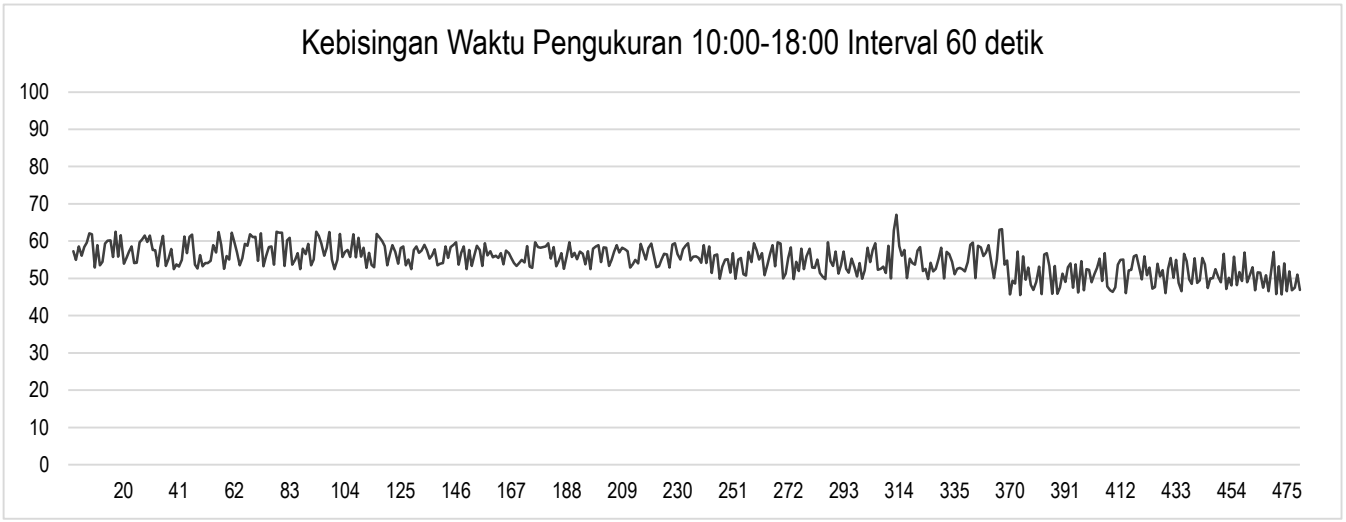
- (*) Terakreditasi KAN-756 -IDN

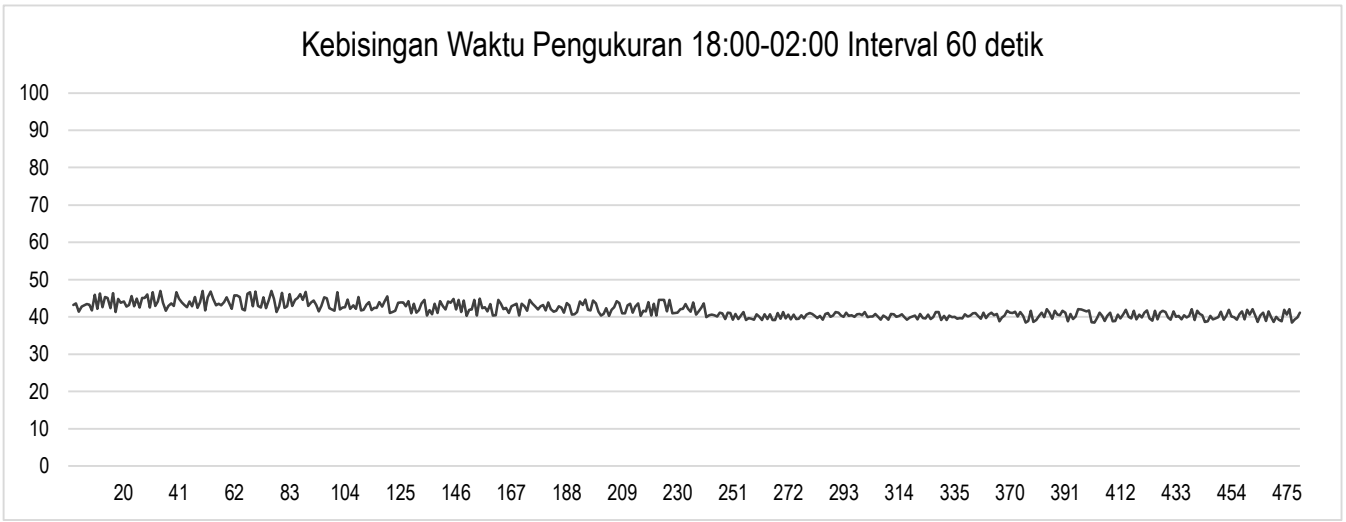
- (**) Keputusan Menteri Lingkungan Hidup No. 48 Tahun 1996 Tentang Baku Mutu Kebisingan.

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

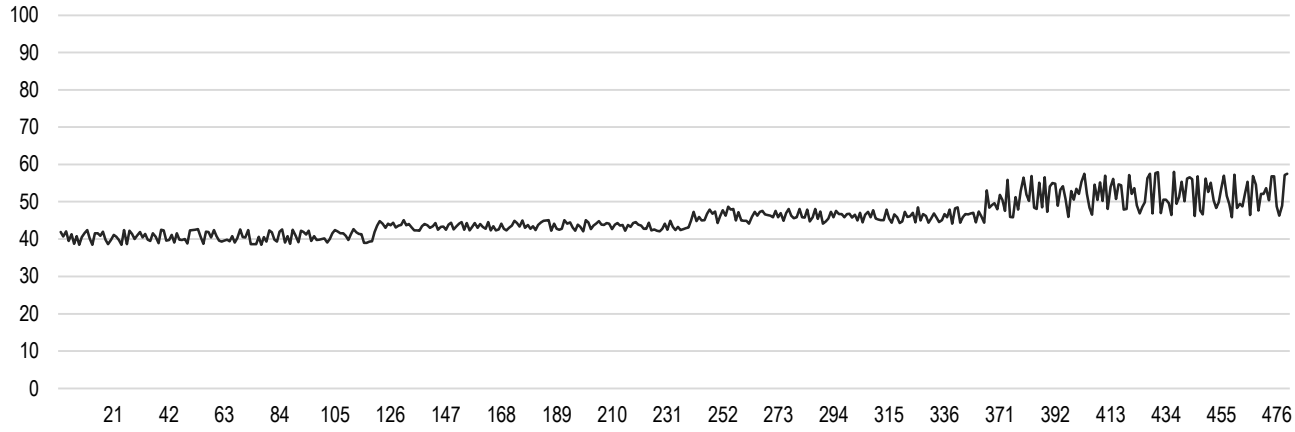




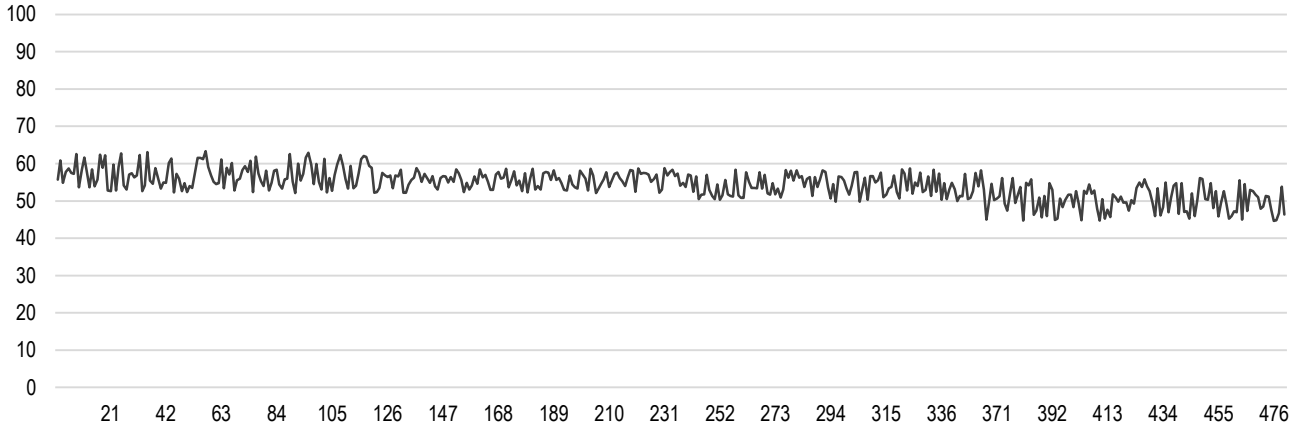
LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

Kebisingan Waktu Pengukuran 02:00-10:00 Interval 60 detik



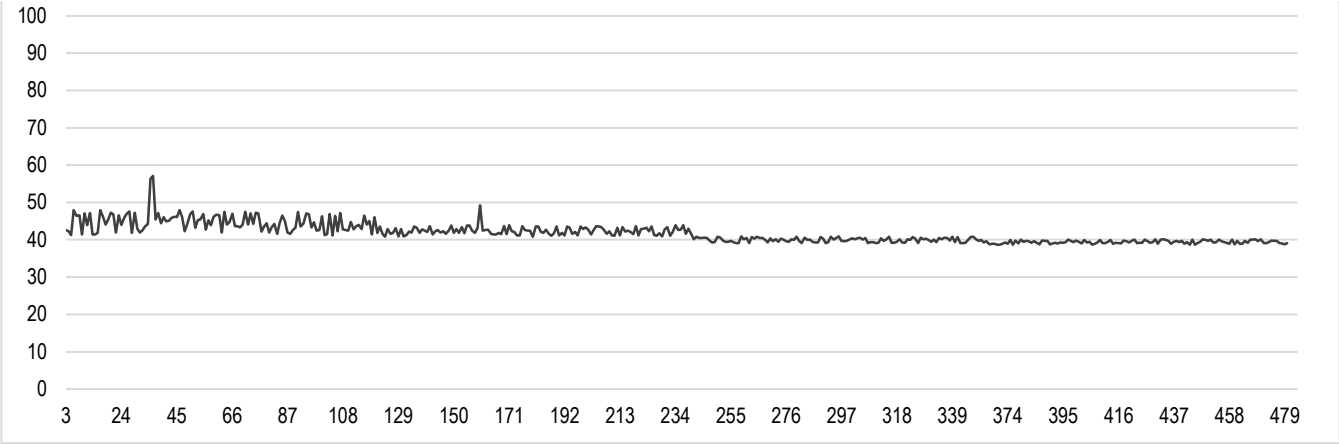
Kebisingan Waktu Pengukuran 10:00-18:00 Interval 60 detik

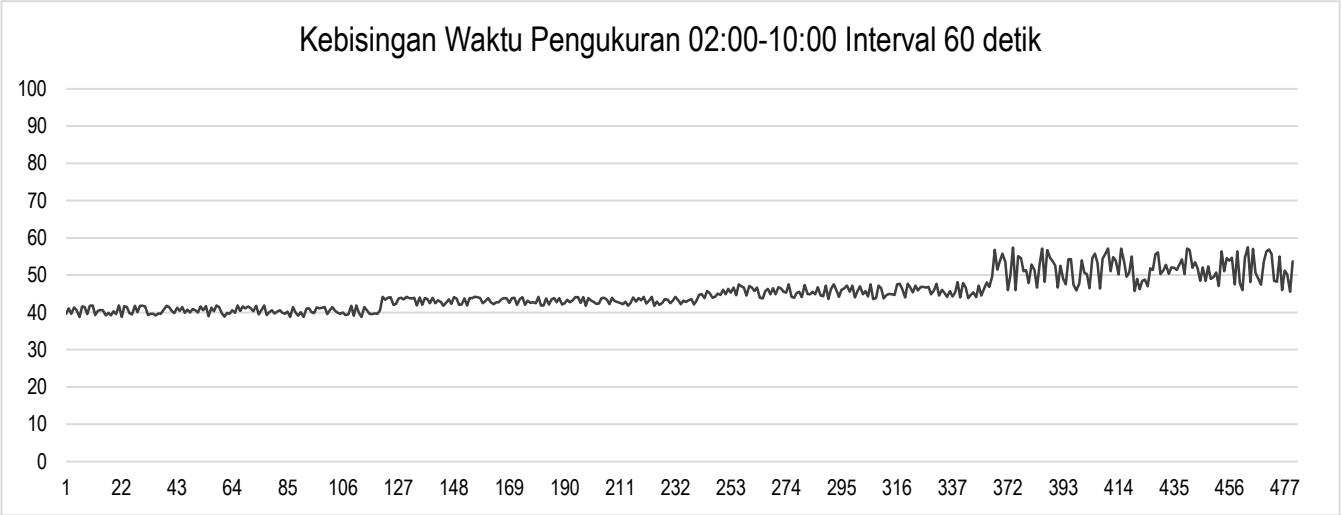


Kebisingan Waktu Pengukuran 18:00-02:00 Interval 60 detik

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 38.67"
			BT	:	110° 13' 38.23"
Identitas Contoh Uji	:	**K-1 Area TPA Sanggrahan**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-21
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu





LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

NO	HARI	RESULT										SATUAN	METODE
		L1	L2	L3	L4	L5	L6	L7	Ls	Lm	Lsm		
		09:00 - 14:00	14:00 - 17:00	17:00 - 22:00	22:00 - 00:00	00:00 - 03:00	03:00 - 06:00	06:00 - 09:00					
1	Hari Pertama	50.9	49.9	45.3	40.6	40.2	40.9	43.1	**48.5**	**40.6**	**47.7**	dBA	SNI 8427-2017
2	Hari Kedua	50.4	49.9	46.1	40.0	39.8	42.5	47.5	**48.8**	**41.1**	**48.1**	dBA	SNI 8427-2017

No	Agustus,5 2024 - Agustus, 5 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	49.1	51.0	52.4	49.2	49.1	52.0	51.6	49.6	51.3	51.4	51.7	47.8	48.9	49.7	51.6	50.0
2	50.8	53.0	51.3	51.3	52.2	51.2	49.8	52.6	47.1	50.9	47.8	50.7	50.7	52.6	47.3	51.1
3	51.2	49.8	49.2	50.1	51.8	48.0	52.0	50.9	50.4	49.7	47.3	51.1	52.6	51.5	52.1	51.0
4	52.0	52.3	50.2	49.9	52.4	48.9	49.3	52.2	50.3	48.4	48.5	48.4	50.1	46.5	48.6	47.9
5	53.4	50.2	53.4	51.2	52.0	51.5	49.3	50.9	51.3	51.3	47.9	50.9	47.5	49.2	47.3	52.7
6	52.8	49.9	52.4	50.5	49.5	48.5	51.4	51.4	47.1	50.8	47.2	50.9	50.6	52.4	48.1	46.7
7	52.1	49.6	50.5	51.9	51.8	52.1	52.8	49.6	49.7	51.4	47.1	49.9	47.0	46.6	49.3	49.9
8	52.0	52.2	51.0	49.9	48.7	50.5	50.5	51.4	48.3	51.3	49.5	47.3	50.6	51.5	47.2	47.5
9	50.7	49.1	49.3	49.4	49.0	50.3	50.0	48.6	49.2	49.6	49.5	51.2	51.2	49.3	52.3	46.8
10	52.6	50.1	52.1	51.1	48.1	52.2	50.0	52.5	49.8	51.4	49.7	49.3	50.9	50.1	50.6	47.5
11	51.0	53.1	50.9	51.9	48.5	52.8	48.9	49.4	49.3	51.4	49.7	47.5	52.2	49.4	48.4	49.6
12	51.8	52.8	51.2	49.2	48.7	50.8	52.0	52.8	47.5	47.4	48.3	51.2	48.4	47.6	49.2	48.2
13	52.3	52.3	49.5	51.8	51.0	52.3	48.3	49.2	47.9	49.2	48.0	51.2	52.7	47.0	47.5	49.6
14	49.1	51.6	50.6	50.3	50.4	50.7	49.6	52.2	47.0	50.6	51.4	48.7	52.6	49.9	49.9	48.6
15	51.8	49.9	49.1	52.4	52.3	50.1	52.3	49.5	48.2	50.2	51.4	47.8	46.7	49.9	47.8	49.3
16	50.9	52.1	49.6	51.2	49.9	52.6	49.4	48.6	51.2	51.1	51.3	51.7	52.5	47.4	49.9	46.6
17	50.7	51.9	52.2	51.1	48.8	51.9	50.6	49.8	49.8	50.0	48.8	48.2	46.7	52.2	47.7	50.2
18	52.8	53.5	50.3	51.2	49.9	48.7	48.7	50.1	50.2	51.8	50.1	51.3	51.9	47.4	51.4	52.3
19	51.8	53.2	49.9	51.3	51.5	49.3	51.3	52.8	47.6	50.0	48.4	47.0	49.1	48.3	50.4	47.8
20	51.8	52.1	51.8	50.6	50.6	50.6	50.5	52.6	49.3	49.1	51.8	47.0	51.3	47.6	48.7	50.6
21	51.6	51.9	52.5	52.4	48.0	48.2	52.3	48.6	47.5	47.9	49.3	50.8	51.9	47.8	49.6	51.8
22	51.0	53.4	52.0	52.4	49.5	48.3	51.4	52.5	50.4	50.7	47.4	47.0	48.7	49.7	49.9	47.4
23	51.5	50.6	51.8	51.0	48.8	51.8	52.6	50.1	47.2	47.9	49.7	50.6	49.9	51.4	47.5	47.5
24	52.2	49.0	52.6	49.2	49.0	52.6	48.3	49.6	47.6	49.7	51.1	51.7	50.5	52.0	46.6	48.1
25	50.0	52.1	52.4	49.8	49.5	52.2	48.9	49.2	49.0	47.6	49.2	51.3	52.6	47.7	47.9	51.2
26	50.6	51.1	52.8	52.6	51.6	49.3	50.0	48.9	51.4	48.6	50.9	50.6	50.6	50.4	50.6	50.5
27	52.3	52.4	52.5	49.8	50.6	52.1	49.1	48.7	49.7	51.0	51.4	47.2	49.3	52.4	47.7	50.4
28	50.1	52.3	49.4	52.4	50.7	49.2	52.4	48.8	48.4	49.9	48.4	50.7	48.0	52.2	46.5	51.2
29	52.9	50.9	52.9	52.0	51.0	49.9	51.9	50.0	49.9	48.1	48.5	50.8	46.6	49.9	46.6	48.2
30	52.5	52.3	50.8	52.0	51.4	51.6	50.6	51.4	50.7	50.7	50.3	47.0	48.0	50.0	50.7	50.2

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,5 2024 - Agustus, 6 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	44.9	43.8	45.2	41.4	43.2	43.3	43.6	41.4	39.6	39.6	40.3	39.8	39.4	41.0	40.3	39.5
2	42.5	41.4	43.7	45.3	40.3	42.0	41.1	42.9	40.8	40.0	40.6	39.2	41.5	40.3	38.7	40.2
3	42.2	42.0	45.5	41.3	40.9	41.6	43.4	44.0	40.7	40.3	40.1	41.0	39.7	39.3	39.7	41.0
4	46.0	42.1	44.6	45.5	40.4	43.8	43.7	41.0	40.3	40.6	41.1	41.9	40.5	40.9	41.3	38.6
5	44.6	43.4	41.9	42.8	42.8	43.4	44.0	43.3	41.2	39.9	41.1	40.2	39.0	39.7	40.5	39.2
6	46.0	42.6	42.7	43.9	40.2	42.4	41.6	42.2	39.9	39.5	39.3	41.4	41.3	40.7	40.1	41.6
7	45.9	45.2	42.8	41.2	42.7	41.2	43.0	40.6	41.7	40.2	40.9	41.9	38.9	40.1	40.8	39.5
8	45.3	45.3	42.9	45.8	42.7	42.6	41.5	42.6	39.6	41.5	39.4	40.3	39.8	41.6	38.5	40.3
9	42.9	45.0	44.8	41.4	42.3	41.2	43.6	43.5	39.7	39.7	40.8	41.0	40.7	39.2	41.2	38.6
10	42.9	41.8	44.5	41.2	41.8	42.7	41.5	40.6	41.8	40.4	40.4	41.5	39.0	40.1	41.0	39.3
11	41.9	44.6	43.4	45.2	41.4	42.6	40.3	40.2	40.1	41.7	40.9	39.2	40.2	38.6	39.7	40.8
12	45.6	42.4	44.9	44.3	40.4	40.3	41.5	42.3	39.0	41.9	40.8	40.4	39.0	40.6	39.3	40.5
13	45.5	42.6	43.3	41.8	42.8	40.7	41.9	41.0	39.6	40.6	40.8	40.9	39.0	40.7	38.7	41.1
14	44.9	43.1	44.4	45.2	43.5	42.7	41.7	42.5	41.3	40.0	41.8	41.5	40.0	40.8	39.5	40.6
15	41.4	41.5	41.2	44.0	40.9	41.3	42.6	42.4	40.8	39.8	40.6	39.4	40.1	40.0	40.5	41.7
16	44.7	43.1	43.7	42.3	40.5	40.8	43.5	40.9	40.9	39.1	40.0	40.9	39.1	39.7	39.6	39.7
17	42.3	45.7	44.8	43.9	43.8	40.9	42.3	41.8	40.4	39.0	41.4	41.8	40.2	41.0	40.1	39.9
18	42.1	42.8	42.9	41.2	42.2	43.4	41.2	40.4	41.3	41.1	39.8	39.9	41.6	39.1	38.5	39.3
19	45.3	44.6	41.8	42.1	41.4	40.7	41.7	41.3	40.1	41.6	41.6	40.0	40.8	39.0	40.6	39.1
20	41.2	43.0	43.7	43.6	42.4	41.5	40.6	43.7	39.2	39.1	39.3	40.4	41.0	40.5	38.9	38.8
21	43.1	41.3	44.6	43.5	43.6	41.7	40.9	42.8	40.7	41.0	40.5	41.8	40.9	41.4	40.5	40.4
22	45.4	42.2	43.7	44.3	43.9	41.1	41.6	43.4	41.1	40.7	41.5	39.4	41.1	40.6	41.0	38.9
23	41.6	44.4	45.9	42.1	41.8	41.8	40.4	40.5	41.7	41.5	39.0	40.2	40.0	39.4	39.1	40.9
24	42.2	42.3	44.7	44.4	43.4	43.8	40.8	40.3	40.3	40.7	41.2	39.2	39.0	39.3	41.4	38.7
25	45.2	43.0	41.9	44.6	41.1	42.9	41.1	41.7	41.5	41.7	41.3	40.8	40.9	41.6	40.1	38.9
26	44.1	44.9	41.6	45.8	42.2	43.3	41.5	41.6	41.3	40.3	41.8	40.3	40.8	40.0	40.8	41.1
27	45.2	42.8	41.6	44.7	42.2	41.7	43.5	42.5	39.8	41.4	41.0	39.3	41.0	38.7	38.8	38.7
28	41.6	45.0	45.0	43.4	42.8	43.4	41.4	41.7	40.3	41.8	39.8	39.4	40.5	41.3	41.7	40.3
29	45.4	44.0	42.4	42.4	40.4	40.9	42.8	40.9	39.0	41.2	40.3	41.8	41.4	40.0	41.6	41.0
30	43.2	42.6	44.3	41.7	41.9	43.3	43.4	40.3	39.5	39.1	41.4	41.8	41.5	41.5	40.0	38.9

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,6 2024 - Agustus, 6 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	39.7	38.8	40.4	41.6	40.3	40.8	40.1	40.5	43.3	43.6	42.4	41.4	42.9	44.1	45.7	44.0
2	39.8	40.0	39.4	39.9	40.7	40.7	42.0	40.6	40.5	43.0	41.1	40.5	42.7	45.8	43.6	42.6
3	39.2	40.9	41.6	39.5	41.8	40.4	41.5	39.5	42.9	41.6	43.7	40.5	44.3	43.5	45.2	43.9
4	39.6	38.8	40.0	39.3	39.8	40.5	39.7	41.3	42.8	43.4	42.1	42.7	45.1	43.4	45.3	43.2
5	40.2	40.5	39.5	39.6	41.0	40.5	42.2	39.6	41.3	43.1	41.8	43.6	42.6	44.9	43.0	42.5
6	41.3	41.7	38.8	40.0	39.6	41.4	41.4	41.1	41.4	42.1	42.3	43.3	44.5	42.8	45.1	45.3
7	39.9	40.1	40.1	39.2	40.8	40.5	41.1	40.7	41.9	43.1	41.5	42.6	42.6	44.9	43.0	45.8
8	40.0	38.9	41.9	39.8	39.8	39.8	40.9	41.2	43.6	43.6	41.9	41.7	42.7	42.6	43.7	43.7
9	39.5	40.0	41.3	41.1	41.8	40.9	41.9	41.3	42.2	41.9	42.3	43.0	42.7	43.0	42.5	43.2
10	39.1	41.6	39.5	40.3	40.3	40.0	39.9	41.2	42.4	41.9	43.6	43.2	45.3	42.5	44.2	43.0
11	38.7	41.9	38.7	41.0	42.0	41.4	40.2	41.7	40.8	42.0	43.3	40.8	45.2	43.9	46.2	44.9
12	39.0	40.5	40.9	41.7	39.5	41.4	40.7	39.9	41.1	43.6	43.0	43.0	43.4	44.1	44.7	45.9
13	38.7	41.7	40.1	41.2	40.3	40.2	40.3	39.5	43.4	41.5	43.4	42.6	45.4	43.5	43.4	45.4
14	39.9	39.8	38.8	39.6	42.0	41.1	40.8	41.5	43.2	42.1	42.0	43.7	42.6	45.5	44.2	46.1
15	41.2	41.3	39.1	39.6	40.4	41.0	39.5	39.8	41.0	42.3	42.7	42.9	45.5	44.7	43.7	45.7
16	39.8	41.0	41.1	40.5	40.4	41.9	39.9	40.9	43.5	42.6	42.7	41.8	43.5	43.0	44.4	44.2
17	40.0	42.0	39.2	41.7	41.5	41.0	42.1	42.1	42.1	42.9	43.0	42.9	43.2	44.6	45.0	43.6
18	42.0	40.3	40.8	39.0	39.9	40.9	42.0	41.3	43.3	43.0	42.9	41.2	45.5	45.5	43.3	43.6
19	39.9	41.0	41.2	41.5	39.5	40.0	40.5	40.1	42.8	43.0	42.6	40.6	44.7	44.1	43.1	43.1
20	41.7	39.1	39.0	41.1	42.0	40.1	40.4	39.7	42.7	42.3	43.6	41.7	45.4	44.8	43.4	46.0
21	38.7	41.1	38.9	38.7	40.9	39.7	40.2	40.6	42.7	41.4	43.0	42.0	45.0	45.9	46.0	43.8
22	40.9	39.6	40.8	40.4	40.7	41.7	39.8	40.2	40.5	42.9	41.1	42.5	43.3	44.2	44.0	42.8
23	41.1	40.8	39.4	38.7	40.0	41.0	39.5	40.2	41.4	41.9	41.2	43.4	45.3	44.7	45.7	45.3
24	39.2	41.1	41.4	39.6	39.8	41.2	41.6	40.2	40.8	42.1	42.4	42.4	43.7	45.1	45.0	44.4
25	40.8	39.0	41.2	40.3	42.0	41.9	39.9	40.7	41.8	41.6	41.4	41.9	43.2	45.0	43.9	43.7
26	41.1	40.9	39.0	41.8	40.3	40.4	42.1	40.0	43.4	42.0	42.5	41.7	43.4	43.4	43.4	43.4
27	41.4	38.6	38.6	40.6	42.2	39.6	39.6	40.5	43.0	41.8	41.9	40.5	44.7	46.1	44.0	43.7
28	40.5	38.8	39.9	40.2	39.6	41.1	39.7	41.7	43.1	41.4	40.9	41.9	45.3	45.2	42.7	45.4
29	39.5	39.7	38.8	38.7	39.9	42.2	41.4	39.5	42.4	41.7	40.7	41.8	43.2	45.7	45.2	43.8
30	38.8	40.7	40.5	39.8	41.9	42.1	39.5	41.3	43.3	43.2	41.0	41.1	43.5	43.7	46.0	45.2

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,6 2024 - Agustus, 6 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	51.9	50.8	49.8	51.0	48.1	48.2	52.4	50.0	51.8	48.7	50.4	47.3	50.6	50.8	46.7	47.9
2	52.1	50.3	52.4	49.8	48.2	49.4	48.2	51.1	49.5	51.7	50.3	51.1	51.8	49.8	52.4	50.7
3	51.9	52.4	50.9	49.6	52.6	50.4	51.9	51.0	50.2	50.5	48.5	50.5	49.5	52.5	52.4	52.6
4	52.4	53.3	52.0	51.7	50.1	50.1	48.3	48.4	49.1	49.3	51.6	51.2	47.9	46.6	49.4	48.9
5	48.9	53.5	51.6	49.2	49.1	49.2	49.5	50.6	50.2	50.6	50.0	49.0	48.8	48.9	48.9	50.3
6	50.1	50.7	49.1	51.4	50.0	52.8	51.4	52.3	47.9	50.1	50.2	51.7	47.7	48.5	48.7	49.1
7	51.2	53.3	50.4	50.0	50.0	49.4	48.2	49.5	51.6	51.5	47.6	47.4	52.1	52.4	51.1	51.9
8	52.4	49.0	53.5	52.2	52.8	50.7	52.6	50.0	48.1	47.3	47.4	47.8	49.3	49.8	46.5	52.1
9	50.0	52.7	52.8	52.7	50.2	51.1	50.6	49.3	49.2	49.0	48.8	49.6	47.4	49.3	47.5	50.6
10	49.5	51.4	53.4	50.0	51.4	48.1	52.8	52.1	50.6	49.1	47.8	49.5	52.7	48.2	48.0	51.7
11	51.6	50.5	50.4	50.8	50.8	52.8	51.9	51.5	48.1	49.9	50.1	48.4	47.6	48.3	49.0	51.1
12	49.5	50.7	49.1	53.5	51.8	49.4	50.2	49.6	51.7	49.9	48.1	51.6	47.3	47.1	47.7	50.0
13	52.1	52.6	51.3	52.6	52.1	49.6	51.2	51.7	48.4	51.6	47.2	48.8	50.3	52.0	47.6	48.8
14	53.2	50.4	52.0	52.7	50.0	51.5	50.2	49.7	49.6	49.7	49.6	47.7	46.5	50.4	47.8	50.8
15	49.7	50.9	52.6	51.6	50.1	48.6	49.3	49.3	47.2	49.6	50.7	47.6	52.3	47.2	47.7	50.4
16	52.9	52.1	53.5	51.9	49.9	49.1	51.9	51.7	50.4	47.6	49.0	48.0	47.9	50.6	50.6	47.9
17	51.6	49.5	49.3	51.4	51.0	52.5	48.7	51.5	49.7	50.5	49.9	49.4	50.3	47.0	51.9	52.4
18	49.3	51.6	52.9	49.9	52.7	52.4	49.1	49.0	49.7	50.7	49.6	51.5	48.7	48.1	51.7	50.9
19	52.6	50.3	49.3	51.1	50.0	48.9	52.8	52.4	51.1	48.4	51.8	47.5	50.7	51.8	49.2	47.9
20	51.1	49.6	52.4	49.0	49.1	51.2	50.3	48.3	48.6	50.8	51.5	50.3	49.4	49.8	52.3	52.0
21	50.9	50.8	51.6	52.0	51.8	51.9	48.4	51.0	48.5	51.4	49.6	48.9	52.3	52.1	51.5	52.6
22	52.0	52.0	53.0	53.3	49.4	48.9	51.7	51.2	49.6	51.2	51.8	49.4	48.7	48.4	50.8	46.6
23	51.9	51.7	51.2	52.0	52.0	52.0	52.7	48.8	47.0	51.3	51.6	51.2	50.5	49.8	47.2	47.0
24	48.9	51.4	52.7	51.8	50.3	51.0	52.3	48.7	50.5	50.7	48.9	50.0	50.6	50.5	52.7	47.1
25	52.2	53.4	50.6	51.1	52.2	48.1	49.7	48.6	50.8	49.5	49.9	48.5	52.7	48.3	46.8	47.7
26	52.1	53.2	49.4	52.4	52.7	50.3	52.0	48.1	47.5	48.8	49.6	51.8	51.3	49.1	46.6	50.9
27	50.8	51.6	53.2	51.7	48.2	48.7	48.6	48.7	47.7	47.5	50.6	47.3	52.3	47.4	51.1	50.8
28	51.9	51.0	52.1	52.7	52.7	51.4	50.4	51.6	49.3	51.3	47.0	48.2	49.6	52.5	52.5	51.2
29	51.5	51.0	51.2	50.9	48.9	50.3	49.0	48.4	49.2	48.0	49.4	49.4	52.1	48.6	52.4	50.8
30	52.3	52.6	50.5	51.2	49.7	49.6	52.8	50.2	48.9	51.2	47.8	50.1	52.6	47.9	49.9	51.1

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,6 2024 - Agustus, 7 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	43.2	44.1	47.6	46.9	43.6	42.8	43.9	43.1	39.7	39.7	39.4	40.6	40.0	39.8	39.0	39.5
2	41.9	48.0	47.2	45.0	41.6	43.4	43.4	41.3	40.0	39.4	39.9	40.9	38.7	39.5	38.8	39.2
3	44.9	43.8	43.7	46.4	41.5	42.3	40.8	43.5	39.9	39.3	40.2	40.9	40.0	40.1	38.9	39.4
4	42.0	43.7	41.9	41.6	42.4	43.0	43.1	41.6	39.7	39.3	40.0	39.9	38.8	38.9	39.2	39.8
5	45.8	43.7	44.0	46.4	41.3	42.9	43.7	43.0	40.5	40.6	39.4	39.8	39.0	39.2	38.9	39.7
6	43.4	44.9	45.2	42.3	42.9	42.8	40.9	41.0	40.3	39.5	39.3	40.2	39.1	40.0	39.0	39.7
7	46.5	43.3	44.3	42.6	41.1	42.1	43.4	43.7	40.3	40.5	39.6	40.9	39.4	39.5	39.2	38.9
8	45.7	47.4	42.0	42.1	43.2	42.1	41.5	41.3	39.7	40.9	39.9	39.9	40.1	38.9	39.3	39.5
9	44.3	41.3	42.3	42.7	42.8	43.0	42.9	41.8	39.2	40.8	40.1	40.4	39.3	38.7	39.6	39.8
10	47.8	41.2	44.8	47.2	42.2	42.4	42.8	41.8	39.9	40.4	40.3	39.1	39.3	38.9	39.5	39.1
11	45.1	44.3	42.8	47.4	43.9	43.4	42.8	42.0	39.4	40.5	40.0	40.3	39.3	38.7	39.2	39.4
12	47.5	46.2	44.3	46.0	43.3	42.3	42.7	42.1	39.8	40.0	40.4	40.9	38.9	39.5	39.8	40.1
13	41.7	44.4	41.2	45.3	41.2	41.3	41.5	43.5	39.3	39.7	39.9	39.4	39.5	39.8	40.1	39.8
14	46.3	44.6	47.9	47.9	41.7	40.8	41.0	42.4	40.4	40.7	39.2	39.1	39.3	39.3	39.4	39.6
15	44.5	44.3	41.2	42.1	42.6	42.1	42.0	41.3	39.5	39.2	39.9	40.1	39.2	40.1	38.7	39.2
16	43.1	47.0	41.8	47.7	42.8	41.0	41.0	42.8	39.8	40.2	40.9	40.4	38.8	38.9	39.6	39.1
17	45.5	43.4	45.7	47.9	43.3	41.9	42.6	42.1	40.8	39.3	40.2	40.8	40.1	39.5	38.7	38.9
18	47.9	45.0	42.4	44.6	42.7	42.7	43.6	42.5	39.7	40.6	40.4	40.4	38.7	38.9	39.5	39.2
19	45.8	45.2	46.4	41.2	42.8	43.6	41.6	41.7	39.4	39.2	39.6	40.6	40.0	38.7	39.6	39.6
20	45.6	45.8	44.7	42.7	42.3	42.9	43.3	42.5	40.7	40.4	39.6	40.5	39.1	39.3	39.4	39.3
21	44.8	42.6	41.6	44.0	43.3	41.0	43.3	42.1	39.7	40.8	39.1	40.2	39.3	39.2	38.8	39.8
22	41.9	42.6	46.8	45.6	42.9	40.8	41.6	43.1	39.3	40.1	39.9	39.1	38.7	39.5	38.8	39.9
23	44.9	41.8	45.7	43.4	41.0	41.6	42.7	42.6	40.4	40.9	39.7	40.2	39.6	39.7	39.7	39.2
24	45.3	44.3	44.3	41.5	40.9	41.2	42.7	41.9	40.8	39.2	40.5	40.7	39.0	38.7	39.1	39.9
25	44.9	46.5	47.3	43.1	43.7	42.2	43.8	41.7	39.2	40.7	40.6	39.6	38.7	39.2	39.6	40.0
26	47.6	48.0	47.7	41.5	42.5	43.4	41.7	41.5	40.8	39.6	39.6	39.7	39.0	38.9	39.5	39.0
27	42.0	42.4	44.8	41.8	42.6	42.8	42.3	42.8	40.0	40.1	39.9	40.0	39.8	38.7	39.9	39.6
28	43.0	44.2	45.5	44.6	41.3	43.1	41.5	40.8	39.1	40.1	40.4	40.0	38.9	38.9	39.2	39.5
29	42.6	45.8	46.2	41.9	41.5	42.6	42.0	43.3	39.8	39.7	40.0	39.9	39.2	39.3	39.7	39.8
30	43.7	45.6	46.3	48.0	43.9	43.3	43.7	43.7	39.3	40.3	40.3	40.3	39.2	39.7	39.7	39.0

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Agustus,7 2024 - Agustus, 7 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	40.4	41.1	39.8	40.7	44.2	44.2	43.8	42.9	43.7	46.0	45.2	46.9	48.3	45.1	49.2	48.6
2	40.8	41.4	40.4	41.1	42.0	44.0	44.0	43.9	45.7	44.2	47.0	44.4	51.5	51.8	49.5	51.9
3	39.7	41.2	42.0	41.3	43.9	44.2	42.5	42.8	45.0	47.5	47.2	45.6	50.6	45.7	50.1	50.9
4	39.0	40.3	40.8	40.0	43.9	43.9	44.2	43.5	45.8	44.8	46.4	43.6	50.7	52.3	48.2	46.4
5	39.8	39.0	40.8	39.5	43.4	43.0	42.2	42.4	45.5	46.7	46.7	44.8	47.7	45.8	51.0	50.1
6	40.1	41.5	40.6	40.1	43.4	43.7	43.4	43.2	48.1	43.9	46.4	43.8	53.0	47.8	45.4	46.3
7	39.0	42.0	39.1	41.0	42.2	43.3	42.3	43.6	46.6	45.4	47.3	43.7	45.1	47.6	52.7	50.4
8	40.7	39.6	39.5	39.0	43.2	43.4	42.6	43.7	44.4	44.1	45.3	48.0	48.7	51.4	45.5	45.6
9	40.8	41.7	40.3	40.8	43.8	42.3	43.5	41.9	43.9	45.4	45.2	45.1	46.6	48.3	47.0	51.9
10	40.2	41.1	41.6	39.4	42.9	44.1	44.0	42.1	45.9	45.8	47.2	46.5	52.0	48.7	45.8	52.1
11	41.4	40.0	41.6	39.1	41.9	42.5	42.2	42.5	45.1	44.2	45.7	45.1	47.9	47.0	49.8	50.5
12	40.2	39.4	39.4	38.9	44.0	42.6	43.3	43.1	45.7	45.9	46.7	47.2	48.8	44.9	46.0	48.5
13	41.7	39.3	40.7	38.9	43.9	43.6	41.9	43.8	46.1	47.1	47.7	47.3	50.0	45.1	50.9	49.7
14	40.8	39.0	39.5	40.3	42.6	43.7	43.8	43.8	44.6	46.5	47.7	45.9	46.6	51.9	53.0	45.5
15	39.4	40.2	41.0	42.0	43.4	42.8	42.7	42.7	48.0	46.8	45.4	47.1	50.0	46.1	45.0	48.4
16	41.6	39.2	40.8	39.3	43.8	41.9	42.8	43.2	45.8	44.3	43.6	47.5	46.5	49.4	49.9	46.5
17	41.4	41.6	39.8	39.7	43.6	43.2	43.3	44.1	47.6	44.7	45.6	46.4	47.7	50.4	52.6	48.9
18	39.6	40.4	41.8	42.0	44.2	42.9	43.1	44.0	46.8	45.8	45.4	43.6	48.4	48.3	52.3	48.9
19	39.5	39.0	41.7	40.5	43.1	44.0	43.0	42.8	44.7	46.3	43.6	46.6	52.5	51.8	49.9	51.8
20	41.3	40.9	40.8	41.9	42.2	43.2	43.0	43.4	45.8	44.0	44.7	46.6	45.5	46.7	50.8	47.1
21	41.5	39.4	39.2	39.0	41.8	42.1	43.2	43.7	44.3	43.6	46.7	47.0	45.4	51.6	48.7	49.6
22	40.4	38.8	40.2	41.4	43.1	42.6	42.9	44.0	45.8	44.0	44.9	43.7	52.1	47.1	52.3	50.5
23	41.8	41.3	41.1	41.8	42.5	41.9	42.8	42.6	44.7	46.4	43.6	43.6	51.0	51.7	47.4	47.3
24	39.2	41.6	38.8	41.2	43.8	43.0	42.4	43.3	45.2	44.6	45.8	46.2	52.3	51.0	50.4	49.3
25	40.4	41.4	39.0	38.8	42.6	42.5	43.9	43.6	44.2	46.7	46.6	48.0	51.6	44.8	50.6	48.7
26	41.3	41.2	40.9	41.3	43.9	43.6	43.5	43.3	47.3	45.2	44.9	47.9	49.7	46.3	51.1	50.5
27	40.8	41.7	41.1	39.0	42.4	43.9	42.5	41.8	44.4	48.1	44.7	43.7	51.7	51.6	51.2	45.4
28	39.5	41.7	40.7	41.4	43.1	43.0	43.3	43.2	47.8	43.7	46.2	48.0	52.1	49.7	49.4	48.9
29	40.4	40.7	40.6	40.5	42.4	43.2	43.9	44.0	46.1	43.8	45.1	46.6	48.9	49.1	51.9	47.1
30	40.0	41.5	41.5	41.8	43.4	44.0	42.4	42.2	47.3	46.8	46.9	43.9	51.2	47.0	47.2	49.9

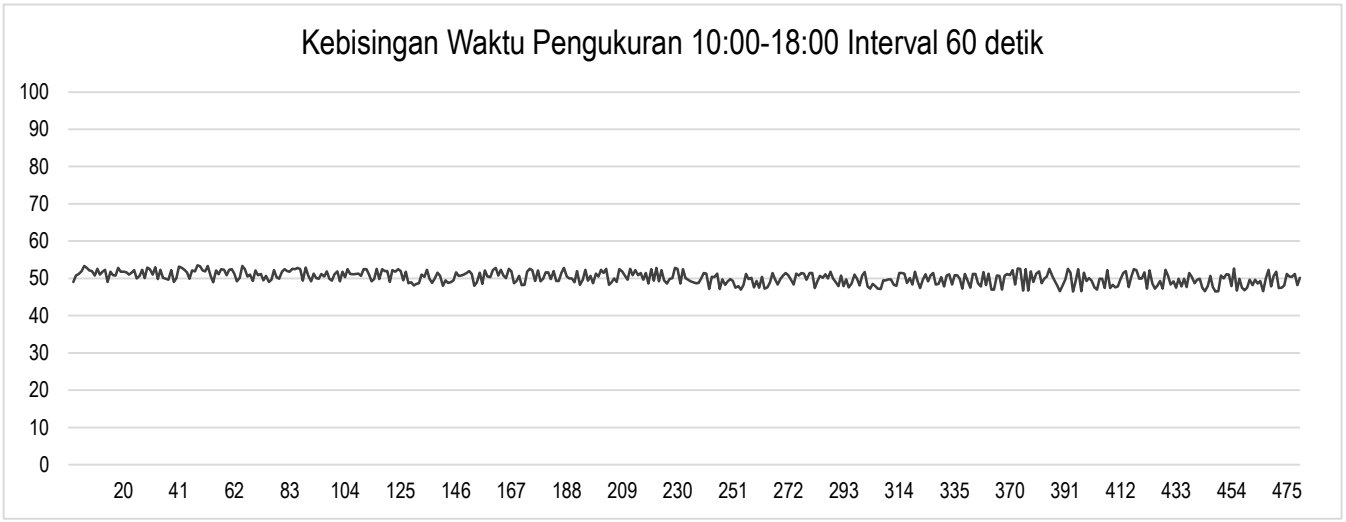
- (*) Terakreditasi KAN-756 -IDN

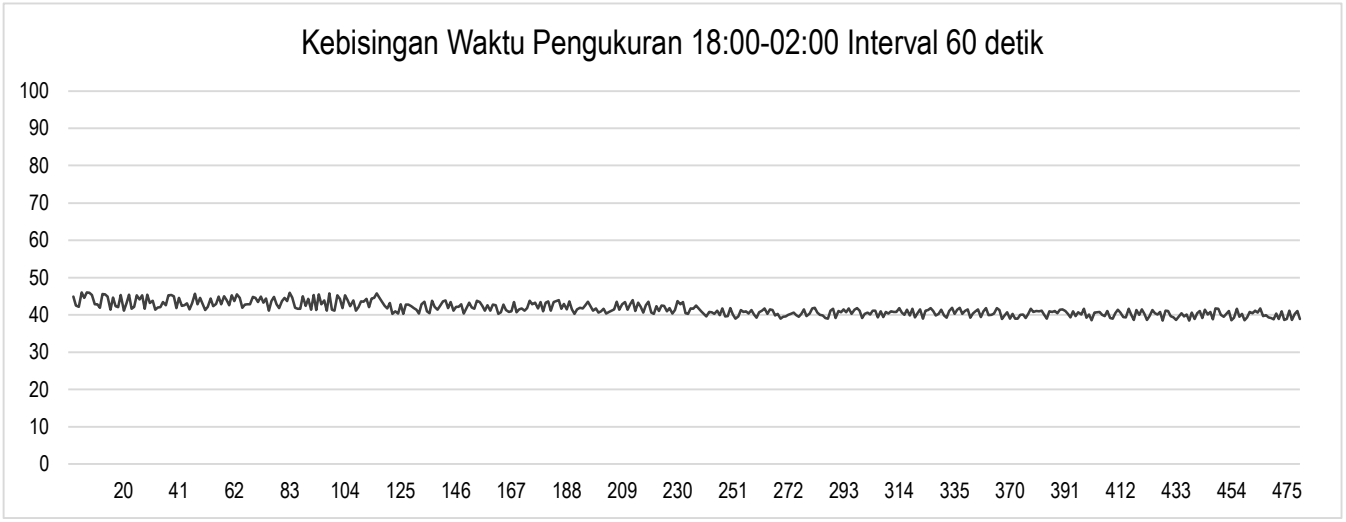
- (**) Keputusan Menteri Lingkungan Hidup No. 48 Tahun 1996 Tentang Baku Mutu Kebisingan.

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

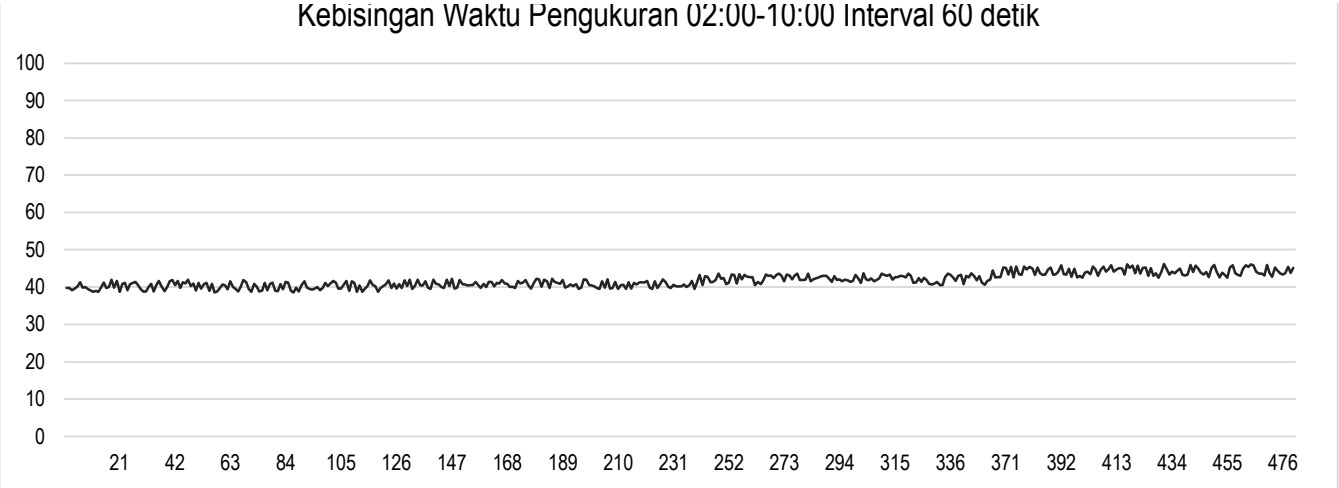
Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

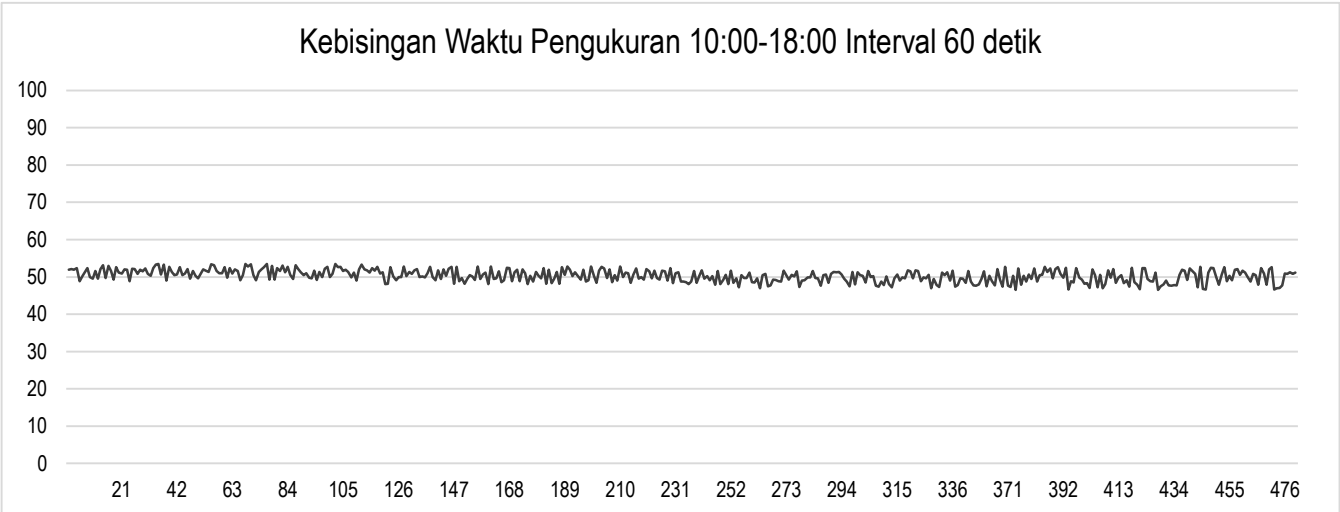




LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

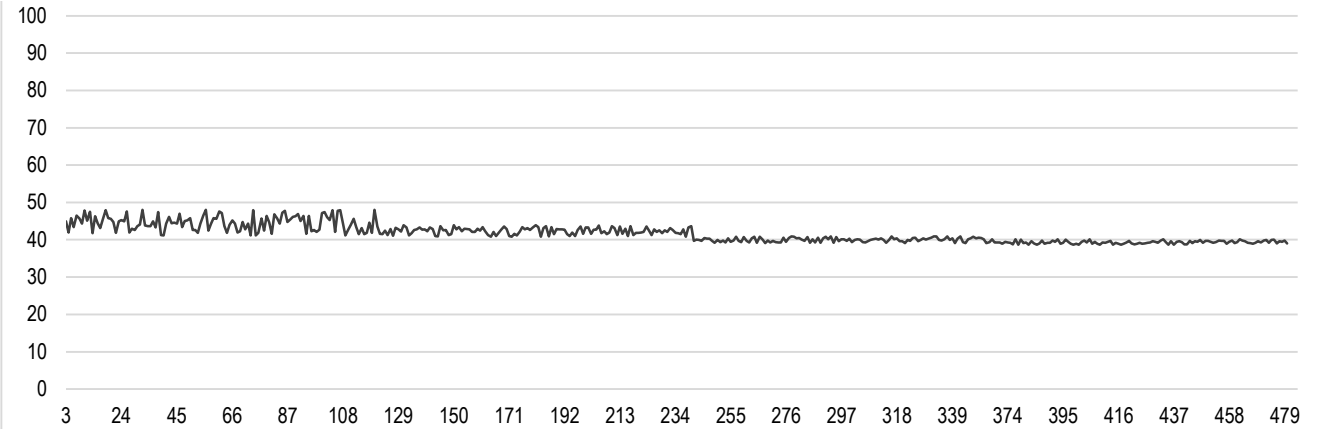


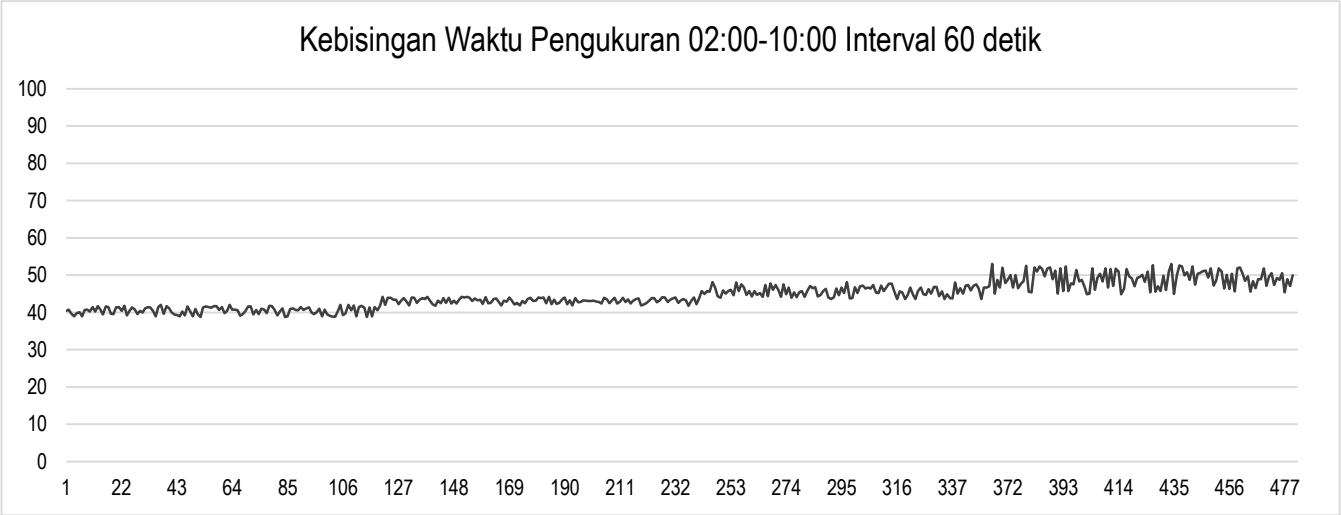


Kebisingan Waktu Pengukuran 18:00-02:00 Interval 60 detik

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 30.79"
			BT	:	110° 13' 47.51"
Identitas Contoh Uji	:	**K-2 Pemukiman Dusun Losari**			
Tanggal Pengambilan	:	05 Agu - 07 Agu 24	ID Sampel Laboratorium	:	18244316-22
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu





LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

NO	HARI	RESULT										SATUAN	METODE
		L1	L2	L3	L4	L5	L6	L7	Ls	Lm	Lsm		
		09:00 - 14:00	14:00 - 17:00	17:00 - 22:00	22:00 - 00:00	00:00 - 03:00	03:00 - 06:00	06:00 - 09:00					
1	Hari Pertama	49.4	49.7	46.3	40.5	40.3	42.3	43.0	**47.9**	**41.2**	**47.4**	dBA	SNI 8427-2017
2	Hari Kedua	49.1	49.7	45.9	40.6	40.3	42.5	43.2	**47.7**	**41.3**	**47.3**	dBA	SNI 8427-2017

No	Juli, 27 2024 - Juli, 27 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	51.0	49.4	47.8	49.0	48.5	47.3	49.6	49.1	49.0	51.6	48.9	50.6	49.2	49.8	47.9	50.6
2	49.0	51.0	48.0	50.8	50.0	51.2	48.8	48.1	49.8	51.4	48.2	47.1	46.7	48.5	48.8	47.5
3	50.9	50.9	51.0	48.3	48.2	51.3	51.3	47.3	51.5	51.3	49.1	51.3	49.1	50.3	48.4	51.0
4	50.6	50.8	50.9	50.6	49.7	49.8	47.9	48.6	48.3	47.9	49.7	48.8	50.1	50.6	50.2	48.5
5	48.3	51.5	50.8	51.0	50.4	50.2	49.3	49.0	50.3	49.5	49.8	51.3	50.3	47.7	49.0	47.5
6	50.8	48.6	47.8	48.1	48.8	49.3	49.2	51.4	51.7	49.2	47.7	47.1	48.0	51.2	46.6	48.2
7	49.9	51.5	50.3	49.9	49.2	50.5	47.5	47.6	48.0	50.9	47.9	48.8	51.2	50.4	47.2	51.3
8	49.9	49.0	50.4	50.7	49.4	51.2	51.6	51.2	46.8	47.9	49.7	49.1	51.3	49.2	47.1	49.3
9	48.1	49.5	48.5	50.4	48.0	48.2	51.1	47.0	46.5	50.7	51.4	57.2	49.6	49.4	47.6	48.6
10	49.7	49.8	48.3	50.9	47.5	50.0	47.2	51.3	51.6	50.2	47.8	56.1	48.9	46.7	47.4	47.6
11	48.5	49.5	51.1	50.8	49.6	51.0	50.5	48.4	51.6	51.8	51.0	56.6	46.7	47.8	46.1	49.7
12	50.4	49.3	50.2	50.8	51.3	49.3	51.4	48.5	47.8	46.5	49.9	47.2	48.0	50.3	48.1	46.5
13	50.2	48.8	48.4	49.6	50.1	50.8	47.5	50.2	50.4	47.6	49.0	48.6	49.8	50.7	47.3	50.7
14	49.8	50.7	50.9	48.5	48.2	47.4	49.3	50.5	48.2	51.5	47.1	49.3	50.2	46.9	50.1	50.8
15	51.3	50.0	48.2	51.4	58.2	50.0	47.9	48.1	48.6	48.5	47.6	50.8	50.5	50.4	47.4	50.8
16	49.6	50.0	50.2	48.9	58.1	48.6	47.3	49.1	51.7	46.6	51.3	47.2	50.4	46.2	48.0	48.1
17	48.4	49.0	51.5	50.3	57.2	48.1	50.0	51.5	49.8	50.5	48.2	46.7	47.3	48.8	49.5	49.3
18	48.3	48.0	51.0	50.8	48.6	48.2	49.5	48.3	47.4	51.6	51.0	47.5	46.6	48.8	50.2	50.6
19	50.8	50.2	51.4	48.3	51.3	49.3	49.4	49.0	48.1	48.9	51.1	47.8	49.2	49.6	51.0	46.4
20	50.8	50.6	48.7	49.1	47.5	48.1	49.1	48.0	51.8	49.3	47.6	51.4	47.3	49.3	49.0	49.0
21	51.2	51.3	49.7	47.8	48.8	51.3	47.3	51.0	50.4	47.3	49.4	50.7	50.1	48.0	47.1	48.3
22	48.5	49.1	49.4	49.2	50.3	49.4	49.3	49.8	51.3	46.9	48.9	49.4	51.0	50.3	50.4	48.5
23	51.0	48.5	49.2	50.3	48.5	48.2	49.3	48.8	51.2	48.8	48.9	49.3	51.2	47.9	50.9	50.4
24	50.1	50.0	48.1	50.9	51.3	51.0	51.7	50.7	50.1	47.6	50.0	50.5	47.7	47.7	46.4	48.4
25	51.5	50.1	50.0	47.9	51.6	48.6	48.3	51.1	49.3	47.1	48.8	47.5	51.3	49.3	48.9	47.1
26	48.1	48.1	48.4	49.7	50.0	50.4	51.1	48.1	47.4	48.8	49.7	48.7	49.2	46.5	47.9	51.2
27	50.6	50.7	48.7	49.4	51.4	50.0	49.7	51.0	47.3	50.9	48.4	51.7	49.7	48.8	46.9	47.6
28	49.6	49.6	50.5	48.7	49.6	48.3	50.3	48.6	47.3	47.1	47.6	49.2	49.0	50.3	50.2	46.5
29	48.1	48.8	49.4	50.1	49.9	51.3	47.9	50.3	51.0	46.8	47.2	46.9	46.9	50.2	50.6	49.5
30	48.5	50.9	50.2	50.3	49.4	48.2	48.2	49.2	47.6	46.9	47.9	48.4	47.6	51.1	47.0	46.7

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 27 2024 - Juli, 28 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	45.7	44.3	46.3	42.7	43.4	43.9	40.6	43.1	40.9	40.9	41.1	41.2	40.2	39.7	39.3	40.3
2	56.7	43.3	56.3	44.0	41.8	43.1	43.7	40.8	40.0	40.6	40.0	41.1	40.3	39.6	41.0	40.2
3	56.4	45.1	56.3	46.2	43.8	42.6	41.5	41.1	40.5	40.3	39.7	41.0	41.1	40.5	39.7	40.2
4	56.4	45.5	56.7	46.2	42.6	40.7	43.4	42.1	40.8	41.2	41.5	40.1	40.0	40.3	41.0	39.5
5	44.1	43.3	45.7	44.0	42.3	42.5	40.9	41.7	40.1	41.1	39.6	40.3	39.3	39.4	41.2	39.6
6	46.3	43.4	42.7	42.7	42.2	43.9	40.8	43.5	41.4	39.8	41.3	39.2	39.2	40.4	40.5	39.4
7	45.9	43.5	46.2	43.0	42.8	42.3	42.4	42.1	41.4	39.5	39.2	41.3	41.0	39.4	40.1	40.1
8	46.0	45.7	43.0	43.7	41.6	43.2	41.0	40.8	40.9	41.0	39.7	39.7	40.2	40.7	40.7	41.2
9	43.5	46.1	46.2	44.2	41.4	41.0	42.4	42.1	41.5	40.5	41.4	41.3	39.8	40.3	39.6	40.5
10	44.4	45.1	43.9	42.7	42.3	43.4	41.9	42.5	40.2	41.1	40.5	40.5	39.1	40.3	40.1	39.8
11	46.0	43.3	42.9	46.3	41.4	42.6	40.7	43.1	39.2	40.8	41.5	40.2	40.3	41.2	40.3	40.3
12	43.8	46.4	42.7	45.0	43.9	42.5	43.3	43.5	39.7	40.3	40.8	40.8	39.2	40.4	40.8	39.7
13	45.2	46.4	45.7	46.1	42.1	40.7	41.8	42.3	40.5	39.5	41.1	39.6	39.1	39.3	40.2	41.1
14	45.4	46.6	46.4	46.2	43.8	43.4	40.7	40.9	40.2	40.9	41.4	40.3	40.6	39.0	40.5	40.3
15	46.4	46.2	43.1	45.5	41.6	42.1	42.1	43.2	41.2	41.4	40.4	40.9	39.3	41.0	39.4	41.2
16	43.8	45.0	44.7	42.9	42.9	41.0	40.7	41.1	41.5	41.3	40.6	40.8	40.4	41.2	41.0	39.9
17	45.6	45.0	44.7	46.4	43.6	41.0	43.6	43.9	41.2	39.8	40.3	40.0	40.0	39.7	40.6	40.6
18	44.2	46.4	44.0	44.5	42.7	43.3	43.7	42.8	39.2	39.8	39.3	40.2	40.6	40.7	40.7	39.0
19	43.9	43.8	43.7	44.6	41.6	42.9	42.7	42.1	39.2	40.8	41.3	41.2	39.0	40.6	40.2	40.9
20	44.6	44.9	45.6	43.2	42.2	41.7	43.6	43.7	40.2	40.9	39.2	41.1	39.2	40.9	40.6	41.1
21	45.1	45.7	44.7	43.1	41.7	42.0	41.0	43.1	40.1	39.9	40.2	39.9	40.7	40.6	41.1	40.5
22	45.3	44.2	43.1	44.8	43.8	43.1	40.9	42.2	40.7	39.6	41.1	39.7	39.4	39.3	39.7	39.4
23	45.5	43.3	46.6	46.1	41.5	43.8	41.0	40.6	39.3	39.6	40.9	40.9	39.0	41.0	41.1	41.2
24	46.3	45.4	45.8	43.9	43.4	42.5	41.6	41.0	41.5	39.5	40.5	39.2	41.0	40.3	39.8	41.1
25	46.4	43.0	45.7	43.5	40.9	41.4	41.5	42.7	39.5	39.9	40.8	40.1	40.4	40.9	39.2	41.0
26	45.1	46.0	43.5	46.1	43.2	41.3	43.9	40.9	39.2	39.3	40.5	39.5	40.3	40.6	40.4	40.1
27	42.8	44.3	44.4	45.2	41.0	41.9	42.3	42.7	41.1	41.5	40.3	41.2	40.7	39.5	39.8	39.3
28	44.9	44.5	46.4	42.8	43.1	40.6	42.4	42.0	40.6	39.5	40.9	41.5	40.8	41.0	39.4	39.9
29	46.2	44.5	43.8	42.6	40.7	43.9	41.4	42.4	41.2	39.2	39.9	40.9	41.1	40.8	39.2	40.7
30	45.7	44.4	45.5	43.0	42.9	43.0	41.0	40.6	40.4	40.9	41.0	40.6	39.2	39.5	40.2	40.2

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 28 2024 - Juli, 28 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	39.8	40.1	40.4	39.2	39.7	39.7	41.0	41.1	40.7	40.5	40.7	43.4	42.4	43.0	44.4	45.5
2	41.4	41.4	41.4	38.9	41.5	41.7	41.8	39.8	42.2	43.0	41.6	43.4	45.2	44.0	45.5	42.3
3	39.1	38.9	41.1	39.9	39.4	40.2	40.6	41.3	40.4	40.7	43.1	43.4	42.7	44.2	42.9	44.7
4	40.2	39.6	38.3	38.5	40.2	41.7	40.4	41.9	43.3	41.5	41.1	41.1	45.6	42.5	44.5	42.7
5	40.5	40.1	41.1	41.4	39.2	40.3	41.9	39.2	41.9	42.8	43.1	42.4	45.6	43.4	43.2	45.0
6	40.3	38.4	38.7	39.5	40.8	39.2	40.8	41.3	42.8	41.8	41.1	41.9	43.3	44.1	45.5	45.5
7	41.0	38.8	41.6	38.8	39.7	41.0	41.6	40.4	43.5	41.3	40.6	41.3	44.6	45.5	45.5	44.5
8	40.8	39.3	40.9	38.4	39.5	40.6	41.2	41.1	41.4	43.6	41.2	42.7	43.0	43.8	43.5	42.7
9	38.8	39.8	39.2	38.9	41.3	41.6	41.2	39.6	42.0	41.0	42.4	41.2	45.1	45.8	43.2	42.5
10	38.4	41.8	40.6	40.3	39.3	41.5	40.5	41.2	40.4	40.8	40.5	42.4	45.6	44.4	44.5	42.2
11	38.8	40.3	40.6	40.0	40.3	40.8	41.1	41.1	42.6	40.9	40.6	40.5	42.4	42.8	45.3	43.1
12	38.4	41.5	39.5	39.7	41.5	40.3	40.5	39.9	41.5	43.0	43.4	43.5	42.3	45.5	42.9	45.4
13	39.5	41.7	40.0	41.3	41.3	40.3	39.6	39.5	41.4	43.2	40.8	43.7	45.4	42.8	42.9	44.0
14	39.9	39.2	39.4	39.8	40.0	39.6	40.5	39.2	42.4	43.2	42.6	41.4	45.1	42.8	45.6	45.8
15	41.7	38.6	41.2	39.0	55.1	39.9	39.9	41.0	42.8	43.2	43.0	42.2	44.8	45.6	45.0	42.8
16	38.9	40.0	38.5	38.4	55.2	39.2	41.3	41.7	43.4	41.5	40.4	42.0	43.7	44.7	43.8	42.5
17	41.8	39.6	41.4	38.9	56.3	39.5	40.7	41.2	41.7	43.4	41.8	41.0	43.5	44.6	45.1	44.8
18	40.6	38.7	41.2	40.8	40.9	40.8	41.9	41.7	43.0	42.6	42.0	42.1	44.9	43.6	44.9	42.7
19	40.0	40.4	40.8	39.0	40.4	40.5	41.4	40.1	41.9	43.5	42.6	43.6	45.1	42.3	42.4	45.7
20	41.4	39.9	38.8	41.1	41.6	41.6	40.4	41.9	41.1	42.1	43.5	42.3	45.1	43.1	44.2	43.9
21	39.4	40.6	39.7	38.8	41.0	39.6	41.1	39.6	42.2	42.3	40.6	40.6	44.0	45.3	43.0	43.0
22	40.4	40.3	39.4	38.7	39.6	41.8	41.6	40.4	40.6	40.9	40.9	42.9	43.9	43.9	43.7	43.8
23	41.5	39.5	39.3	40.3	41.9	39.4	41.9	40.4	41.0	43.5	42.7	41.4	43.3	44.7	44.8	42.2
24	40.9	41.8	41.5	41.8	40.5	39.4	40.8	40.1	42.0	40.6	42.8	43.1	45.6	42.3	42.8	43.1
25	38.7	39.8	41.8	40.3	40.7	40.2	41.6	39.8	43.6	43.2	43.6	42.6	43.3	43.0	43.8	42.5
26	38.6	41.8	41.4	40.4	41.7	39.2	41.2	40.4	41.3	42.8	41.9	40.5	44.2	44.5	42.4	43.4
27	41.0	39.8	38.8	40.6	39.3	40.6	41.2	40.5	40.9	43.7	41.9	42.2	42.3	44.1	43.1	45.2
28	40.5	40.4	38.4	41.4	40.8	39.5	41.0	41.3	41.0	42.9	43.5	41.5	43.0	43.4	42.9	44.8
29	41.5	41.6	41.0	40.3	40.2	39.3	39.8	40.8	41.3	41.9	42.1	43.6	43.0	45.7	43.4	45.6
30	41.6	40.5	39.0	39.0	41.8	41.0	39.2	39.8	41.5	43.5	43.4	43.0	43.6	45.7	44.9	45.3

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 28 2024 - Juli, 28 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	49.5	50.2	49.0	51.0	50.8	49.7	49.9	48.7	50.3	50.3	50.8	48.0	47.3	48.3	48.3	50.5
2	50.0	48.0	50.5	49.7	49.1	51.0	47.2	48.0	46.6	50.1	49.3	51.4	48.5	49.5	49.7	50.0
3	47.5	50.3	50.6	50.8	47.8	48.5	47.5	47.6	48.7	51.1	51.5	50.6	49.2	49.1	49.7	47.0
4	48.3	50.3	48.5	50.3	49.4	51.6	49.6	50.5	46.9	48.9	46.9	47.9	50.0	47.9	47.2	48.8
5	51.1	48.1	49.3	50.0	50.6	51.2	47.3	49.2	47.6	50.3	49.5	47.5	46.9	47.8	51.1	49.9
6	49.6	49.1	49.1	48.9	47.5	48.1	47.4	50.8	46.7	46.6	46.9	50.7	46.8	47.4	50.7	45.9
7	50.2	50.1	49.0	51.2	49.6	51.3	49.6	49.9	50.3	51.6	51.7	56.7	48.3	46.9	46.7	47.1
8	49.2	50.6	48.6	48.8	49.9	49.5	49.1	47.4	51.2	49.4	48.7	56.4	48.0	50.9	48.6	46.6
9	50.1	47.6	47.9	48.0	48.2	51.5	50.5	50.4	50.5	49.9	51.2	57.1	46.5	48.8	46.8	48.7
10	50.5	50.4	50.1	49.2	49.1	51.0	48.7	51.4	51.3	49.0	51.4	50.7	47.5	48.9	48.7	46.4
11	51.1	51.1	49.3	50.2	50.3	48.2	47.1	47.7	50.2	50.6	46.7	50.2	47.4	49.9	49.6	47.6
12	49.1	49.1	50.3	47.8	49.9	47.2	49.3	48.0	50.0	47.2	47.0	47.4	49.6	49.2	49.7	48.7
13	48.3	49.5	50.2	50.3	51.7	50.4	50.5	51.2	47.1	47.0	50.2	47.0	46.2	48.4	49.2	47.6
14	48.5	49.4	51.2	50.5	56.1	51.7	48.6	51.5	49.4	48.6	50.5	50.1	50.5	50.9	49.7	48.0
15	49.2	49.0	51.2	50.2	55.2	47.0	49.8	50.7	47.8	51.3	51.3	50.6	50.8	48.8	50.1	47.4
16	47.9	48.5	51.1	49.0	56.1	49.3	48.7	48.0	50.8	49.5	49.8	48.8	46.8	47.5	48.0	49.3
17	48.9	49.1	50.1	47.7	49.7	48.2	47.9	51.3	51.7	49.1	48.2	48.0	49.3	47.4	47.4	45.9
18	48.5	48.8	49.3	48.3	48.5	48.9	50.3	46.9	51.5	46.9	51.7	46.8	49.6	47.2	46.3	50.2
19	48.5	50.5	47.9	48.0	50.5	49.7	51.1	49.6	47.8	47.9	48.3	51.2	49.5	50.6	49.6	46.3
20	47.7	48.7	51.1	49.3	50.0	49.4	50.2	48.6	51.0	48.7	48.8	48.3	47.9	50.4	49.0	47.8
21	49.3	50.9	49.8	49.8	47.3	48.4	49.6	51.6	48.5	50.0	51.7	51.3	51.0	50.9	46.5	49.1
22	47.6	50.4	47.9	50.9	51.0	50.5	46.9	47.7	48.5	50.4	47.4	48.0	48.4	50.0	50.0	49.8
23	50.3	50.4	50.7	51.1	49.4	48.1	50.3	48.0	46.8	51.6	48.2	49.2	51.0	50.0	50.3	49.6
24	50.9	48.5	47.9	49.4	46.9	51.7	48.1	48.3	51.3	50.0	50.4	49.5	50.6	48.7	49.8	47.0
25	49.4	50.4	51.0	49.4	48.3	49.6	50.0	50.4	50.8	46.8	50.0	46.6	47.3	50.0	48.9	50.5
26	48.3	49.6	50.5	48.3	50.9	50.9	50.0	47.7	48.8	46.8	50.5	50.5	46.7	46.6	50.2	49.4
27	48.4	48.8	50.7	47.5	50.7	50.0	50.3	48.0	49.7	51.6	50.3	48.5	46.0	50.7	48.3	49.7
28	48.3	47.7	51.0	50.6	48.9	49.1	47.1	48.6	51.0	49.0	51.4	46.9	49.0	48.9	50.6	51.1
29	48.9	48.5	50.3	47.6	49.5	47.6	50.3	48.9	50.4	48.2	47.6	48.6	48.5	47.1	49.1	49.6
30	49.1	51.1	51.2	49.6	48.8	46.9	51.1	49.7	47.0	51.4	49.2	47.1	48.2	49.2	50.4	49.9

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 28 2024 - Juli, 29 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	45.5	46.0	44.9	43.4	41.1	41.2	41.8	40.7	41.2	41.1	40.8	40.7	39.3	40.4	40.1	40.6
2	44.5	46.2	44.9	43.7	40.6	40.3	42.1	40.9	40.5	39.5	39.8	39.5	40.8	39.6	40.1	40.5
3	56.2	45.0	56.1	45.6	40.6	40.7	40.4	41.4	39.9	39.5	39.7	40.3	40.6	39.3	40.1	40.9
4	56.3	44.1	55.2	46.2	41.4	41.6	41.4	41.0	40.5	40.8	40.8	41.0	40.6	39.9	40.0	39.4
5	56.1	45.5	55.3	45.1	42.1	40.9	40.9	40.9	41.4	39.5	39.5	40.2	40.1	40.6	40.3	39.4
6	42.8	45.6	43.9	43.3	40.3	40.8	41.1	40.8	41.2	41.2	40.2	40.6	39.5	40.5	40.2	39.3
7	45.4	45.5	43.7	45.6	40.2	40.8	41.5	41.8	40.6	40.2	40.2	40.3	39.5	40.7	40.3	39.5
8	44.3	43.9	42.8	43.5	41.8	41.6	40.4	40.7	40.8	40.8	39.9	41.4	40.9	40.1	39.3	39.8
9	45.7	44.6	43.3	45.2	41.1	41.7	41.8	41.0	41.5	39.7	39.7	41.6	40.6	40.5	39.6	39.9
10	44.6	43.0	44.2	44.1	40.4	41.7	40.5	41.2	39.9	40.3	40.3	41.3	39.6	39.9	40.5	39.3
11	43.1	43.9	45.2	44.6	40.2	41.4	42.1	41.3	39.6	41.1	40.2	40.0	39.3	40.3	39.5	39.7
12	42.7	45.2	42.5	44.3	40.2	41.9	41.5	40.5	41.4	39.9	41.3	41.3	39.4	40.6	39.4	40.9
13	42.8	42.8	42.5	42.9	40.2	41.6	40.6	40.5	39.6	40.8	40.1	39.9	39.8	40.7	39.7	40.6
14	43.5	45.5	43.7	42.6	41.9	41.3	41.1	41.3	41.5	40.5	40.3	41.0	40.4	39.5	40.8	40.1
15	43.1	44.0	42.4	45.2	41.8	40.6	40.4	41.0	41.1	41.5	41.2	41.0	40.0	40.0	39.3	39.7
16	44.0	43.8	45.4	45.1	41.8	40.9	41.2	40.8	39.6	41.6	40.1	39.9	39.6	40.2	40.5	40.4
17	46.0	43.2	45.6	43.5	40.4	41.9	42.0	42.1	41.4	41.7	41.0	40.2	40.5	40.1	40.6	40.5
18	44.8	45.0	43.2	45.7	40.5	40.4	42.0	41.2	40.1	40.0	39.7	39.5	39.3	40.4	40.7	40.3
19	43.9	45.1	44.6	42.8	41.3	41.5	40.3	40.3	41.4	39.6	41.6	39.9	39.6	41.0	39.5	39.9
20	44.0	43.6	42.8	44.8	40.4	40.3	41.5	41.4	40.9	39.9	41.7	40.1	40.1	39.3	40.3	39.9
21	45.6	42.9	44.0	45.8	41.7	40.4	41.1	40.9	40.6	40.6	40.6	40.4	40.3	40.9	40.3	39.3
22	45.7	43.0	44.5	44.9	40.5	40.4	41.5	40.9	40.8	40.3	40.6	40.8	39.9	39.8	39.5	40.9
23	45.1	45.5	42.8	43.3	41.9	40.3	40.9	41.1	40.8	40.6	40.6	40.8	40.6	40.6	40.2	40.7
24	43.0	43.1	42.8	44.8	41.0	41.8	41.6	40.5	40.0	40.2	40.1	40.6	40.8	40.9	40.5	40.9
25	44.3	42.4	44.5	45.3	41.3	41.4	41.4	40.5	39.6	41.4	40.4	39.9	39.4	40.8	41.0	39.4
26	45.2	42.9	45.3	44.3	40.5	41.6	40.7	41.5	39.6	39.9	40.6	39.7	39.7	39.3	40.5	40.2
27	45.0	42.5	43.8	43.2	41.7	41.1	40.6	41.9	39.6	41.2	40.5	40.7	40.1	39.8	40.4	40.4
28	44.8	42.5	45.3	44.7	41.3	40.4	40.4	40.3	40.1	40.9	41.2	40.6	39.3	40.8	39.5	41.0
29	45.3	45.9	44.7	44.0	41.2	40.2	41.6	40.6	41.5	40.1	41.7	41.3	39.3	40.0	40.4	40.6
30	45.9	45.5	42.6	44.2	41.7	41.0	41.0	41.1	39.6	40.6	41.6	41.3	39.4	40.1	40.7	41.0

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 29 2024 - Juli, 29 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	39.9	42.1	40.3	39.2	40.7	41.5	40.8	40.2	43.2	41.2	41.3	42.3	45.1	45.6	45.9	43.9
2	40.3	41.2	39.0	41.1	40.2	41.5	41.6	40.3	41.2	42.9	41.7	41.3	44.3	45.4	42.4	42.6
3	40.5	39.4	41.9	41.2	41.4	41.5	40.1	39.9	42.0	41.4	41.3	43.7	46.0	44.8	44.9	44.3
4	40.2	38.7	40.4	39.2	39.6	40.5	41.9	42.2	43.6	40.9	42.1	42.3	45.9	45.6	43.0	43.2
5	42.1	39.4	38.8	39.7	41.7	42.0	40.4	41.6	41.7	43.2	43.7	42.5	46.0	45.5	45.1	43.8
6	40.9	40.2	40.2	41.0	40.6	42.3	40.5	41.8	40.8	43.4	41.4	40.9	42.6	44.8	43.3	44.2
7	41.1	42.1	40.0	39.5	42.3	41.4	42.0	41.4	42.0	41.8	42.5	43.8	43.9	43.2	43.8	42.8
8	42.0	41.4	38.9	40.8	42.3	39.6	41.7	39.9	41.5	41.6	41.5	41.8	44.3	44.8	44.7	43.8
9	40.8	41.0	41.6	39.1	40.7	40.9	41.7	41.1	43.0	42.2	41.3	43.2	45.1	43.2	45.0	42.7
10	41.4	40.7	39.6	40.8	39.8	39.6	40.1	41.3	41.6	42.9	43.2	42.4	43.8	45.9	43.9	43.6
11	38.8	39.7	41.5	39.9	40.0	41.1	40.7	40.9	43.6	43.7	41.2	41.9	42.9	44.3	44.4	43.2
12	39.8	40.6	39.7	40.4	42.4	42.1	40.5	40.3	43.0	41.5	43.6	40.9	44.2	44.6	44.7	43.4
13	39.8	39.1	40.3	39.4	42.4	42.4	40.2	40.5	42.2	43.7	42.3	41.7	45.1	42.4	45.4	43.8
14	41.6	40.4	41.5	39.6	40.7	42.3	40.1	41.6	43.6	43.1	43.1	40.9	42.8	43.6	43.0	45.8
15	40.6	39.3	41.0	39.6	55.1	40.0	40.3	39.6	42.3	42.9	42.7	43.2	43.5	43.7	43.8	42.5
16	42.1	41.9	39.3	39.1	55.6	42.1	40.0	41.5	43.9	42.6	40.8	43.9	44.1	46.0	44.5	44.7
17	39.3	41.8	40.4	40.6	55.1	40.3	40.5	40.8	41.4	43.5	42.8	42.6	43.0	44.6	44.0	45.0
18	41.4	39.4	41.4	40.3	40.2	40.6	41.9	40.7	41.1	41.3	43.3	43.3	42.7	42.5	45.8	44.1
19	41.1	39.7	42.1	41.0	40.4	41.8	41.8	41.7	43.6	43.4	41.6	40.9	44.2	43.2	45.8	44.2
20	39.9	38.8	41.2	41.0	40.3	42.0	39.6	41.6	41.1	41.4	41.8	43.2	42.8	45.9	44.2	43.8
21	40.4	41.9	40.3	39.1	42.2	41.8	41.5	40.2	43.2	43.4	41.5	41.5	43.7	43.3	44.4	45.8
22	41.1	41.2	41.3	39.0	42.4	41.4	42.4	40.7	41.6	42.2	43.2	42.3	43.1	43.5	43.5	42.9
23	41.0	40.4	38.8	41.7	41.3	42.0	40.5	41.2	43.1	43.6	43.7	42.8	43.2	45.5	45.2	42.5
24	41.0	39.7	40.5	40.9	41.7	42.0	42.4	42.2	43.0	42.2	41.7	41.7	45.8	42.6	44.6	43.4
25	40.7	41.3	38.8	38.7	39.6	42.2	42.3	42.4	41.3	42.3	40.8	43.9	44.1	44.8	45.1	44.6
26	40.2	40.4	39.3	40.6	41.8	42.0	41.7	41.3	42.6	42.0	42.7	41.1	45.6	45.0	44.7	45.2
27	40.7	39.3	40.5	41.5	39.7	41.1	41.1	41.0	43.3	42.6	42.4	41.3	42.4	45.8	44.9	45.6
28	40.1	40.7	39.4	39.2	39.8	41.7	40.3	40.1	41.6	42.1	41.2	42.7	45.0	42.4	43.0	46.0
29	38.7	41.2	41.3	41.9	39.8	40.6	41.0	41.8	42.2	41.7	43.0	42.8	44.9	45.2	45.0	43.0
30	40.6	39.8	40.2	41.6	42.1	42.1	42.3	41.5	43.7	42.2	41.8	43.1	42.7	43.8	45.8	42.5

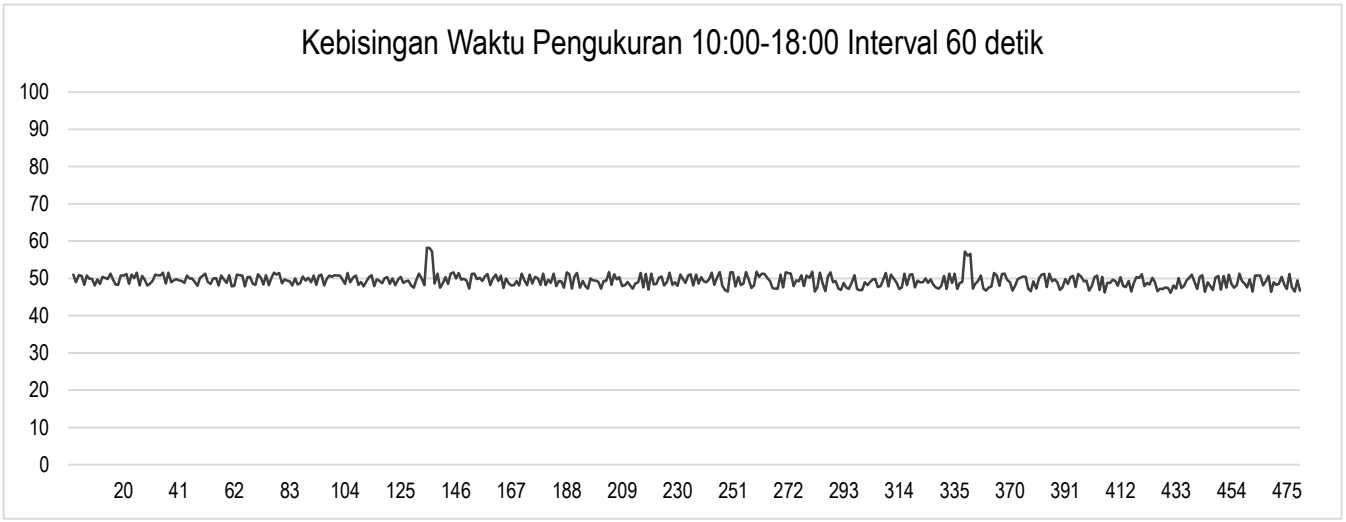
- (*) Terakreditasi KAN-756 -IDN

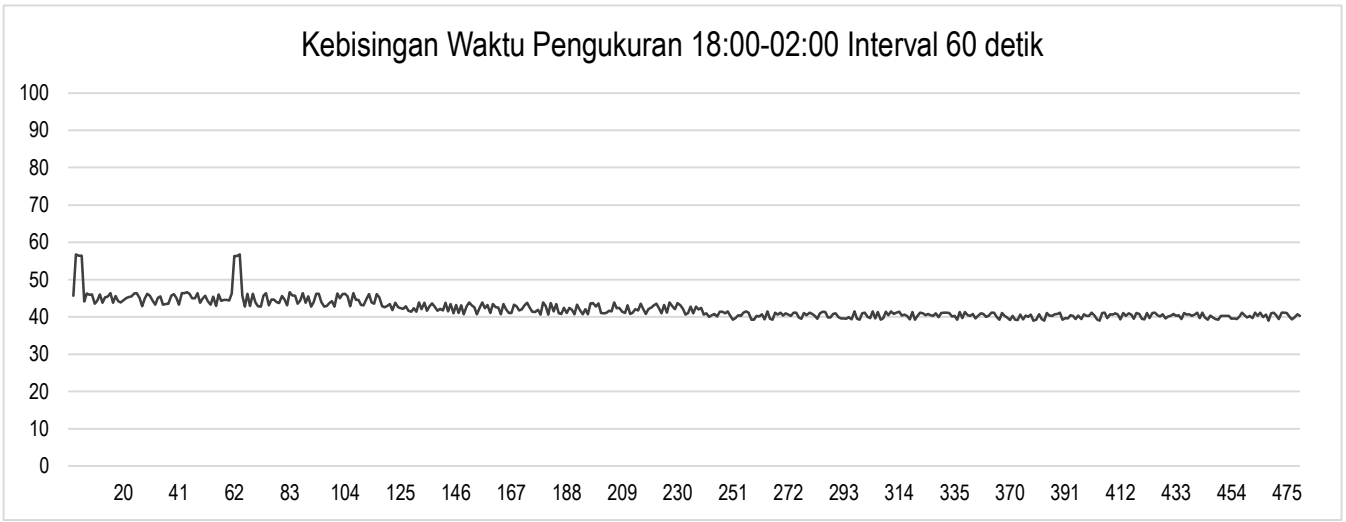
- (**) Keputusan Menteri Lingkungan Hidup No. 48 Tahun 1996 Tentang Baku Mutu Kebisingan.

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

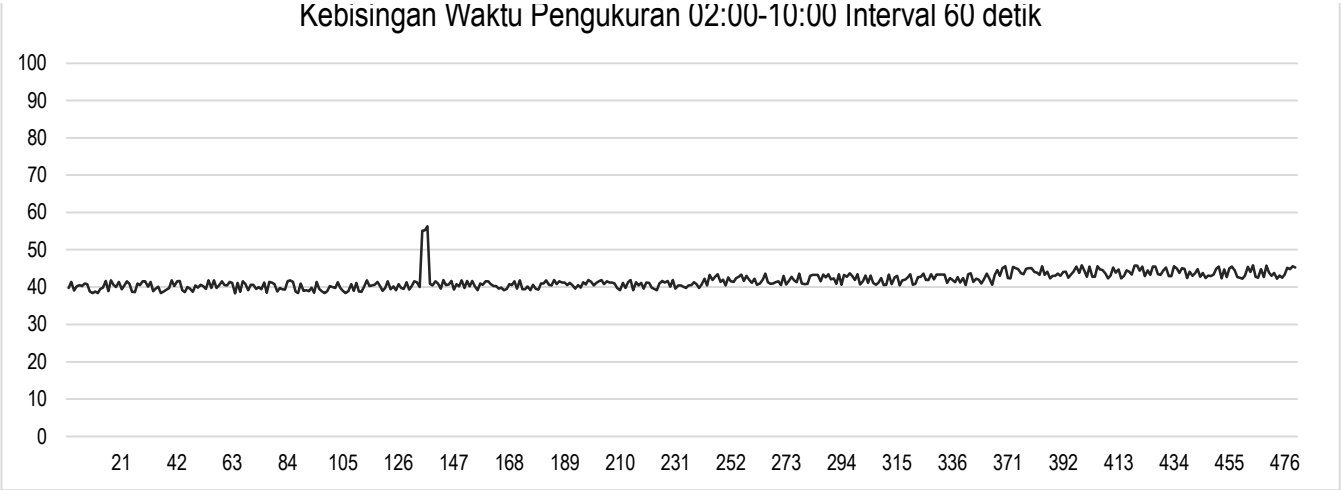
Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

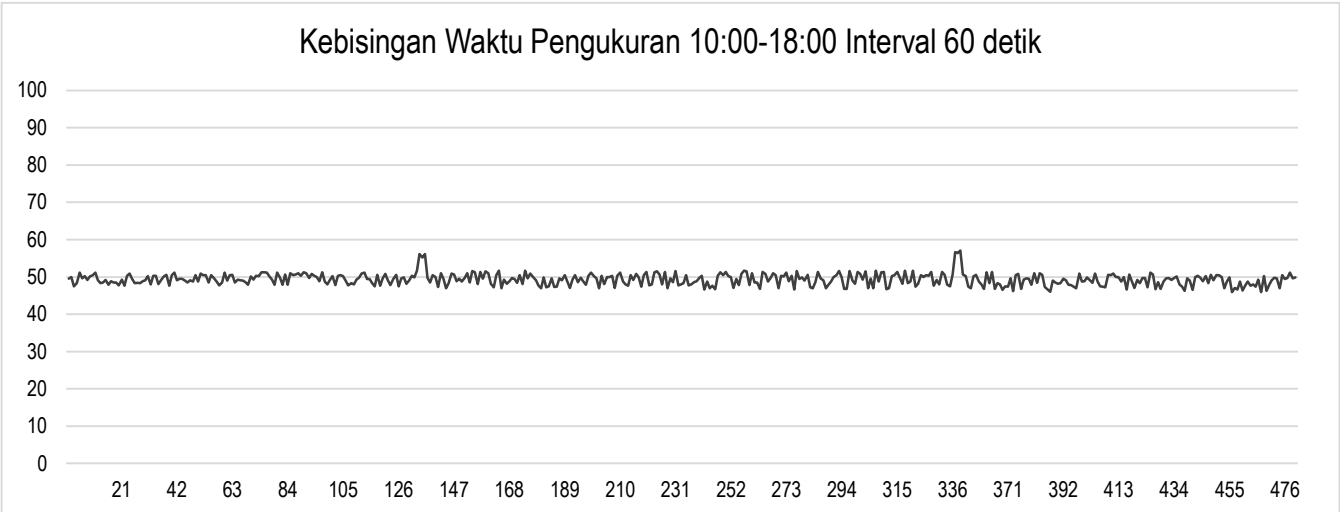


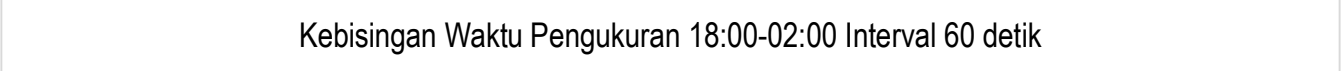


LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

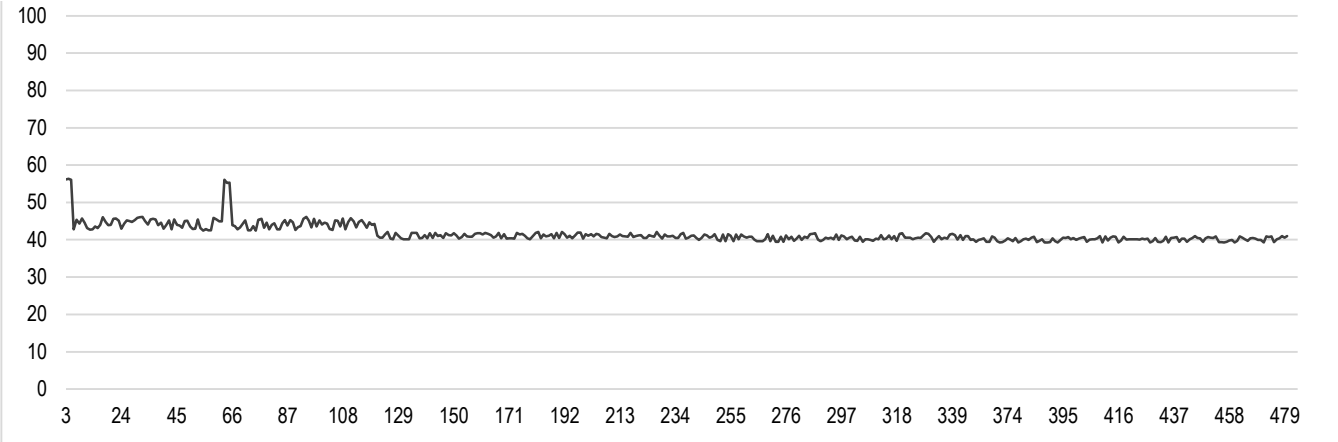


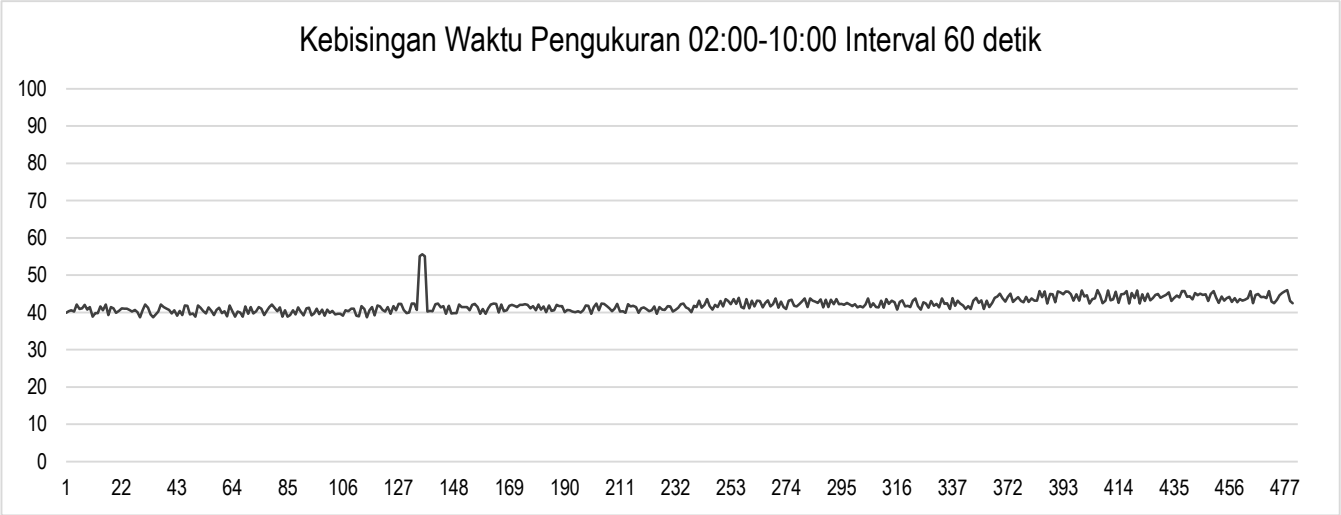




LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 55.0"
			BT	:	110° 13' 28.6"
Identitas Contoh Uji	:	**K-3 Pemukiman Dusun Temandang 2**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-23
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu





LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

NO	HARI	RESULT										SATUAN	METODE
		L1	L2	L3	L4	L5	L6	L7	Ls	Lm	Lsm		
		09:00 - 14:00	14:00 - 17:00	17:00 - 22:00	22:00 - 00:00	00:00 - 03:00	03:00 - 06:00	06:00 - 09:00					
1	Hari Pertama	49.5	49.8	45.8	41.3	40.8	41.5	43.3	**47.9**	**41.2**	**47.4**	dBA	SNI 8427-2017
2	Hari Kedua	49.1	49.6	45.7	42.0	41.0	41.4	43.9	**47.7**	**41.4**	**47.3**	dBA	SNI 8427-2017

No	Juli, 27 2024 - Juli, 27 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	51.9	51.3	50.6	48.9	46.1	47.7	47.1	48.4	51.8	50.8	47.9	51.1	50.5	50.6	51.7	47.9
2	48.0	50.6	49.1	49.2	51.9	52.7	49.9	52.3	51.8	49.4	51.7	51.6	50.2	48.0	47.3	51.0
3	51.4	49.8	50.4	52.0	49.8	49.2	52.3	47.0	49.0	49.0	49.2	51.4	47.0	48.4	46.8	51.5
4	50.8	50.9	51.5	50.4	48.7	51.8	52.6	52.2	50.8	49.4	48.5	49.9	46.9	50.1	51.8	47.6
5	49.0	50.3	48.3	48.7	47.4	48.5	52.3	46.7	49.3	49.7	47.6	50.1	47.2	51.3	50.9	46.9
6	50.5	50.1	51.4	50.8	51.2	48.2	52.2	51.5	48.2	50.8	49.9	48.8	50.8	47.1	49.6	46.9
7	52.0	48.2	50.5	50.6	48.6	50.8	48.0	50.5	48.8	50.4	50.9	48.9	49.0	47.6	46.7	49.9
8	51.5	51.2	51.1	51.2	47.4	50.5	49.5	48.7	50.3	48.3	48.5	51.5	50.3	49.1	49.3	48.7
9	47.5	52.1	51.9	50.0	50.7	52.5	50.6	51.0	48.0	48.6	49.0	49.9	50.7	48.4	47.0	49.6
10	50.5	47.7	49.6	50.5	51.6	48.3	46.1	51.2	49.0	47.7	49.8	48.5	48.6	49.2	50.0	51.1
11	48.3	51.1	50.6	49.7	51.8	45.9	51.9	52.4	48.5	49.7	49.6	51.1	51.1	49.2	49.1	49.7
12	51.0	49.3	51.4	48.9	50.6	47.2	47.6	50.5	49.3	47.8	48.1	48.4	49.0	48.5	50.7	48.6
13	51.7	51.3	51.6	52.0	48.4	47.1	48.1	50.4	50.7	50.5	48.8	48.4	49.5	51.1	48.7	51.0
14	50.4	52.1	47.9	48.5	52.5	49.1	51.7	50.5	51.6	50.0	49.8	50.2	47.2	48.4	49.0	51.6
15	47.9	52.2	50.5	49.7	51.0	48.6	47.3	48.3	49.0	49.9	48.2	48.9	49.4	50.1	49.9	48.4
16	51.8	48.0	49.0	51.4	51.1	45.8	51.2	48.6	48.3	50.1	49.1	49.0	49.9	51.4	47.7	51.8
17	52.1	50.7	50.4	51.2	47.7	47.1	46.4	49.2	51.6	47.9	47.6	50.0	50.7	51.1	49.6	49.8
18	51.0	50.9	49.3	51.1	49.5	47.3	50.8	47.1	48.1	50.8	47.9	51.4	50.0	50.7	47.9	50.8
19	49.8	51.2	49.9	48.3	46.7	50.7	47.8	46.9	49.0	49.9	51.0	49.8	51.6	51.2	50.7	49.3
20	48.1	47.4	50.8	51.5	48.6	48.9	47.5	49.5	47.7	50.6	49.1	48.2	51.6	50.7	50.2	49.8
21	50.9	49.4	48.7	52.0	48.5	49.2	51.4	52.1	51.9	51.9	49.9	51.9	46.9	49.1	51.3	51.1
22	51.5	47.4	48.5	51.0	49.8	52.5	50.5	51.7	48.1	51.7	49.5	51.5	49.4	47.5	48.1	46.9
23	49.2	51.1	50.8	50.0	49.4	49.9	52.5	49.9	51.9	51.5	48.6	50.3	47.9	50.4	48.9	49.6
24	49.5	47.9	47.7	47.5	45.8	46.4	51.8	51.1	50.7	49.2	49.5	50.3	47.7	47.4	47.9	48.1
25	51.1	48.6	51.2	47.9	48.2	52.5	52.5	45.8	50.8	51.1	48.5	51.5	46.8	50.9	51.7	47.4
26	49.0	48.1	48.8	50.7	46.9	52.2	47.1	49.2	47.9	49.3	50.2	51.2	49.0	47.0	48.3	49.9
27	47.4	52.2	51.8	47.8	48.3	48.0	48.3	51.9	48.5	48.6	49.2	50.5	51.8	48.3	49.7	48.0
28	47.3	50.8	52.2	50.8	51.1	46.0	50.4	46.2	51.9	51.6	49.4	51.5	51.4	50.0	50.5	47.3
29	51.3	51.7	51.3	48.0	51.2	47.4	51.3	49.6	48.1	51.5	48.6	51.8	47.6	50.1	50.3	48.0
30	47.6	49.3	48.8	49.9	45.8	47.3	50.1	47.9	49.5	47.7	50.6	48.1	47.8	49.4	48.8	49.7

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 27 2024 - Juli, 28 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	46.0	47.2	45.5	45.3	42.3	42.7	41.2	42.3	40.6	41.6	41.7	41.2	39.5	39.1	41.0	41.9
2	43.6	44.0	43.8	45.2	42.7	41.6	41.7	42.3	40.7	41.6	40.4	40.9	39.5	38.9	41.7	41.7
3	45.1	46.0	44.0	46.9	42.7	42.1	41.2	42.4	41.4	42.2	42.2	42.0	41.8	40.0	39.9	40.3
4	44.1	43.0	46.9	44.4	41.9	41.8	42.4	42.0	41.1	42.0	42.0	40.5	40.6	40.0	39.7	41.1
5	42.9	43.6	45.6	43.2	42.8	41.4	42.2	41.5	41.9	40.5	40.2	40.2	41.6	41.1	40.8	40.6
6	44.6	43.5	42.4	46.7	42.9	42.3	42.9	42.0	41.7	41.7	40.5	40.9	41.8	40.3	41.6	40.6
7	47.1	44.9	45.2	46.7	43.0	42.6	41.7	42.2	41.4	40.1	41.0	42.1	39.5	40.5	40.2	41.4
8	43.5	43.7	46.8	45.1	42.5	42.3	41.8	41.3	41.0	41.3	40.9	41.0	39.5	41.2	38.9	41.4
9	47.2	47.1	42.9	44.2	42.6	43.1	42.3	42.3	41.0	40.7	40.4	42.1	40.1	41.9	41.0	38.9
10	46.5	44.6	45.3	43.9	42.2	42.0	41.7	42.0	40.2	40.4	40.5	41.0	39.9	40.8	41.8	40.9
11	45.0	47.1	47.1	44.6	43.1	41.6	43.1	41.3	42.1	41.4	41.8	41.0	41.3	39.2	41.3	39.5
12	45.0	42.6	43.8	44.9	41.9	41.9	41.6	42.1	42.0	40.4	40.1	40.3	39.1	40.3	41.4	41.6
13	47.2	47.0	44.7	45.7	41.2	42.8	42.2	42.2	40.3	40.1	40.9	42.1	38.9	39.8	40.0	41.9
14	46.0	46.9	45.0	46.9	42.3	42.6	42.4	42.5	41.5	42.0	41.5	41.9	40.4	39.0	39.9	41.9
15	43.6	43.5	44.1	46.6	41.2	42.8	41.3	42.5	41.9	41.8	41.1	42.0	41.5	41.8	41.5	40.6
16	46.3	46.8	43.6	43.8	43.0	43.1	42.9	41.9	41.1	41.0	41.8	41.4	41.9	42.0	39.3	39.9
17	46.8	44.0	43.1	46.0	42.4	42.7	42.1	42.1	41.0	42.1	40.8	41.9	40.1	41.0	40.1	42.0
18	46.0	45.1	43.1	46.1	42.8	43.0	41.4	42.3	40.8	41.9	41.6	41.9	41.4	41.6	40.4	41.9
19	46.4	44.1	42.6	45.2	41.5	42.9	41.6	42.6	41.9	41.4	42.2	41.1	41.2	40.9	38.9	41.2
20	45.0	43.6	46.2	46.4	41.7	42.5	41.5	42.0	41.3	41.7	41.7	41.4	41.3	39.5	41.8	40.1
21	45.7	46.9	45.5	44.6	41.7	42.2	43.1	43.0	41.7	40.5	41.4	42.0	39.4	41.4	39.3	39.9
22	44.1	42.9	45.8	44.5	42.9	42.4	41.6	43.1	42.1	40.9	42.0	41.2	40.9	40.0	40.7	41.5
23	44.1	46.4	43.1	46.1	42.9	41.8	42.6	42.4	41.3	41.2	41.2	40.1	40.6	42.0	39.7	41.2
24	42.6	44.6	44.5	44.6	41.8	42.1	42.8	41.5	41.4	41.1	42.2	42.0	40.7	40.1	39.1	40.0
25	42.7	44.9	46.3	44.9	41.6	42.0	41.6	41.3	40.9	40.4	41.1	41.3	40.4	39.8	39.5	39.6
26	43.1	45.9	45.7	46.1	42.3	41.7	41.7	41.8	41.9	41.2	42.2	41.8	38.9	41.7	41.0	41.7
27	43.2	44.2	45.0	42.5	42.8	41.8	42.0	42.3	40.8	40.7	40.6	41.7	39.1	41.9	38.9	39.0
28	44.8	44.1	46.3	45.4	42.5	42.3	41.8	41.2	40.7	40.3	42.0	41.6	39.5	41.5	41.2	38.9
29	46.8	47.2	46.7	42.6	41.7	41.7	41.5	41.8	40.2	41.5	40.6	41.3	41.0	40.4	39.4	39.6
30	43.6	45.8	45.0	44.1	42.8	42.3	41.9	42.5	40.1	40.4	41.4	41.9	41.8	41.7	40.9	39.8

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 28 2024 - Juli, 28 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	41.8	39.7	39.8	41.1	40.0	40.3	41.4	40.7	40.9	41.1	42.5	43.7	46.2	44.5	44.6	44.1
2	40.5	42.5	42.8	40.0	42.2	41.4	40.8	41.7	43.9	43.4	43.0	41.3	43.1	44.5	43.7	43.9
3	42.9	39.3	42.4	42.6	42.5	42.7	42.1	40.0	43.3	42.8	43.6	42.9	45.1	43.0	43.7	44.9
4	39.1	40.5	39.6	42.5	41.0	42.5	41.8	41.9	41.4	40.8	40.5	42.3	43.2	45.5	46.7	43.7
5	41.2	40.4	41.1	39.2	40.7	41.1	40.3	40.3	44.0	41.8	42.4	43.6	45.4	44.5	46.1	45.6
6	42.8	41.3	42.9	39.2	40.2	42.5	40.9	41.1	41.0	44.0	43.5	41.7	44.9	43.3	46.1	45.4
7	40.9	42.1	39.7	41.2	41.6	41.8	42.3	41.8	40.7	41.1	41.2	42.2	45.2	44.1	45.8	46.7
8	39.9	41.4	40.9	42.8	40.8	40.8	40.4	40.5	43.5	42.7	43.6	42.4	43.8	46.4	42.9	46.4
9	40.5	39.1	42.8	41.5	41.5	42.1	42.4	40.3	43.4	43.3	41.8	41.7	43.4	42.8	43.0	46.3
10	41.5	40.8	39.0	40.9	41.6	41.3	42.2	40.4	41.9	41.7	43.0	42.6	44.0	43.7	42.8	46.1
11	39.9	42.9	42.3	41.8	40.1	41.7	40.9	42.7	43.9	41.5	41.4	43.1	46.5	44.9	44.2	43.7
12	42.0	39.3	40.6	42.0	42.5	39.8	41.3	41.4	40.5	42.2	43.0	42.8	45.8	45.2	46.7	46.2
13	41.8	41.9	40.5	42.3	41.6	40.2	41.9	42.5	40.8	43.7	43.2	41.0	45.0	44.7	45.2	45.4
14	41.7	41.8	41.9	42.1	40.6	40.8	42.7	40.9	40.5	41.9	42.9	42.2	45.5	46.1	43.3	44.9
15	39.3	41.6	39.9	42.3	42.3	41.4	40.5	41.8	42.5	41.7	41.5	42.6	45.3	45.4	45.7	46.3
16	41.8	39.4	39.6	41.3	41.1	40.1	40.9	40.5	41.0	41.6	42.0	41.9	43.8	45.1	45.2	46.1
17	42.1	40.1	42.9	42.8	40.3	42.1	42.7	42.5	42.7	41.6	43.3	43.9	44.7	44.3	46.2	45.4
18	39.2	40.0	41.9	40.5	42.6	41.8	42.0	40.2	41.1	41.0	41.8	41.5	43.0	43.1	44.7	45.1
19	40.6	41.8	39.5	40.8	42.4	41.5	42.7	41.0	43.8	43.7	43.2	40.5	45.7	45.0	45.5	43.4
20	42.7	42.4	40.2	41.8	40.6	41.3	42.1	41.6	40.6	41.6	43.5	41.2	43.7	46.6	46.0	46.0
21	42.1	39.9	40.9	41.3	40.4	39.8	40.7	41.8	43.5	41.4	43.7	43.4	44.6	45.9	44.5	45.6
22	41.3	40.6	42.7	42.1	40.1	40.5	40.1	40.3	41.8	42.9	41.6	42.3	45.9	46.2	45.9	43.4
23	42.2	39.3	41.4	40.2	42.6	41.5	41.5	41.7	42.7	43.6	43.5	43.2	44.1	46.4	46.5	45.0
24	42.0	42.2	40.2	40.5	40.1	41.1	41.9	40.9	43.7	41.2	40.5	44.0	43.6	44.3	43.8	46.7
25	39.8	40.7	39.6	39.3	41.2	42.0	40.8	40.9	41.6	40.6	42.3	42.3	43.1	43.0	44.7	43.5
26	42.1	42.9	42.9	42.4	42.1	41.5	41.7	41.8	41.6	43.4	41.5	42.0	45.5	44.3	46.0	46.2
27	39.2	40.2	42.1	41.2	42.4	40.7	42.1	41.9	41.4	40.9	43.2	43.9	42.8	43.0	45.0	43.3
28	42.7	41.1	39.9	39.7	42.5	39.8	42.3	40.4	42.2	42.5	42.0	40.7	44.4	43.9	43.4	43.1
29	42.2	40.8	41.6	41.3	41.4	42.7	42.0	42.3	43.6	42.8	40.6	40.9	43.9	45.9	43.9	45.6
30	39.3	40.1	39.0	41.2	40.6	41.5	40.5	41.2	42.3	42.3	41.8	42.9	43.4	42.8	44.9	44.7

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 28 2024 - Juli, 28 2024															
	10:00 - 10:30	10:30 - 11:00	11:00 - 11:30	11:30 - 12:00	12:00 - 12:30	12:30 - 13:00	13:00 - 13:30	13:30 - 14:00	14:00 - 14:30	14:30 - 15:00	15:00 - 15:30	15:30 - 16:00	16:00 - 16:30	16:30 - 17:00	17:00 - 17:30	17:30 - 18:00
1	47.0	50.1	48.1	51.6	52.5	51.8	50.8	46.5	50.4	48.7	50.4	49.3	51.3	50.3	48.2	48.1
2	47.3	50.7	47.6	49.7	47.4	45.7	48.9	51.9	48.1	49.8	51.7	49.5	47.0	49.7	47.5	48.4
3	47.8	52.2	51.8	52.3	49.6	50.9	52.0	49.3	49.8	47.6	52.1	48.5	46.9	47.8	46.6	46.9
4	52.0	48.1	48.3	49.5	45.7	48.4	52.1	50.4	50.6	48.1	47.5	47.8	47.3	47.3	48.9	46.5
5	48.9	50.4	51.1	50.5	50.1	51.2	51.1	49.3	47.7	48.4	51.9	47.6	50.9	49.1	48.4	47.9
6	49.5	50.3	46.6	48.2	52.3	49.8	46.8	48.8	50.6	49.6	49.6	49.6	50.7	50.4	51.1	46.5
7	51.5	52.4	49.9	50.0	52.3	47.2	51.7	47.9	47.6	52.0	47.8	50.1	48.9	49.8	50.9	49.4
8	51.3	48.3	46.6	48.9	51.9	52.6	47.0	45.7	50.4	48.8	52.0	51.9	47.2	49.9	47.8	50.1
9	49.7	48.1	51.1	48.4	51.2	51.9	45.8	47.8	50.8	50.8	50.6	49.2	46.5	51.0	48.8	49.5
10	46.7	48.5	48.1	49.1	52.3	53.0	46.8	46.5	48.2	50.5	51.9	49.5	46.6	50.7	47.4	47.7
11	48.1	50.3	47.1	52.5	50.5	50.3	50.7	48.6	51.3	47.5	49.9	51.9	47.6	48.1	47.9	46.7
12	46.5	46.3	51.9	46.3	52.9	48.2	50.3	47.4	50.4	50.2	49.8	49.7	49.3	49.4	48.0	51.2
13	51.3	47.5	51.9	49.2	48.0	47.4	48.6	52.8	51.2	49.5	48.3	50.0	49.4	47.2	50.4	49.2
14	52.1	48.6	49.8	48.0	47.9	49.7	51.2	48.5	48.3	51.3	48.8	49.8	51.5	49.4	51.4	46.6
15	48.3	48.8	50.3	48.9	50.0	48.8	49.3	48.5	51.2	51.6	50.6	51.2	48.4	46.7	48.6	50.1
16	47.3	48.6	49.1	49.6	50.2	49.5	50.6	48.0	50.3	48.2	51.1	48.2	47.0	47.3	51.3	46.6
17	48.7	48.3	49.5	47.0	52.6	45.8	52.0	46.7	50.7	50.6	47.5	47.6	48.6	47.2	50.3	49.2
18	49.2	50.8	49.7	50.7	52.7	48.7	50.9	47.7	50.4	48.9	48.0	51.6	46.4	50.8	51.3	51.3
19	46.4	50.3	47.5	46.7	49.1	47.8	46.5	49.3	47.6	52.1	48.8	47.5	50.8	48.4	48.4	47.5
20	49.6	46.6	52.5	51.5	49.8	45.9	47.9	51.9	51.1	50.8	48.7	49.7	46.5	50.1	50.8	50.9
21	50.2	50.3	47.6	52.1	46.2	51.0	46.4	52.5	51.0	48.4	50.8	50.1	46.7	46.4	50.7	48.2
22	46.8	46.5	46.3	51.6	46.9	46.1	50.2	47.9	48.8	51.6	49.4	49.5	48.5	47.9	47.5	49.0
23	52.3	49.7	49.6	49.1	50.9	51.5	52.5	51.0	48.6	48.5	51.9	48.1	46.4	50.3	49.3	50.4
24	47.1	52.0	46.7	48.5	50.3	48.6	50.1	50.1	49.6	49.8	52.0	52.0	46.4	47.1	47.6	50.4
25	48.6	49.5	48.6	49.3	46.9	45.5	48.1	51.1	49.0	48.0	50.1	50.7	49.8	51.3	50.2	48.8
26	47.5	47.9	50.7	49.1	50.7	46.2	52.1	51.6	51.4	47.7	48.5	47.5	47.9	49.3	46.6	46.8
27	50.4	49.2	50.4	47.8	50.9	45.5	49.9	47.6	50.7	49.0	48.3	51.1	51.0	47.2	47.7	48.3
28	47.2	50.0	47.7	47.7	45.7	48.5	48.2	47.4	51.9	48.8	47.8	49.0	47.5	48.7	48.6	49.4
29	48.6	50.7	48.8	47.0	48.5	48.7	51.0	50.6	47.5	49.7	48.2	47.8	51.2	49.9	50.4	49.2
30	50.7	48.9	47.7	52.5	50.7	51.1	50.0	49.5	48.0	51.7	49.8	51.4	48.4	49.5	48.1	50.7

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 28 2024 - Juli, 29 2024															
	18:00 - 18:30	18:30 - 19:00	19:00 - 19:30	19:30 - 20:00	20:00 - 20:30	20:30 - 21:00	21:00 - 21:30	21:30 - 22:00	22:00 - 22:30	22:30 - 23:00	23:00 - 23:30	23:30 - 00:00	00:00 - 00:30	00:30 - 01:00	01:00 - 01:30	01:30 - 02:00
1	45.4	47.8	46.3	42.9	43.8	43.4	41.6	43.5	41.2	41.2	42.2	41.0	40.5	40.4	42.0	39.0
2	43.7	47.1	47.6	44.9	44.1	43.5	44.2	43.3	42.9	42.8	41.0	41.8	41.0	39.7	40.2	41.3
3	42.9	43.1	46.8	43.1	42.0	42.4	43.8	41.6	42.0	41.7	41.9	41.5	40.5	42.0	40.7	40.4
4	46.5	46.0	46.7	44.3	42.4	42.7	43.1	43.0	42.7	42.9	41.5	42.8	40.3	41.8	41.9	39.8
5	43.8	45.6	44.9	44.3	42.3	42.2	42.2	43.4	42.7	41.8	42.1	42.3	40.9	39.0	41.6	41.6
6	47.0	46.3	45.4	42.9	44.1	41.6	43.9	41.7	41.4	42.9	42.8	41.9	39.5	41.0	39.5	39.3
7	42.9	43.1	45.4	44.1	41.6	44.0	43.8	43.7	42.4	41.0	42.0	41.1	41.8	40.2	40.7	40.9
8	46.6	43.9	42.5	43.7	42.8	42.1	43.4	42.7	42.5	41.0	41.8	42.0	41.4	41.3	39.2	42.0
9	45.7	45.1	44.2	46.1	41.8	43.7	42.1	43.7	41.2	42.8	41.6	41.4	40.0	42.1	41.4	40.4
10	42.7	47.6	45.7	47.1	43.9	42.6	42.5	43.1	41.1	41.6	42.4	42.8	40.8	41.3	39.3	40.4
11	45.1	47.4	43.5	44.0	42.4	43.4	44.3	41.9	42.2	41.7	41.2	42.5	40.9	41.5	41.9	41.5
12	45.3	46.5	47.8	42.3	43.0	43.1	43.2	42.0	41.7	42.8	41.5	41.2	41.9	41.3	39.0	39.6
13	44.1	46.4	45.5	46.0	43.9	43.7	41.9	42.4	42.6	42.4	41.2	42.4	42.1	41.9	39.3	41.3
14	47.7	43.0	44.5	44.9	42.1	43.7	43.0	41.6	41.5	42.0	42.9	41.5	41.0	41.8	40.7	41.5
15	45.2	42.6	43.5	46.5	42.8	43.6	42.3	44.3	41.6	42.6	41.3	42.5	39.8	42.0	40.6	42.1
16	44.4	42.9	44.3	47.3	43.2	43.4	41.5	43.7	41.4	41.2	41.6	42.3	39.7	39.3	39.7	40.0
17	47.5	44.3	44.1	46.8	42.8	43.8	44.3	43.9	41.3	42.7	41.7	41.3	41.2	40.0	39.6	41.9
18	43.2	46.4	46.3	43.5	41.6	42.6	44.2	43.3	41.8	41.7	41.4	42.8	41.8	41.3	40.3	41.2
19	43.1	44.8	42.9	46.2	41.9	42.7	44.1	41.9	42.7	42.4	41.9	42.3	39.0	41.0	39.6	41.7
20	46.1	43.5	47.5	42.4	41.5	44.1	42.7	41.5	42.1	42.9	41.7	41.4	40.8	39.6	41.1	40.1
21	45.5	42.5	43.8	43.1	42.2	43.2	42.4	41.9	42.7	41.1	41.3	41.6	42.0	42.0	41.5	39.0
22	44.3	44.0	43.5	46.8	42.8	43.1	41.5	42.6	41.2	42.1	42.8	41.7	39.5	40.2	42.0	39.0
23	47.5	44.1	44.9	45.0	43.6	42.2	42.3	41.6	42.1	42.3	41.1	42.8	42.0	42.0	39.1	41.4
24	46.3	45.4	44.0	42.9	44.0	42.6	43.3	43.7	42.4	41.1	41.0	41.4	41.7	39.1	40.9	39.0
25	43.5	46.5	47.5	42.3	42.0	41.6	41.9	42.5	41.1	41.7	41.5	42.7	39.9	41.4	41.3	40.7
26	46.4	42.8	45.5	46.5	44.1	42.9	44.1	41.9	42.9	41.8	41.6	42.7	39.6	41.8	39.1	40.0
27	46.9	42.6	45.5	43.8	42.6	42.7	42.0	43.1	42.3	41.7	42.6	41.5	40.7	39.6	40.4	41.0
28	46.8	47.3	42.9	42.5	44.0	43.8	42.4	43.9	41.2	41.4	41.5	42.2	39.5	39.0	40.1	41.8
29	45.9	43.1	45.8	43.7	43.7	41.7	43.1	43.6	42.6	41.0	41.3	41.2	40.5	39.4	42.1	42.0
30	44.1	43.1	44.8	46.2	42.3	43.4	42.6	41.6	42.8	42.3	42.3	42.9	41.2	41.0	41.3	40.9

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

No	Juli, 29 2024 - Juli, 29 2024															
	02:00 - 02:30	02:30 - 03:00	03:00 - 03:30	03:30 - 04:00	04:00 - 04:30	04:30 - 05:00	05:00 - 05:30	05:30 - 06:00	06:00 - 06:30	06:30 - 07:00	07:00 - 07:30	07:30 - 08:00	08:00 - 08:30	08:30 - 09:00	09:00 - 09:30	09:30 - 10:00
1	40.4	40.7	40.2	42.1	41.8	41.9	41.3	40.5	44.1	43.0	41.7	43.0	45.9	46.7	47.0	44.1
2	41.2	41.0	41.0	41.4	41.3	40.9	40.6	42.4	43.5	44.5	42.8	42.5	46.3	43.7	44.6	47.1
3	40.2	40.6	39.2	42.4	40.9	41.2	42.0	42.4	43.8	44.5	43.3	41.6	44.9	44.1	46.0	46.4
4	41.5	42.5	40.7	39.3	42.4	40.4	42.1	41.2	41.1	43.0	43.2	41.7	46.8	46.4	44.9	45.3
5	42.2	40.1	39.3	41.9	40.4	40.7	42.2	40.4	44.5	43.8	43.6	43.7	45.9	43.5	44.9	45.9
6	42.1	40.7	40.9	41.1	40.5	40.5	40.6	42.1	41.0	44.0	41.8	43.5	44.7	44.7	43.9	46.8
7	41.6	40.8	39.7	41.0	40.3	42.2	40.6	41.5	43.1	42.8	43.3	43.2	43.8	45.3	43.6	46.5
8	40.0	40.0	41.1	40.4	42.2	40.4	42.5	41.7	44.3	44.1	42.9	43.6	44.2	44.4	43.5	43.7
9	41.6	40.5	42.4	40.9	40.9	40.3	41.6	41.6	43.9	41.1	42.6	44.1	43.9	45.0	45.0	45.6
10	41.4	40.9	39.2	39.7	41.2	41.3	42.3	40.6	43.1	42.7	43.0	43.0	45.0	45.2	45.4	44.4
11	42.4	41.9	41.1	42.4	42.5	42.0	41.0	41.5	42.8	41.8	42.4	42.3	43.5	43.7	46.2	43.6
12	42.6	40.6	40.3	41.8	41.9	40.7	42.5	41.1	42.1	44.1	41.0	42.4	44.4	46.7	44.1	43.3
13	39.9	41.4	40.4	40.2	41.4	40.3	42.2	42.1	42.0	42.7	42.1	43.6	45.1	43.4	46.8	46.7
14	40.7	40.1	39.2	41.4	42.5	42.2	42.5	40.9	41.2	43.5	41.8	42.7	46.8	46.0	46.7	43.9
15	41.1	39.6	40.3	40.1	40.7	41.7	42.2	40.4	42.5	43.7	42.0	41.2	45.1	46.4	44.9	44.1
16	40.7	42.2	39.9	42.6	42.4	42.4	40.3	41.7	42.6	42.5	43.9	42.3	46.1	46.7	44.6	44.3
17	40.3	40.4	39.6	40.5	41.7	40.4	40.6	40.6	44.2	41.3	42.2	41.7	43.4	46.4	43.7	44.4
18	41.8	41.6	42.0	42.5	42.1	42.4	41.0	42.2	44.4	42.8	44.5	43.4	45.3	46.6	46.0	45.2
19	40.7	39.7	41.5	41.6	40.8	41.3	41.3	41.1	41.9	42.1	43.0	41.3	44.0	45.2	45.5	45.4
20	42.0	40.5	41.9	41.3	41.5	42.1	40.5	40.9	43.3	43.4	41.4	41.0	45.6	43.3	43.9	43.9
21	42.3	41.9	39.9	39.8	41.7	42.5	41.8	42.0	44.2	42.8	43.9	44.2	46.3	44.8	43.5	46.8
22	41.9	39.6	41.5	40.8	41.3	42.2	40.8	40.8	43.9	43.3	43.3	41.8	44.1	45.5	46.3	45.8
23	42.3	40.7	42.7	41.1	41.3	42.2	42.4	41.0	43.6	44.4	43.7	41.6	43.7	46.2	45.0	43.7
24	40.8	42.6	41.9	41.0	41.6	42.2	40.8	41.0	44.1	44.0	44.0	42.4	44.1	43.7	47.0	46.8
25	40.9	42.5	41.1	42.3	42.3	41.2	42.5	41.8	44.5	42.8	41.4	41.9	44.9	47.1	45.3	43.4
26	39.5	40.9	40.3	42.7	42.3	42.5	42.2	42.3	42.8	44.5	41.8	42.5	45.5	46.9	46.2	45.0
27	41.6	41.5	39.4	40.2	42.4	40.9	42.2	42.1	41.5	43.0	41.5	44.4	45.8	46.2	46.7	46.2
28	42.6	41.5	42.7	41.6	41.6	42.2	41.1	41.8	41.6	41.2	41.9	41.3	46.9	45.0	45.8	46.3
29	42.1	41.3	40.8	41.3	42.5	40.3	42.0	41.1	41.9	41.8	41.6	41.9	46.3	43.7	44.2	44.2
30	42.3	41.9	39.6	40.9	42.2	42.3	41.4	40.6	43.8	43.2	43.9	42.3	44.6	45.2	46.3	46.5

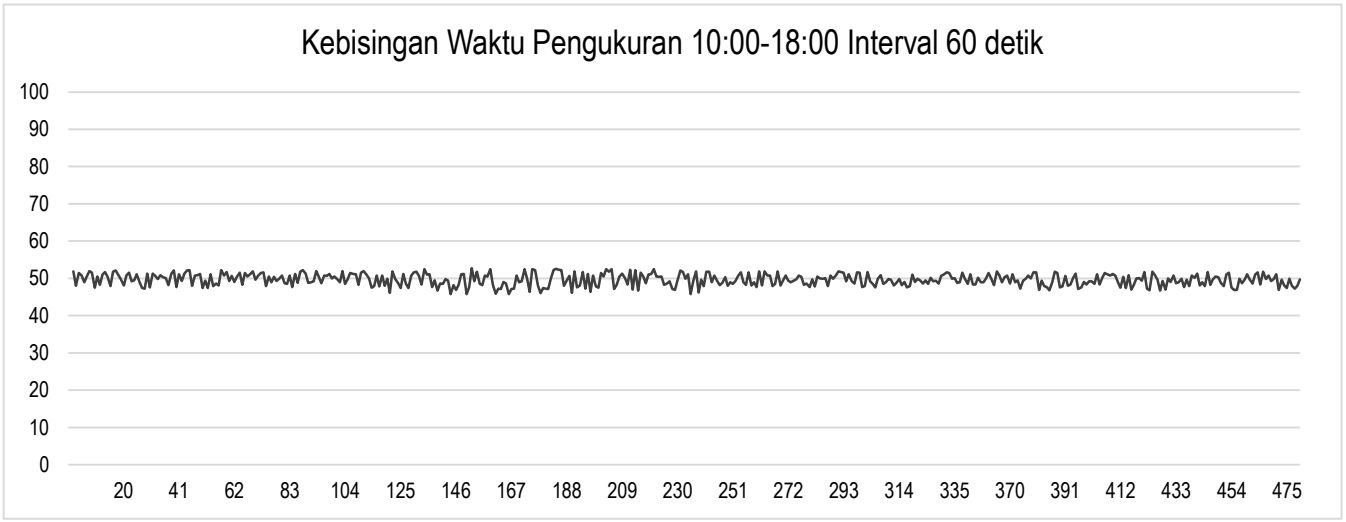
- (*) Terakreditasi KAN-756 -IDN

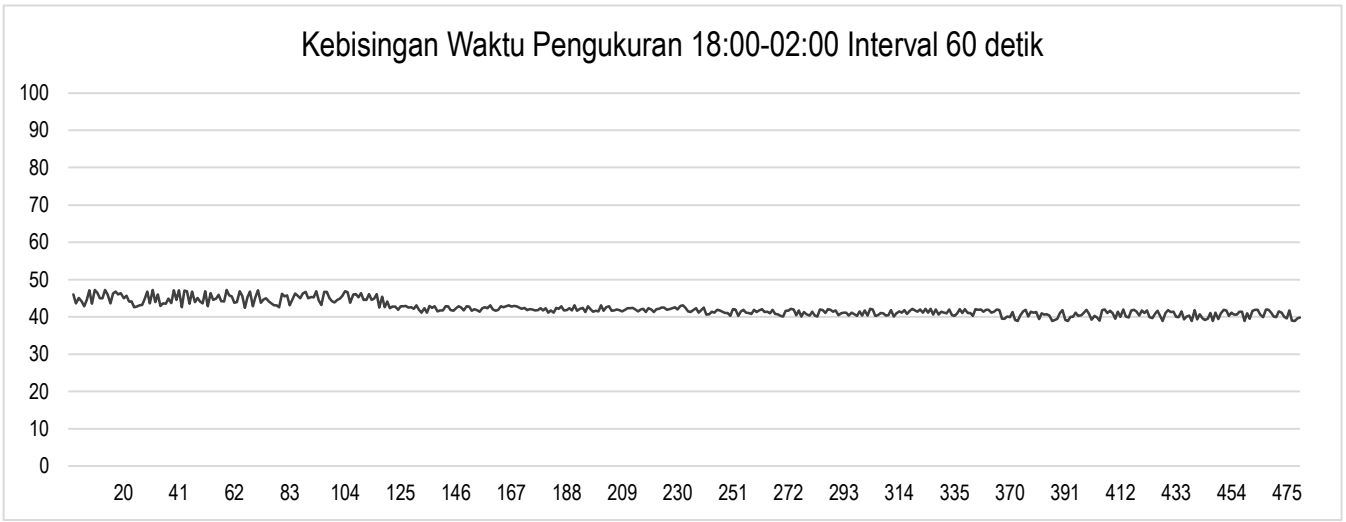
- (**) Keputusan Menteri Lingkungan Hidup No. 48 Tahun 1996 Tentang Baku Mutu Kebisingan.

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

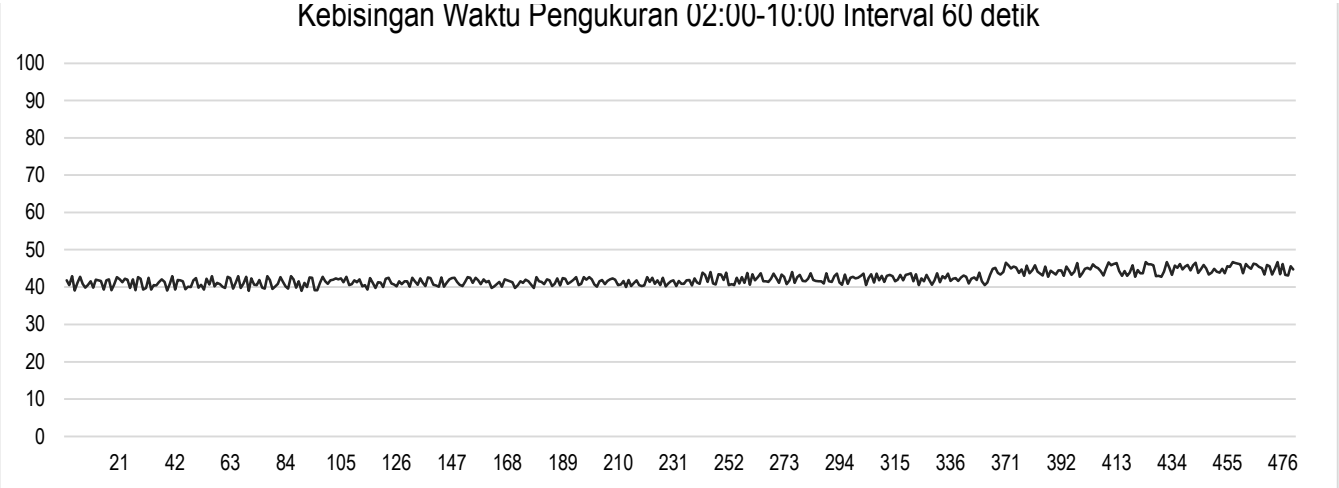
Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

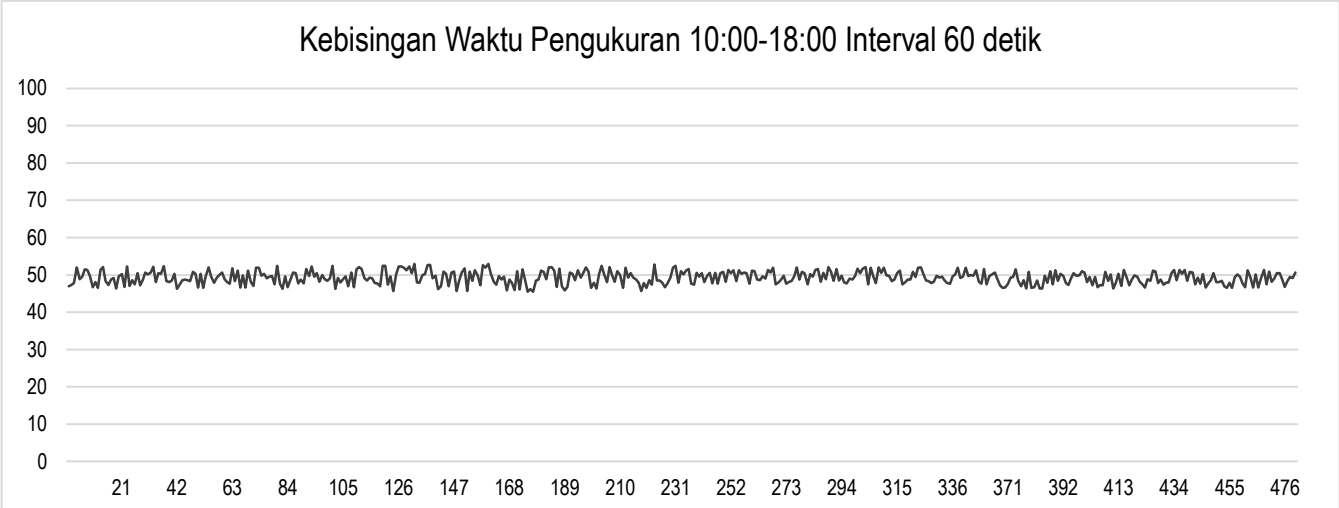




LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu

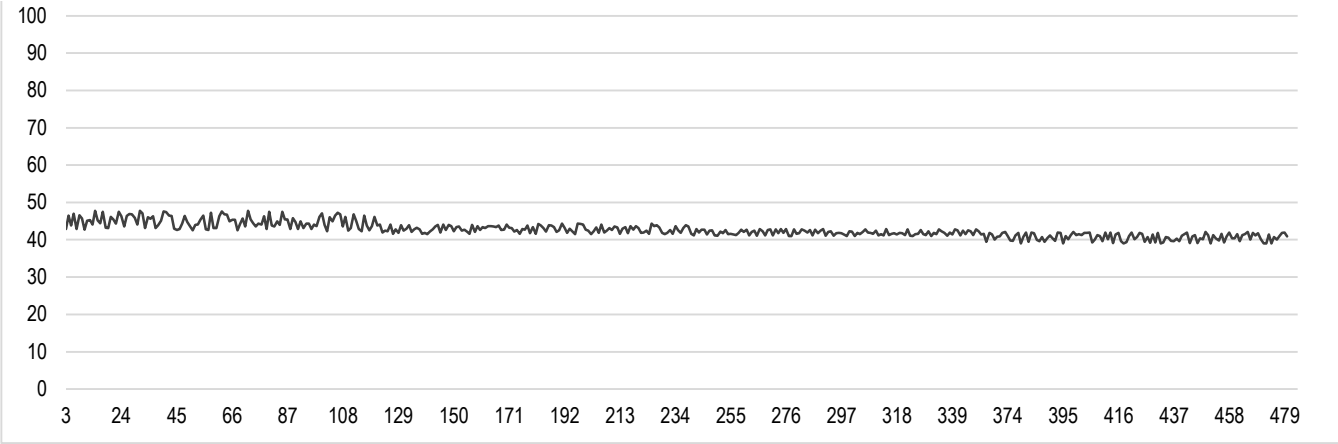


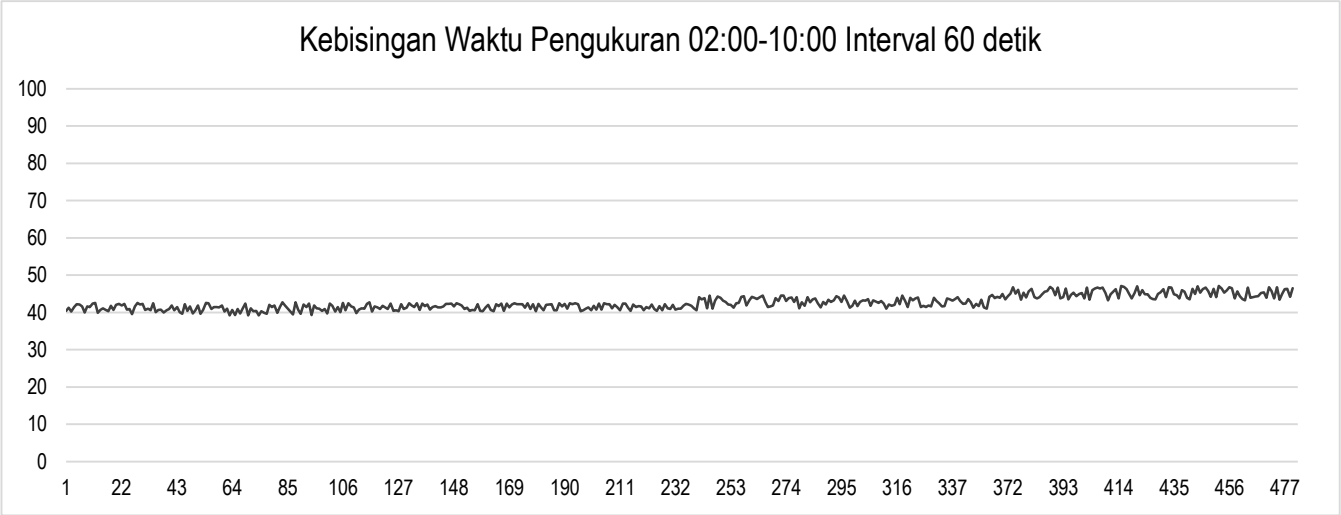


Kebisingan Waktu Pengukuran 18:00-02:00 Interval 60 detik

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	:	18244316	Tanggal Dilaporkan	:	26 Agustus 2024
Nama Pelanggan	:	TPA Temanggung	Nama Pemohon	:	-
			LS	:	07° 19' 34.21"
			BT	:	110° 13' 19.90"
Identitas Contoh Uji	:	**K-4 Pemukiman Dusun Tegal Ombo**			
Tanggal Pengambilan	:	07 Agu - 09 Agu 24	ID Sampel Laboratorium	:	18244316-24
Waktu Pengambilan	:	-	Tanggal Penerimaan	:	12-Agu-24
Matriks	:	Kebisingan	Waktu Analisis	:	12 Agu - 26 Agu





LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 30.3"
		BT	: 110° 13' 35.9"
Identitas Contoh Uji	: **SW-1 Hulu Sungai TPA**		
Tanggal Pengambilan	: 7-Agu-24	ID Sampel Laboratorium	: 18244316-25
Waktu Pengambilan	: 15:41	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Biota	Waktu Analisis	: 12 Agu - 26 Agu

Metode : APHA 10200 ed 23rd Thn 2017		Metode : APHA 10200 ed 23rd Thn 2017		Metode : SNI 06-2412-1991	
Macam Organisme (Genera)	**Hasil (Sel/L)**	**Macam Organisme (Genera)**	**Hasil (Ind/L)**	**Macam Organisme (Genera)**	**Hasil (Ind/m^2)**
PHYTOPLANKTON		**ZOOPLANKTON**		**MACROBENTHOS**	
BACILLARIOPHYCEAE		**ROTIFERA**		**OLIGOCHAETA**	
Denticula sp.	64	*Monostylla* sp.	92	*Lumbriculus sp.*	22
Fragilaria sp.	36	*Philodina* sp.	136	**GASTROPODA**	
Navicula sp.	88	*Polyarthra* sp.	88	*Melanoides* sp.	22
CYANOPHYCEAE				*Lymnaea* sp.	22
Anabaena sp.	24				
CHLOROPHYCEAE					
Ankistrodesmus sp.	144				
Cosmarium sp.	108				
Kelimpahan Total	464	Kelimpahan Total	316	Kelimpahan Total	66
Jumlah Taksa (S)	6	Jumlah Taksa (S)	3	Jumlah Taksa (S)	3
Indeks Keragaman (H')	1.64	Indeks Keragaman (H')	1.08	Indeks Keragaman (H')	1.58
Indeks Keseragaman (E)	0.92	Indeks Keseragaman (E)	0.98	Indeks Keseragaman (E)	1.00
Indeks Dominasi (D)	0.21	Indeks Dominasi (D)	0.35	Indeks Dominasi (D)	0.33

- (*) Terakreditasi KAN-756 -IDN

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 36.35"
		BT	: 110° 13' 31.45"
Identitas Contoh Uji	: **SW-2 Sungai Dekat Outlet IPAL**		
Tanggal Pengambilan	: 8-Agu-24	ID Sampel Laboratorium	: 18244316-26
Waktu Pengambilan	: 15:10	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Biota	Waktu Analisis	: 12 Agu - 26 Agu

Metode : APHA 10200 ed 23rd Thn 2017

Macam Organisme (Genera)	Hasil (Sel/L)
PHYTOPLANKTON	
BACILLARIOPHYCEAE	
Pinnularia sp.	16
Rophalodia sp.	56
Surirella sp.	88
CYANOPHYCEAE	
Anabaena sp.	52
Oscillatoria sp.	140
CHLOROPHYCEAE	
Cosmarium sp.	84
Dictyosphaerium sp.	96
Netrium sp.	28
Kelimpahan Total	560
Jumlah Taksa (S)	8
Indeks Keragaman (H')	1.93
Indeks Keseragaman (E)	0.93
Indeks Dominasi (D)	0.16

Metode : APHA 10200 ed 23rd Thn 2017

Macam Organisme (Genera)	Hasil (Ind/L)
ZOOPLANKTON	
PROTOZOA	
Vorticella sp.	20
ROTIFERA	
Monostylla sp.	72
Polyarthra sp.	24
NEMATODA	
Nematoda Worm (sp1)	48
Kelimpahan Total	164
Jumlah Taksa (S)	4
Indeks Keragaman (H')	1.26
Indeks Keseragaman (E)	0.91
Indeks Dominasi (D)	0.31

Metode : SNI 06-2412-1991

Macam Organisme (Genera)	Hasil (Ind/m^2)
MACROBENTHOS	
DIPTERA	
Polypedilum sp.	33
OLIGOCHAETA	
Lumbriculus sp.	11
GASTROPODA	
Melanoides sp.	22
Kelimpahan Total	66
Jumlah Taksa (S)	3
Indeks Keragaman (H')	1.46
Indeks Keseragaman (E)	0.92
Indeks Dominasi (D)	0.39

- (*) Terakreditasi KAN-756 -IDN

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 36.50"
		BT	: 110° 13' 30.88"
Identitas Contoh Uji	: **SW-3 Sungai Setelah Outlet IPAL**		
Tanggal Pengambilan	: 8-Agu-24	ID Sampel Laboratorium	: 18244316-27
Waktu Pengambilan	: 15:25	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Biota	Waktu Analisis	: 12 Agu - 26 Agu

Metode : APHA 10200 ed 23rd Thn 2017

Macam Organisme (Genera)	Hasil (Sel/L)
PHYTOPLANKTON	
BACILLARIOPHYCEAE	
Fragilaria sp.	92
Pinnularia sp.	76
Terpsinoe sp.	92
CYANOPHYCEAE	
Oscillatoria sp.	140
EUGLENOPHYCEAE	
Phacus sp.	124
CHLOROPHYCEAE	
Ankistrodesmus sp.	72
Dictyosphaerium sp.	40
Netrium sp.	48
Scenedesmus sp.	88
Ulothrix sp.	24
Kelimpahan Total	796
Jumlah Taksa (S)	10
Indeks Keragaman (H')	2.20
Indeks Keseragaman (E)	0.96
Indeks Dominasi (D)	0.12

Metode : APHA 10200 ed 23rd Thn 2017

Macam Organisme (Genera)	Hasil (Ind/L)
ZOOPLANKTON	
PROTOZOA	
Arcella sp.	144
Vorticella sp.	172
CRUSTACEAE	
Nauplius (stadia)	172
NEMATODA	
Nematoda Worm (sp1)	136
Kelimpahan Total	624
Jumlah Taksa (S)	4
Indeks Keragaman (H')	1.38
Indeks Keseragaman (E)	1.00
Indeks Dominasi (D)	0.25

Metode : SNI 06-2412-1991

Macam Organisme (Genera)	Hasil (Ind/m^2)
MACROBENTHOS	
GASTROPODA	
Melanoides sp.	22
Lymnaea sp.	22
INSECTA	
Chironomus sp.	11
Kelimpahan Total	55
Jumlah Taksa (S)	3
Indeks Keragaman (H')	1.52
Indeks Keseragaman (E)	0.96
Indeks Dominasi (D)	0.36

- (*) Terakreditasi KAN-756 -IDN

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: 26 Agustus 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -
		LS	: 07° 19' 41.8"
		BT	: 110° 13' 18.2"
Identitas Contoh Uji	: **SW-4 Hilir Sungai TPA**		
Tanggal Pengambilan	: 7-Agu-24	ID Sampel Laboratorium	: 18244316-28
Waktu Pengambilan	: 14:32	Tanggal Penerimaan	: 12-Agu-24
Matriks	: Biota	Waktu Analisis	: 12 Agu - 26 Agu

Metode : APHA 10200 ed 23rd Thn 2017	
Macam Organisme (Genera)	**Hasil (Sel/L)**
PHYTOPLANKTON	
BACILLARIOPHYCEAE	
Fragilaria sp.	40
Pinnularia sp.	80
Rophalodia sp.	20
Surirella sp.	96
CYANOPHYCEAE	
Anabaena sp.	20
Oscillatoria sp.	4
CHLOROPHYCEAE	
Ankistrodesmus sp.	68
Dictyosphaerium sp.	76
Netrium sp.	60
Ulothrix sp.	12
Kelimpahan Total	476
Jumlah Taksa (S)	10
Indeks Keragaman (H')	2.06
Indeks Keseragaman (E)	0.90
Indeks Dominasi (D)	0.14

Metode : APHA 10200 ed 23rd Thn 2017	
Macam Organisme (Genera)	**Hasil (Ind/L)**
ZOOPLANKTON	
PROTOZOA	
Vorticella sp.	32
CRUSTACEAE	
Nauplius (stadia)	52
NEMATODA	
Nematoda Worm (sp1)	128
Kelimpahan Total	212
Jumlah Taksa (S)	3
Indeks Keragaman (H')	0.93
Indeks Keseragaman (E)	0.85
Indeks Dominasi (D)	0.45

Metode : SNI 06-2412-1991	
Macam Organisme (Genera)	**Hasil (Ind/m^2)**
MACROBENTHOS	
GASTROPODA	
Melanoides sp.	11
Lymnaea sp.	33
Kelimpahan Total	44
Jumlah Taksa (S)	2
Indeks Keragaman (H')	0.81
Indeks Keseragaman (E)	0.81
Indeks Dominasi (D)	0.63

- (*) Terakreditasi KAN-756 -IDN

- Hasil hanya berhubungan dengan contoh yang diuji dan laporan ini tidak boleh digandakan kecuali seluruhnya.

LAPORAN HASIL PENGUJIAN

Nomor Pekerjaan	: 18244316	Tanggal Dilaporkan	: August 26, 2024
Nama Pelanggan	: TPA Temanggung	Nama Pemohon	: -

TABEL KUALITAS PERAIRAN MENURUT INDEKS DIVERSITAS FITOPLANKTON DAN ZOOPLANKTON

Indeks Keanekaragaman (H')	Kondisi struktur komunitas	Kategori	Skala
> 2.41		Sangat baik	5
1.81 – 2.40	Lebih stabil	Baik	4
1.21 – 1.80	Stabil	Sedang	3
0.61 – 1.20	Cukup stabil	Buruk	2
< 0.60	Kurang stabil	Sangat buruk	1

Sumber : Wibisono, 2005

End of Page

Biodiversity Baseline

List of Flora in Project area

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
1	Achantaceae	*Barleria cristata*			Herb		-	-	Yes	v		
2	Achantaceae	*Asystasia gangetica*	Chinese violet	Rumput israel	Herb	-	-	-	No	v	v	v
3	Achantaceae	*Ruellia prostrata*	Prostrate wild petunia	Kencana	Herb	-	-	-	Yes		v	
4	Amaranthaceae	*Alternanthera bettzickiana*				-	-	-	No	v		
5	Amaranthaceae	*Alternanthera philoxeroides*	Brazilian joy-weed	Tolod	Herb	-	-	-	No		v	
6	Amaranthaceae	*Alternanthera sessilis*	Sessile joyweed	Tolod	Herb	LC	-	-	Yes	v		v
7	Amaranthaceae	*Amaranthus viridis*	Green Amaranth	Bayam	Herb	-	-	-	No			v
8	Amaranthaceae	*Gomphrena celosioides*			Herb	-	-	-	No	v		
9	Anacardiaceae	*Anacardium occidentale*	Cashew	Jambu mete	Shrub	LC	-	-	No		v	
10	Anacardiaceae	*Mangifera indica*		Mangga		DD	-	-	No	v		
11	Annonaceae	*Annona muricata*	Soursop	Sirsak	Tree	LC	-	-	No	v	v	
12	Annonaceae	*Annona squamosa*				-	-	-	No	v		
13	Annonaceae	*Canaga odorata*		Kenanga		-	-	-	Yes	v		
14	Annonaceae	*Eryngiumn foetidum*		Ketumbar		-	-	-	Yes	v		
15	Annonaceae	*Polyalthia longifolia*	Cemetery tree	Glodokan tiang	Tree	-	-	-	No	v	v	
16	Apocynaceae	*Cascabela thevetia*	Yellow oleander	Oleander kuning	Shrub	-	-	-	No		v	
17	Araceae	*Aglaonema commutatum*		Aglonema		-	-	-	No	v		
18	Araceae	*Alocasia macrorrhizos*	Giant taro	Bira		-	-	-	No	v		
19	Araceae	*Colocasia esculenta*	Wild Taro	Talas	Herb	LC	-	-	No	v	v	v
20	Araceae	*Monstera deliciosa*				-	-	-	No	v		
21	Araceae	*Philodendron martianum*				-	-	-	No	v		
22	Araceae	*Polyscias scutellaria*		Puding semangkuk		LC	-	-	No	v		
23	Araceae	*Syngonium podophyllum*		Syngonium batik lokal		-	-	-	No	v		

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
24	Araceae	*Syngonium wendlandii*				-	-	-	No	v		
25	Araliaceae	*Caryota mitis*		Tukus		LC	-	-	Yes	v		
26	Araliaceae	*Heptapleurum actinophyllum*				LC	-	-	No	v		
27	Araliaceae	*Schefflera heptaphylla*				-	-	-	No	v		
28	**Arecaceae**	***Adonidia merrillii***		**Palem putri**		**VU**	**-**	**-**	**No**	**v**		
29	Arecaceae	*Areca triandra*		Buring utan		LC	-	-	No	v		
30	Arecaceae	*Cocos nucifera*	Coconut palm	Kelapa	Tree	-	-	-	No	v	v	v
31	Arecaceae	*Cordyline fruticosa*		Hanjuang		-	-	-	No	v		
32	Arecaceae	*Dracaenaa surculosa*		Bambu Jepang		-	-	-	No	v		
33	Arecaceae	*Dypsis lutescens*		Palem kuning		NT	-	-	No	v		
34	Arecaceae	*Salacca zalacca*		Salak		-	-	-	Yes	v		
35	Arecaceae	*Syngonium podophyllum*		Syngonium batik lokal		-	-	-	No	v		
36	Arecaceae	*Xanthosoma sagittifolium*	Arrow leaf elephant's ear	Talas belitung	Herb	-	-	-	No		v	v
37	Asparagaceae	*Asplenium obovatum*				-	-	-	No	v		
38	Asparagaceae	*Cordyline fruticosa*		Hanjuang		LC	-	-	No	v		
39	Asparagaceae	*Dracaena fragrans*		Senjuang wangi		LC	-	-	No	v		
40	Asparagaceae	*Dracaena reflexa*		Nyanyian dari india		LC	-	-	No	v		
41	Asparagaceae	*Dracaena trifasciata*	Snake plant	Lidah mertua	Herb	-	-	-	No	v	v	
42	Asparagaceae	*Ophiopogon japonicus*				-	-	-	No	v		
43	Aspleniaceae	*Deparia petersenii*	Japanese false spleenwort	-	Fern	-	-	-	No		v	
44	Aspleniaceae	*Eclipta prostrata*				-	-	-	No	v		
45	Aspleniaceae	*Phegopteris connectilis*	Beech Fern	Paku kijang	Fern	LC	-	-	No			v
46	Aspleniaceae	*Thelypteris dentata*	Downy shieldfern		Fern	LC	-	-	No	v	v	
47	Asteraceae	*Ageratum conyzoides*		Bandotan		-	-	-	No	v		
48	Asteraceae	*Bidens pilosa*		Ketul		-	-	-	No	v		

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
49	Asteraceae	*Blumea axillaris*				-	-	-	Yes	v		
50	Asteraceae	*Chromolaena odorata*	Bitter bush	Kerinyuh	Herb	-	-	-	No	v	v	
51	Asteraceae	*Crassocephalum crepidioides*		Sintrong	Herb	-	-	-	No	v	v	
52	Asteraceae	*Cyanthillium cinereum*				-	-	-	Yes	v		
53	Asteraceae	*Erigeron bonariensis*				-	-	-	No	v		
54	Asteraceae	*Erigeron sumatrensis*	Alpine Daisy	Jalantir	Herb	-	-	-	No	v	v	v
55	Asteraceae	*Pseudelephantopus spicatus*	Dog's tongue	Tapak liman semu	Herb	-	-	-	No	v	v	
56	Asteraceae	*Rorippa palustris*	Marsh yellow cress	Genjer	Shrub	LC	-	-	Yes			v
57	Asteraceae	*Sphagneticola trilobata*		Wedelia		-	-	-	No	v		
58	Asteraceae	*Synedrella nodiflora*	Nodeweed	Jotang kuda	Herb	-	-	-	No	v	v	v
59	Asteraceae	*Tridax procumbens*	Coatbuttons			-	-	-	No	v		
60	Bromeliaceae	*Ananas comosus*	Pineapple	Nanas	Herb	-	-	-	No		v	v
61	Cactaceae	*Selenicereus triangularis*				-	-	-	No	v		
62	Cannaceae	*Canna indica*		Bunga tasbih		-	-	-	No	v		
63	Caricaceae	*Carica papaya*	Papaya	Pepaya	Herb	DD	-	-	No	v		v
64	Cleomaceae	*Cleome rutidosperma*				-	-	-	No	v		
65	Clusiaceae	*Garcinia mangostana*	Mangosteen	Manggis	Shrub	DD	-	-	No			v
66	Combretaceae	*Terminalia catappa*		Ketapang		LC	-	-	Yes	v		
67	Convolvulaceae	*Ipomoea aquatica*	Water spinach	Kangkung	Herb	LC	-	-	Yes			v
68	Convolvulaceae	*Ipomoea batatas*	Sweet Potato	Ubi	Herb	DD	-	-	No			v
69	Convolvulaceae	*Ipomoea obscura*				-	-	-	Yes	v		
70	Costaceae	*Hellenia speciosa*			Herb	-	-	-	Yes		v	
71	Euphorbiaceae	*Acalypha siamensis*	Wild tea	Teh-tehan	Shrub	-	-	-	No	v	v	
72	Euphorbiaceae	*Cnidoscolus aconitifolius*	Treadsoftly	Kates jepang		LC	-	-	No	v		
73	Euphorbiaceae	*Codiaeum variegatum*		Puring		LC	-	-	Yes	v		

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
74	Euphorbiaceae	*Euphorbia heterophylla*			Herb	LC	-	-	No		v	
75	Euphorbiaceae	*Euphorbia hirta*	False euphorbia	Petikan kebo	Herb	-	-	-	No	v		v
76	Euphorbiaceae	*Euphorbia neriifolia*		Sesudu		LC	-	-	No	v		
77	Euphorbiaceae	*Excoecaria cochinchinensis*		Sambang darah		LC	-	-	No	v		
78	Euphorbiaceae	*Hevea brasiliensis*		Pokok getah		LC	-	-	No	v		
79	Euphorbiaceae	*Macaranga tanarius*	Parasol leaf tree	Karahan	Shrub	LC	-	-	Yes	v	v	v
80	Euphorbiaceae	*Manihot esculenta*	Cassava	Ubi kayu	Shrub	DD	-	-	No	v	v	v
81	Fabaceae	*Albizia carbonaria*	Naked albizia	Sengon		-	-	-	No	v		
82	**Fabaceae**	***Albizia julibrissin***	**Mimosa**	**Pohon sutra persia**	**Tree**	**VU**	**-**	**-**	**No**	**v**		**v**
83	Fabaceae	*Albizia lebbeck*		Kitoke		LC	-	-	No	v		
84	Fabaceae	*Arachis hypogaea*	Peanut	Kacang tanah	Herb	-	-	-	No			v
85	Fabaceae	*Archidendron jiringa*	Jengkol	Jengkol	Tree	LC	-	-	Yes	v	v	
86	Fabaceae	*Calliandra houstoniana*	Powderpuff tree	Kaliandra	Tree	LC	-	-	No	v	v	v
87	Fabaceae	*Centrosema pubescens*	Wild Pea	Kacang asu	Herb	-	-	-	No	v		v
88	Fabaceae	*Centrosema virginianum*	Spurred Butterfly Pea	Kacang kupu-kupu	Herb	-	-	-	No			v
89	**Fabaceae**	***Dalbergia latifolia***	**Bombay blackwood**	**Sonobrits**	**Tree**	**VU**	**App. II**	**-**	**Yes**	**v**	**v**	**v**
90	Fabaceae	*Desmanthus virgatus*	Wild tantan	Tantan liar	Shrub	LC	-	-	No	v	v	
91	Fabaceae	*Enterolobium cyclocarpum*		Sengon buto		LC	-	-	No	v		
92	Fabaceae	*Erythrina fusca*				LC	-	-	Yes	v		
93	Fabaceae	*Leucaena leucocephala*				-	-	-	No	v		
94	Fabaceae	*Mimosa pudica*	Sensitive plant	Putri malu	Herb	LC	-	-	No	v	v	v
95	Fabaceae	*Tamarindus indica*		Asam jawa		LC	-	-	No	v		
96	Fabaceae	*Vigna unguiculata*	Cowpea	Kacang tunggak	Herb	-	-	-	No			v
97	Fabaceae	*Zapoteca tetragona*				LC	-	-	No	v		
98	Gnetaceae	*Gnetum gnemon*	Spanish join-fir	Melinjo	Tree	LC	-	-	No	v	v	

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
99	Iridaceae	*Trimezia martinicensis*		Bunga iris kuning		-	-	-	No	v		
100	Laminaceae	*Hyptis capitata*	False ironwort	Rumput knop	Herb	-	-	-	No		v	
101	Laminaceae	*Mesosphaerum pectinatum*				-	-	-	No	v		
102	Laminaceae	*Rotheca serrata*				-	-	-	Yes	v		
103	Laminaceae	*Salvia occidentalis*	West indian sage	Daun nggorang	Herb	-	-	-	No		v	
104	**Laminaceae**	***Tectona grandis***	**Teak**	**Jati**	**Tree**	**EN**	**-**	**-**	**No**	**v**	**v**	**v**
105	Laminaceae	*Vitex altissima*				-	-	-	Yes	v		
106	**Lauraceae**	***Cinnamomum verum***		**Kayu manis**		**VU**	**-**	**-**	**No**	**v**		
107	Lauraceae	*Persea americana*	Avocado	Alpukat	Tree	LC	-	-	No			v
108	Malvaceae	*Ceiba pentandra*		Randu	Tree	LC	-	-	No	v	v	
109	Malvaceae	*Durio zibethinus*	Durian	Durian	Tree	DD	-	-	No	v	v	v
110	Malvaceae	*Hibiscus tiliaceus*		Waru		LC	-	-	Yes	v		
111	Malvaceae	*Sida acuta*				-	-	-	No	v		
112	Malvaceae	*Sida cordata*	Heartleaf fanpetals		Herb	-	-	-	No		v	
113	Malvaceae	*Theobroma cacao*		Kakao		-	-	-	No		v	
114	Malvaceae	*Urena lobata*	Caesar weed	Pulutan	Herb	LC	-	-	Yes	v	v	
115	Melastomataceae	*Miconia crenata*	Soapbush	Senggani bulu	Shrub	-	-	-	No	v	v	
116	Meliaceae	*Azadirachta indica*		Mimba		-	-	-	No		v	
117	**Meliaceae**	***Swietenia mahagoni***	**American mahogany**	**Mahoni**	**Tree**	**NT**	**App. II**	**-**	**No**		**v**	**v**
118	Moraceae	*Artocarpus heterophyllus*	Jackfruit	Nangka	Tree	-	-	-	No	v	v	v
119	Moraceae	*Artocarpus integer*		Cempedak		-	-	-	Yes	v		
120	Moraceae	*Ficus benjamina*		Beringin		-	-	-	Yes	v		
121	Moraceae	*Ficus fistulosa*	Fig	Beunying	Shrub	LC	-	-	Yes	v		v
122	Moraceae	*Ficus hispida*	Hairy fig	Luwingan	Shrub	LC	-	-	Yes	v	v	
123	Moraceae	*Ficus microcarpa*		Jejawi		LC	-	-	Yes	v		
124	Moraceae	*Ficus montana*				LC	-	-	Yes	v		

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
125	Moraceae	*Ficus retusa*		Dolar		-	-	-	Yes	v		
126	Moraceae	*Ficus septica*	Septic fig	Awar-awar	Shrub	LC	-	-	Yes	v	v	v
127	Moraceae	*Ficus triloba*				LC	-	-	No	v		
128	Muntingiaceae	*Muntingia calabura*		Kersen		LC	-	-	No	v		
129	Musaceae	*Musa x paradisiaca*	Banana	Pisang nangka	Herb	LC	-	-	No	v	v	v
130	Myrtaceae	*Myrtus communis*	Myrtle	Murad umum		-	-	-	No	v		
131	Myrtaceae	*Psidium guajava*		Jambu biji		-	-	-	No	v		
132	Myrtaceae	*Syzygium jambos*		Pucuk meraah		LC	-	-	No	v		
133	Myrtaceae	*Syzygium myrtifolium*	Red lip	Pucuk merah	Shrub	-	-	-	Yes	v	v	
134	Oxalidaceae	*Oxalis barrelieri*	Barrelier's woodso	Calincing tanah	Herb	-	-	-	No		v	
135	Pandanaceae	*Pandanus amaryllifolius*		Pandan wangi		DD	-	-	No	v		
136	Passifloraceae	*Passiflora edulis*		Markisa		-	-	-	No	v		
137	Phyllanthaceae	*Breynia androgyna*	Star gooseberry	Katukan	Herb	LC	-	-	Yes	v		v
138	Phyllanthaceae	*Flueggea virosa*				-	-	-	Yes	v		
139	Phyllanthaceae	*Phyllanthus acidus*		Cermai		-	-	-	No	v		
140	Phyllanthaceae	*Phyllanthus reticulatus*	Potato bush	Mangsian	Herb	LC	-	-	Yes	v	v	
141	Phyllanthaceae	*Phyllanthus urinaria*	Lizard Tail	Dukong anak	Herb	-	-	-	Yes			v
142	Piperaceae	*Piper aduncum*				LC	-	-	No	v		
143	Piperaceae	*Piper betle*		Sirih		-	-	-	No		v	
144	Piperaceae	*Piper retrofractum*		Cabe jawa		-	-	-	No		v	
145	Pittosporaceae	*Pittosporum undulatum*			Tree	-	-	-	No		v	
146	Poaceae	*Bambusa vulgaris*	Common bamboo	Bambu ampel	Herb	-	-	-	No	v		v
147	Poaceae	*Cynodon dactylon*		Rumput minyak		-	-	-	Yes	v		
148	Poaceae	*Dendrocalamus giganteus*	Giant bamboo	Bambu puan	Herb	LC	-	-	No	v	v	v
149	Poaceae	*Digitaria sanguainalis*	Crab finger grass	Rumput kepiting	Herb	-	-	-	No		v	
150	Poaceae	*Eleusine indica*	Crabgrass	Rumput belulang	Herb	LC	-	-	Yes		v	

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
151	Poaceae	*Imperata cylindrica*		Ilalang		-	-	-	No	v		
152	Poaceae	*Megathyrsus maximus*	Guinea Grass	-	Herb	-	-	-	No	v		v
153	Poaceae	*Oplismenus compositus*				LC	-	-	Yes	v		
154	Poaceae	*Oplismenus undulatifolius*	Wavyleaf basketgrass	-	Herb	-	-	-	Yes		v	v
155	Poaceae	*Saccharum officinarum*				-	-	-	No	v		
156	Poaceae	*Setaria parviflora*				-	-	-	No	v		
157	Portulacaceae	*Portulaca oleracea*		Gelang pasir		-	-	-	No	v		
158	Pteridaceae	*Pityrogramma calomelanos*	Black Tree Fern	Paku perak	Fern	-	-	-	No	v		v
159	Pteridaceae	*Pteris fauriei*	Faurie's brake	-	Fern	-	-	-	No		v	v
160	Pteridaceae	*Pteris tripartita*				-	-	-	Yes	v		
161	**Rubiaceae**	***Coffea arabica***	**Arabian coffee**	**Kopi arabika**	**Shrub**	**EN**	**-**	**-**	**No**	**v**	**v**	**v**
162	Rubiaceae	*Coffea canephora*	Congo coffeetree	Kopi robusta	Shrub	LC	-	-	No	v	v	v
163	Rubiaceae	*Morinda citrifolia*		Mengkudu		LC	-	-	No	v		
164	Rubiaceae	*Mussaenda philippica*		Balik adap		LC	-	-	No	v		
165	Rubiaceae	*Neolamarckia cadamba*	Kadam	-	Tree	-	-	-	Yes		v	
166	Rubiaceae	*Paederia foetida*		Sekuntut		-	-	-	Yes	v		
167	Sapindaceae	*Nephelium lappaceum*		Rambutan		-	-	-	No		v	
168	Schizaeaceae	*Lygodium japonicum*			Fern	-	-	-	Yes		v	
169	Schizaeaceae	*Lygodium venustum*	Monarch climbing fern	Hata	Fern	-	-	-	No		v	
170	Solanaceae	*Capsicum annuum*	Chili	Cabai	Shrub	LC	-	-	No	v		v
171	Solanaceae	*Solanum diphyllum*				-	-	-	No	v		
172	Solanaceae	*Solanum mauritianum*				-	-	-	No	v		
173	Solanaceae	*Solanum melongena*		Terung		-	-	-	Yes	v		
174	Solanaceae	*Solanum torvum*	Turkey berry	Pokak	Herb	-	-	-	No	v	v	v
175	Talinaceae	*Talinum paniculatum*		Kolesom jawa		-	-	-	No	v		
176	Tectariaceae	*Tectaria heracleifolia*	Broad halberd fern	-	Fern	-	-	-	No		v	

No	Family	Scientific Name	English Name	Local Name	Growth habit	Conservation Status			Native	Found at Transect		
						IUCN	CITES	P.106		TPA	FF1	FF2
177	Verbenaceae	*Lantana camara*	Lantana	Tembelekan	Shrub	-	-	-	No	v	v	
178	Verbenaceae	*Stachytarpheta cayennensis*		Pecut kuda		-	-	-	No	v		
179	Verbenaceae	*Stachytarpheta jamaicensis*	Blue potterwed	Pecut kuda	Herb	LC	-	-	No		v	
180	Viburnaceae	*Sambucus racemosa*				LC	-	-	No	v		
181	Vitaceae	*Cissus verticillata*				LC	-	-	No	v		
182	Zingiberaceae	*Alpinia galanga*	Greater galangal	Lengkuas	Herb	-	-	-	Yes			v
183	Zingiberaceae	*Alpinia purpurata*		Lengkuas merah		-	-	-	No		v	
184	Zingiberaceae	*Elettaria cardamomum*	Cardamom	Kapulaga	Herb	-	-	-	No		v	
185	Zingiberaceae	*Hedychium coronarium*				DD	-	-	No	v		

List of Terrestrial Fauna in Project Area

No	Family	Local Name	Common Name	Scientific Name	Conservation Status			Native	Location		
					IUCN	CITES	P.106		TPA	FF1	FF2
Birds											
1	Halcyonidae	Burung cekakak Jawa	Javan Kingfisher	*Halcyon cyanoventris*	LC	-	-	Yes	3	-	1
2	Alcedinidae	Burung cekakak sungai	Collared Kingfisher	*Todiramphus chloris*	LC	-	-	Yes	-	2	1
3	Campephagidae	Burung sepah kecil	Small Minivet	*Pericrocotus cinnamomeus*	LC	-	-	Yes	8	-	8
4	Estrildidae	Burung bondol jawa	Javan Munia	*Lonchura leucogastroides*	LC	-	-	Yes	4	-	3
5	Aegithinidae	Burung cipoh kacat	Common lora	*Aegithina tiphia*	LC	-	-	Yes	2	3	-
6	Nectariniidae	Burung madu sriganti	Olive-backed Sunbird	*Cinnyris jugularis*	LC	-	-	No	1	-	-
7	Nectariniidae	Burung madu kelapa	Brown-throated Sunbird	*Anthreptes malacensis*	LC	-	-	Yes	-	1	-
8	Columbidae	Burung merpati domestik	Rock Pigeon	*Columba livia domestica*	-	-	-	No	4	-	-
9	Columbidae	Burung perkutut	Zebra Dove	*Geopelia striata*	LC	-	-	Yes	1	-	2
10	Turnicidae	Burung gemak loreng	Barred Buttonquail	*Turnix suscitator*	LC	-	-	Yes	-	1	-
11	Picidae	Burung caladi tilik	Sunda Pygmy Woodpecker	*Picoides moluccensis*	LC	-	-	Yes	-	1	2
12	Picidae	Burung caladi ulam	Freckle-breasted Woodpecker	*Dendrocopos analis*	LC	-	-	Yes	-	-	1
13	Cuculidae	Burung kedasih ungu	Violet Cuckoo	*Chrysococcyx xanthorhynchus*	LC	-	-	Yes	-	1	-
14	Pycnonotidae	Burung cucak kutilang	Sooty-headed Bulbul	*Pycnonotus aurigaster*	LC	-	-	Yes	15	5	7
15	Hirundinidae	Burung layang-layang batu	Tahiti Swallow	*Hirundo tahitica*	LC	-	-	Yes	45	11	11

No	Family	Local Name	Common Name	Scientific Name	Conservation Status			Native	Location		
					IUCN	CITES	P.106		TPA	FF1	FF2
16	**Accipitridae**	**Burung sikep madu**	**Oriental Honey-buzzard**	***Pernis ptilorhynchus***	**LC**	**App II**	**Protected**	**Yes**	**-**	**-**	**1**
17	Dicruridae	Burung srigunting kelabu	Ashy Drongo	*Dicrurus leucophaeus*	LC	-	-	Yes	-	-	3
18	Megalaimidae	Burung takur ungkut-ungkut	Coppersmith Barbet	*Psilopogon haemacephalus*	LC	-	-	Yes	-	-	2
Herpetofauna											
19	Colubridae	Ular pohon malabar	Malabar Vine Snake	*Ahaetulla malabarica*	-	-	-	No	2	-	-
20	**Elapidae**	**Ular kobra**	**Southern Indonesian Spitting Cobra**	***Naja sputatrix***	**LC**	**App II**	**-**	**Yes**	**1**	**-**	**-**
21	**Varanidae**	**Biawak air asia**	**Common Water Monitor**	***Varanus salvator***	**LC**	**App II**	**-**	**Yes**	**1**	**-**	**-**
22	Agamidae	Bunglon surai	Maned Forest Lizard	*Bronchocela jubata*	LC	-	-	Yes	5	1	-
23	Scincidae	Kadal kebun	Common Mabuya	*Eutropis multifasciata*	LC	-	-	Yes	2	-	
24	**Gekkonidae**	**Tokek**	**Tokay Gecko**	***Gekko gecko***	**LC**	**App II**	**-**	**Yes**	**1**	**-**	**-**
25	Ranidae	Katak kongkang kolam	Schlegel's Frog	*Chalcorana chalconota*	LC	-	-	Yes	2	-	-
26	Ranidae	-	Large White-lipped Frog	*Chalcorana megalonesa*	LC	-	-	No	1	-	-
27	Rhacophoridae	Katak pohon bergaris	Java Whipping Frog	*Polypedates leucomystax*	LC	-	-	Yes	1	-	-
28	Dicroglossidae	-	-	*Limnonectes* sp.	-	-	-	-	2	-	-
Mammals											
29	Sciuridae	Bajing kelapa	Plantain squirrel	*Callociurus notatus*	LC	-	-	-	2	1	-
30	Pteropodidae	Codot krawar	Lesser Dog-faced Fruit Bat	*Cynopterus brachyotis*	LC	-	-	No	3	-	-

List of Aquatic Biota Around Project Area

No	Family	Local Name	Common Name	Scientific Name	Conservation Status			Native	Count
					IUCN	CITES	P.106		
1	Palaemonidae	Udang sungai	Freshwater Prawn	*Macrobrachium* sp.	-	-	-	-	15
2	Cyprinidae	Ikan wader bintik dua	Common Barb	*Barbodes binotatus*	LC	-	-	-	4

Social Baseline

List of Wastepickers in TPA Sanggrahan

No	Name	Sex	Status	Age	Origin	Scavanging Period	Number of Children	Notes
1	Ruwani	Female	Maried	60	Temandang, Desa Pendowo	14	1	Wife of Yadi
2	Munarsih	Female	Maried	60	Losari, Desa Sanggrahan	7		Wife of Yamidi
3	Siti Khotijah	Female	Maried	48	Wonogiri, Desa Gentan	5	1	Wife of Suyadi
4	Lelet	Female	Maried	63	Losari, Desa Sanggrahan	12		Head of Family
5	Iswoyo	Male	Maried	45	Temandang, Desa Pendowo	6	2	Head of Family
6	Yamini	Female	Maried	42	Temandang, Desa Pendowo	6	2	Wife of Iswoyo
7	Romlah	Female	Maried	56	Temandang, Desa Pendowo	13	1	Head of Family
8	Sarjilah	Female	Maried	35	Losari, Desa Sanggrahan	11	2	Wife of Mukadi
9	Sarmi	Female	Maried	44	Losari, Desa Sanggrahan	4	2	Wife of Saroji
10	Mutinah	Female	Maried	59	Tambaksari, Desa Sanggrahan	8		Wife of Mujilan
11	Mardiyah	Female	Maried	53	Tambaksari, Desa Sanggrahan	13		Wife of Suparman
12	Muridah	Female	Maried	56	Losari, Desa Sanggrahan	10	2	Wife of Maryanto
13	Madyo	Male	Maried	68	Temandang, Desa Pendowo	11		Head of Family
14	Sartimah	Female	Maried	66	Malangsari, Desa Kramat	6		Wife of Parwiyoto
15	Sukarmi	Female	Maried	66	Temandang, Desa Pendowo	11		Wife of Madyo
16	Markun	Male	Maried	53	Losari, Desa Sanggrahan	9		Head of Family
17	Rantinah	Female	Maried	53	Losari, Desa Sanggrahan	11		Wife of Markun
18	Kumpul	Male	Maried	55	Losari, Desa Sanggrahan	12	1	Head of Family
19	Karsih	Female	Maried	49	Losari, Desa Sanggrahan	12	1	Wife of Kumpul
20	Sumarno	Male	Maried	56	Losari, Desa Sanggrahan	8		Head of Family
21	Sutini	Female	Maried	55	Losari, Desa Sanggrahan	7		Wife of Sumarno
22	Suratmi	Female	Maried	61	Losari, Desa Sanggrahan	10		Wife of Ruwani

No	Name	Sex	Status	Age	Origin	Scavanging Period	Number of Children	Notes
23	Yatin	Male	Maried	59	Malangsari, Desa Kramat	2	2	Head of Family
24	Saryatun	Female	Maried	48	Malangsari, Desa Kramat	2	2	Wife of Yatin
25	Maridah	Female	Death Divorced	61	Losari, Desa Sanggrahan	13	2	Head of Family
26	Sarwidi	Male	Maried	67	Losari, Desa Sanggrahan	14		Head of Family
27	Winarti	Female	Maried	45	Losari, Desa Sanggrahan	9	2	Wife of Rani Slamet
28	Tumini	Female	Maried	62	Losari, Desa Sanggrahan	10		Wife of Giman
29	Parsini	Female	Maried	65	Losari, Desa Sanggrahan	10		Wife of Tulus
30	Barsiyah	Female	Maried	45	Losari, Desa Sanggrahan	9	1	Wife of Tunut
31	Marsini	Female	Maried	52	Losari, Desa Sanggrahan	10	1	Wife of Kamis
32	Ronjiyah	Female	Death Divorced	58	Losari, Desa Sanggrahan	10	1	Head of Family
33	Walmiyatun	Female	Maried					
34	Sukir	Male	Maried	48	Madusari, Desa Sanggrahan	7	2	Head of Family
35	Sela	Male	Maried	56	Kelpu, Desa Kelpu	3	2	Head of Family
36	Sunarti	Female	Maried	48	Kelpu, Desa Kelpu	3	2	Wife of Sela
37	Sarminah	Female	Death Divorced	73	Temandang, Desa Pendowo	13		Head of Family
38	Juwariyah	Female	Maried	59	Losari, Desa Sanggrahan	9	2	Wife of Markuat
39	Priyatman	Male	Maried	45	Losari, Desa Sanggrahan	10	1	Head of Family
40	Imbuh	Male	Maried	43	Losari, Desa Sanggrahan	14	1	Head of Family
41	Suparmi	Female	Maried	45	Losari, Desa Sanggrahan	6	1	Wife of Imbuh
42	Siyami	Female	Maried	46	Losari, Desa Sanggrahan	10	2	Wife of Sa'in
43	Sumini	Female	Maried	53	Losari, Desa Sanggrahan	12		Wife of Pardi
44	Dahyono	Male	Maried	52	Losari, Desa Sanggrahan	9	2	Head of Family
45	Urip	Female	Maried	52	Losari, Desa Sanggrahan	9	2	Wife of Dahyono
46	Maryati	Female	Maried	48	Madusari, Desa Sanggrahan	7	2	Wife of Sukir
47	Marsidah	Female	Maried	62	Tambaksari, Desa Sanggrahan	7		Wife of Suyoto

No	Name	Sex	Status	Age	Origin	Scavanging Period	Number of Children	Notes
48	Samini	Female	Maried	50	Tambaksari, Desa Sanggrahan	8	3	Wife of Hamsyar
49	Sukoyo	Male	Maried	48	Losari, Desa Sanggrahan	12	3	Head of Family
50	Mutiyah	Female	Maried	47	Losari, Desa Sanggrahan	12	3	Wife of Sukoyo
51	Siyami	Female	Maried	57	Losari, Desa Sanggrahan	14	1	Wife of kasmuri
52	Sugito	Male	Maried	79	Losari, Desa Sanggrahan	14		Head of Family
53	Daimah	Female	Maried	71	Losari, Desa Sanggrahan	14		Wife of Sugito
54	Suranti	Female	Maried	53	Losari, Desa Sanggrahan	13	1	Wife of Suyat
55	Eko Anggoro	Male	Maried	38	Losari, Desa Sanggrahan	8	2	Head of Family
56	Sarikah	Female	Maried	33	Losari, Desa Sanggrahan	4	2	Wife of Eko Anggoro
57	Samini	Female	Death Divorced	72	Temandang, Desa Pendowo	14		Head of Family
58	Markuwat	Male	Maried	47	Temandang, Desa Pendowo	12	2	Head of Family
59	Darsih	Female	Maried	42	Temandang, Desa Pendowo	8	2	Wife of Markuat
60	Sarminah	Female	Maried	58	Temandang, Desa Pendowo	10	1	Wife of Jamil
61	Ispadi	Male	Maried	65	Temandang, Desa Pendowo	14		Head of Family
62	Marsinah	Female	Maried	58	Temandang, Desa Pendowo	14		Wife of Ispadi
63	Sri Sutirah	Female	Death Divorced	71	Temandang, Desa Pendowo	14	2	Parent
64	Walmiyatun	Female	Maried	34	Losari, Desa Sanggrahan	3	2	Wife of Hidup
65	Imam Supriyadi	Female	Maried	29	Kalipucung, Desa Kramat	3	1	Head of Family
66	Fitriyani	Male	Maried	24	Kalipucung, Desa Kramat	3	1	Wife of Imam S
67	Budi Yani	Female	Maried	39	Dejarak, Desa Gentan	6	3	Wife of Sulisman

Source: DPRKPLH Temanggung, 2024

Demographic Profile of Affected Location

Location	Category		2021	2022	2023
Sanggrahan Village	Area (km2)		4,44	4,44	4,44
	Gender	Men	2.084	2.092	2.096
		Women	2.074	2.104	2.103
	Total		4.158	4.196	4.199
	Sex Ratio		100,48	99,43	99,67
	Density (People/km2)		936	945	946
Pendowo Village	Area (km2)		5,76	5,76	5,76
	Gender	Men	2.376	2.433	2.493
		Women	2.505	2.508	2.592
	Total		4.881	4.941	5.085
	Sex Ratio		94,85	97,01	96,18
	Density (People/km2)		847	858	883
Klepu Village	Area (km2)		3,44	3,44	3,44
	Gender	Men	1.521	1.533	N/A
		Women	1.493	1.525	N/A
	Total		3.014	3.058	N/A
	Sex Ratio		101,88	100,52	N/A
	Density (People/km2)		876	889	N/A
Gentan Village	Area (km2)		6,98	6,98	6,98
	Gender	Men	2.286	2.307	N/A
		Women	2.288	2.333	N/A
	Total		4.574	4.640	N/A
	Sex Ratio		99,91	98,89	N/A
	Density (People/km2)		655	665	N/A
Kranggan Sub-District	Area (km2)		57,61	57,61	57,61
	Gender	Men	24.716	24.935	25.126
		Women	25.034	25.299	25.638
	Total		49.750	50.234	50.764
	Sex Ratio		98,73	98,56	98,00
	Density (People/km2)		864	872	881
Temanggung Regency	Area (km2)		870,65	870,65	870,65
	Gender	Men	399.500	402.114	406.100
		Women	394.903	397.650	402.346
	Total		794.403	799.764	808.446
	Sex Ratio		101,16	101,12	100,93
	Density (People/km2)		912	919	929

Source: BPS Temanggung Regency, 2021 – 2024

Population Composition of Kranggan Sub-District by Age Groups

Age Category	2020			2021			2022		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Age 0-14	5,327	4,994	10,321	5,736	5,339	11,075	6,494	6,153	12,647
Age 15-64	17,373	17,781	35,154	17,097	17,597	34,694	19,755	19,244	38,999
Age 65+	1,61	1,716	3,326	1,36	1,385	2,745	2,118	2,378	4,496
Total	24,31	24,491	48,801	24,193	24,321	48,514	28,367	27,775	56,142

Source: BPS Temanggung Regency, 2021 - 2023

School, Student and Teacher Composition in Temanggung Regency

Village/ Sub-District	Category	2021/2022			2022/2023			2023/2024			Ratio (2023/2024)
		School	Student	Teacher	School	Student	Teacher	School	Student	Teacher	
Kranggan Sub-District	SD (Elementary school)	29	3800	247	29	3.590	248	N/A	N/A	N/A	14
	MI (Islamic elementary school)	6	751	57	6	771	39	6	736	43	17
	SMP (Junior high school)	6	1335	82	6	1.359	80	6	1.379	85	16
	MTs (Islamic junior high school)	4	820	72	4	801	53	4	753	68	11
	SMA (High school)	0	0	0	0	0	0	0	0	0	N/A
	SMK (Vocational high school)	2	395	27	2	380	25	2	374	29	13
	MA (Islamic high school)	2	231	53	2	247	28	2	249	44	6
Temanggung Regency	SD (Elementary school)	434	56170	3843	434	52.592	3830	N/A	N/A	N/A	N/A
	MI (Islamic elementary school)	146	20070	1516	147	20.141	1257	147	19.828	1354	15
	SMP (Junior high school)	79	26759	1517	82	26.941	1505	84	28.093	1539	18
	MTs (Islamic junior high school)	34	8198	694	35	8.477	543	36	8.375	604	14
	SMA (High school)	16	6806	375	16	6968	406	17	7358	401	18
	SMK (Vocational high school)	21	14938	726	21	14.208	759	21	14.708	753	20
	MA (Islamic high school)	18	4287	434	18	4281	311	18	4489	351	13

Source: BPS Temanggung Regency, 2021 - 2024

Population by Religion in Temanggung Regency

Area	Islam	Protestant	Catholic	Hindu	Buddha	Others
Kranggan Sub-District	49,161	1,510	184	5	8	2
Temanggung Regency	782,476	16,380	6,378	187	9,184	357

Source: BPS Temanggung Regency 2024

Number of Worshiping Facilities in Temanggung Regency

Village/Sub-District	Mosque/Musholla	Protestant Church	Catholic Church	Temple	Monastery
Sanggrahan Village	18	1	0	0	0
Pendowo Village	26	0	0	0	0
Klepu Village	15	1	0	0	0
Gentan Village	21	0	0	0	0
Kranggan Sub-District	241	8	0	1	0
Temanggung Regency	3,924	104	2	11	81

Source: BPS Temanggung Regency 2024

List of Tangible and Intangible Cultural Resources in Temanggung Regency

No	Name	Origin/Location	Category	Year of Recognition	Picture
1	Jaranan Margowati	Temanggung	Intangible Cultural Heritage	2019	
2	Situs Liyangan	Dusun Liyangan, Desa Purbosari, Kec. Ngadirejo	Tangible Cultural Heritage	2018	
3	Candi Pringapus	Desa Pringapus, Kec. Ngadirejo	Tangible Cultural Heritage	2018	

No	Name	Origin/Location	Category	Year of Recognition	Picture
4	Candi Gondosuli	Desa Gondosuli, Kec. Bulu	Tangible Cultural Heritage	2018	
5	Prasasti Gondosuli	Desa Gondosuli, Kec. Bulu	Tangible Cultural Heritage	2018	
6	Prasasti Wanua Tnah II	Kompleks Pendopo Pangayoman Temanggung	Tangible Cultural Heritage	2018	
7	Eks Kantor Camat Parakan	Kelurahan Parakan Kauman, Kec. Parakan	Tangible Cultural Heritage	2018	

No	Name	Origin/Location	Category	Year of Recognition	Picture
8	Rumah Dinas Camat Parakan	Kelurahan Parakan Wetan, Kec. Parakan	Tangible Cultural Heritage	2018	
9	Masjid Darussalam	Kec. Temanggung	Tangible Cultural Heritage	2010	

Source: https://budaya.data.kemdikbud.go.id/

List of Traditional Ceremonies in Affected Villages

No ~~No~~	Village	Name of Ceremony	Location	Category of Ceremony	Period of Ceremony	Memorable Figures	Process of Ceremony
1	Sanggrahan	Sadranan	Krajan	Punden	Ruwah	Kyai Campur	Tahlilan
		Sadranan	Gunungpring	Punden	Ruwah	Kyai Gunung	Tahlilan
		Sadranan	Madusari	Punden	Ruwah	Kyai Madu	Tahlilan
		Sadranan	Rowo Kulon	Punden	Ruwah	Kyai Niti Wijoyo	Tahlilan
		Sadranan	Rowo Wetan	Punden	Ruwah	Kyai Gumbeng Rawe	Tahlilan
		Sadranan	Rowo Wetan	Punden	Ruwah	Kyai Iskar	Tahlilan
		Sadranan	Tambak Sari	Punden	Ruwah	Kyai Selowerso	Tahlilan
		Sadranan	Tegalombo	Punden Kramat	Sapar	Nyai Gandik	Tahlilan
2	Gentan	Sadranan	Gentan	Nyadran Punden	Sapar	Mbah Kyai Gandek Perti	Nyadran and Art Performance
				Nyadran Kuburan	Ruwah	Mbah Juwahir	
		Sadranan	Suruh	Nyadran Punden	Sapar	Mbah Kyai Gandek Perti	Nyadran and Art Performance
				Nyadran Kuburan	Ruwah	Mbah Amat Dahir	
		Sadranan	Kalimayung	Nyadran Kuburan	Ruwah	Mbah Kyai Amat Tohir	Nyadran and Art Performance
		Sadranan	Setro	Nyadran Kali	Mulud	Kudup	Nyadran and Art Performance
		Sadranan	Mudal	Nyadran Kuburan	Ruwah	Mbah Kyai Kopek	Nyadran and Art Performance
				Nyadran Kali	Mulud	Sono, Setangkring	
		Sadranan	Keji	Nyadran Kuburan	Ruwah	Mbah Kyai Sarinem, Kyai Kopek	Nyadran and Art Performance
				Nyadran Kali	Mulud	Belik, Ngasinan, Menthuk, Blimbang Gede	

No ~~No~~	Village	Name of Ceremony	Location	Category of Ceremony	Period of Ceremony	Memorable Figures	Process of Ceremony
		Sadranan	Karangmuly o	Nyadran Kuburan	Ruwah	Mbah Kyai Dumuk	Nyadran and Art Performance
				Nyadran Kali	Mulud	Secawanan	
		Sadranan	Kalimundu	Nyadran Kuburan	Ruwah	Mbah Kyai Bajang	Nyadran and Art Performance
				Nyadran Kali	Mulud	Kalimundu	
		Sadranan	Karanganyar	Nyadran Kuburan	Ruwah	Mbah Kyai Bajang	Nyadran and Art Performance
		Sadranan	Dukoh	Nyadran Punden	Ruwah	Mbah Kyai Gandek Perti	Nyadran and Art Performance
				Nyadran Kuburan	Ruwah	Mbah Joyo	
		Sadranan	Traju	Nyadran Punden	Mulud	Mbah Jenggot	Nyadran, Obar-Abir, and Art Performance
				Nyadran Kali	Sapar	Ngasinan, Umbul, Sekakas, Bambang Merak (Ra. Gadung Melati)	
				Nyadran Kuburan	Ruwah	Mbah Kyai Jenggot (R. Brontoyudo)	
		Sadranan	Samponsari	Nyadran Punden	Mulud	Mbah Jenggot	Nyadran, Obar-Abir, and Art Performance
				Nyadran Kali	Sapar	Sekuwok	
				Nyadran Kuburan	Ruwah	Mbah Kyai Jenggot (R. Brontoyudo)	
		Sadranan	Wonogiri	Nyadran Kuburan	Ruwah	Mbah Bodro	Nyadran, Obar-Abir, and Art Performance
				Nyadran Kali	Mulud	Kali Wetan	
		Sadranan	Dempel	Nyadran Kuburan	Ruwah	Mbah Reti Wongso	Nyadran and Art Performance
				Nyadran Kali	Ruwah	Kali Kadep	
		Sadranan	Sejarak	Nyadran Punden	Ruwah	Mbah Kyai Sarjiah	Nyadran and Art Performance

No ~~No~~	Village	Name of Ceremony	Location	Category of Ceremony	Period of Ceremony	Memorable Figures	Process of Ceremony
				Nyadran Kali	Sapar	Ndelik, Senongko, Sawak, Ipek, Klawean	

Source: Temanggung Tourism and Cultural Agency, 2024

Gross Domestic Regional Product of Temanggung Regency

No	Industry	2021	2022	2023
1	Agriculture, Forestry and Fisheries	3.358,51	3.456,66	3.500,84
2	Mining and Quarrying	126,77	121,77	125,57
3	Manufacturing	4.025,97	4.069,85	4.245,85
4	Electricity and Gas	14,78	15,56	16,47
5	Water Supply, Sewerage, Waste Management and Remidiation Activities	13,73	13,76	14,36
6	Construction	806,12	836,12	901,12
7	Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles	3.559,94	3.712,94	3.928,94
8	Transportation and Storage	548,56	907,26	978,95
9	Accomodation and Food Service Activities	264,11	303,84	341,79
10	Information and Communication	401,67	410,67	456,87
11	Financial and Insurance Activities	491,70	494,23	508,60
12	Real Estate Activities	137,94	145,94	158,14
13	Bussiness Activities	56,33	59,51	64,76
14	Public Administration and Defence, Compulsory Social Security	395,01	401,33	421,83
15	Education	671,96	682,91	730,41
16	Human Health and Social Work Activities	193,28	198,28	214,78
17	Other Services Activities	321,56	356,76	388,26
GRDP		15.387,94	16.187,39	16.997,54

Source: BPS Temanggung Regency, 2024

Population of Temanggung Regency by Economic Activities

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1. Economically Active												
Working	173,579	169,821	343,4	257,193	185,816	443,009	260,615	200,15	460,765	267,248	204,211	471,459
Unemployment	7,75	6,006	13,756	7,613	4,305	11,918	9,641	2,383	12,024	5,578	5,614	11,192
2. Not Economically Active												
Attending School	18,943	15,544	34,487	16,668	20,707	37,375	18,356	18,983	37,339	18,467	18,967	37,434
Housekeeping	90,763	99,588	190,351	5,525	84,473	89,998	6,606	78,479	85,085	8,342	78,315	86,657
Others	13,042	13,109	26,151	20,429	11,944	32,373	15,438	10,336	25,774	18,707	11,252	29,959
Total	**304,077**	**304,068**	**608,145**	**307,428**	**307,245**	**614,673**	**310,656**	**310,331**	**620,987**	**318,342**	**318,359**	**636,701**
Unemployment Rate	**4.27%**	**3.42%**	**3.85%**	**2.87%**	**2.26%**	**2.62%**	**3.57%**	**1.18%**	**2.54%**	**2.04%**	**2.68%**	**2.32%**

Source: BPS Temanggung Regency, 2021 - 2024

Agricultural Productivity in Kranggan Sub-District

Commodity	Area (Ha)			Production (Ton)		
	2021	2022	2023	2021	2022	2023
Paddy	1159,1	1126,81	874,1	6838,69	7121,44	5533,05
Corn	425,8	436,56	330,7	1916,1	2012,54	1.521,22
Cassava	16,6	30,7	20	546,31	1043,8	680
Sweet Potato	12,1	39,72	34,1	293,43	1097,27	942,01
Peanut	39,2	37,33	60,2	58,8	65,7	105,95
Curly Chili	58	47	81	5129	6630	12862
Cayenne Pepper	83	178	314	7912	20.942,00	18481
Cabbage	0	0	1	0	0	150
Tomato	1	1	7	220	45	705
Mango	N/A	N/A	N/A	0	0	39,1
Durian	N/A	N/A	N/A	1335,5	2700,3	9476,4
Orange	N/A	N/A	N/A	0	0	93,7
Banana	N/A	N/A	N/A	243,3	122	482,8
Papaya	N/A	N/A	N/A	226,8	158,9	451,2
Salak	N/A	N/A	N/A	347,7	236,3	325,4
Avocado	N/A	N/A	N/A	24,9	208,7	398,8
Guava	N/A	N/A	N/A	66	27,2	77,1
Palm	31	33,5	34	65,1	100,5	85
Coconut	205	208,38	208,38	92,25	93,77	93,77
Robusta Coffee	517,91	535	530	233,06	240,75	238,5
Cocoa	7	6	4	14	1,2	0,8
Sugar cane	23,16	22,2	21,7	70,33	67,89	91,33
Tobacco	18	7	8	104,4	4,2	4,7

Source: BPS Temanggung Regency, 2022 - 2024

Number of Livestock in Kranggan Sub-District

Commodity	2021	2022	2023
Dairy Cattle	0	0	3
Beef Cattle	4186	3171	1575
Buffalo	136	136	33
Horse	12	12	12
Goat	2150	2153	2289
Sheep	33986	32462	35406
Rabbit	383	403	405
Native Chicken	68397	68054	68995
Layer	70847	71147	71147
Duck	9776	9655	9628
Swan	2492	2496	2502
Quail	4746	4800	4854
Goose	674	672	674

Source: BPS Temanggung Regency, 2022 - 2024

Productivity of Fisheries in Kranggan Sub-District (in Ton)

Commodity	2021	2022	2023
Fish Pond	240,4	253,56	314,96
Fish in Rice Field	25,53	33,59	21,78
River	36,26	27,15	11,02
Fish Puddle	7,4	5,88	2,24
Total	309,59	320,18	350,00

Source: BPS Temanggung Regency, 2022 - 2024

Poverty Profile of Temanggung Regency

Year	Poverty Line (rupiah/capita/month)	Number of Poor People	Percentage of Poor People	Poverty Gap Index	Poverty Severity Index
2019	310,176	72,570	9.42	0.51	0.05
2020	323,705	77,330	9.96	0.86	0.11
2021	336,034	79,090	10.17	1.57	0.39
2022	354,012	73,040	9.33	1.06	0.19
2023	388,369	72,960	9.26	0.99	0.17

Source: BPS Temanggung Regency, 2024

Population of Temanggung Regency by Main Employment Status

Main Employment Status	2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Own Account Worker	41.961	29.764	71.725	44.226	31.039	75.265	56.418	37.392	93.810
Employer Assisted by Temporary Worker/Unpaid Worker	69.385	17.872	87.257	82.674	21.927	104.601	78.757	19.988	98.745
Employer Assisted by Permanent Worker/Paid Worker	11.123	3.977	15.100	6.819	1.663	8.482	6.932	3.245	10.177
Employee	67.849	46.839	114.688	63.928	42.707	106.635	65.667	41.126	106.793
Casual Worker	36.830	16.732	53.562	33.127	17.324	50.451	30.169	19.592	49.761
Family Worker/Unpaid Worker	30.045	80.632	110.677	29.841	85.490	115.331	29.305	82.868	112.173
Total	257.193	195.816	453.009	260.615	200.150	460.765	267.248	204.211	471.459

Source: BPS Temanggung Regency, 2022 - 2024

Regional Minimum Wage in Temanggung and Central Java

Regency/Province	2021	2022	2023	2024
Temanggung Regency	1,885,000	1,887,832	2,027,569	2,109,690
Central Java Province	1,798,979	1,812,935	1,958,170	2,036,947

Source: BPS Temanggung Regency, 2022 - 2024

Number of Health Facilities in Affected Location

Health Facility	Kranggan Sub-District			Temanggung Regency		
	2020	2021	2022	2020	2021	2022
Hospital	0	0	0	4	4	4
Public Health Center with Inpatient Care	N/A	0	0	N/A	6	6
Public Health Center without Inpatient Care	N/A	2	2	N/A	20	20
Auxiliary Public Health Center	2	2	2	39	38	39
Primary Clinic	N/A	1	2	N/A	18	19
Integrated Health Post	N/A	67	67	N/A	1,520	1,521

Source: BPS Temanggung Regency, 2022 - 2024

Most Reported Diseases in Puskesmas Kranggan

No	2023		2022		2021	
	Disease	Number of Case	Disease	Number of Case	Disease	Number of Case
1	Essential (primary) hypertension	15.72%	Other acute upper respiratory infections of multiple sites	19.64%	Essential (primary) hypertension	23.14%
2	Other general examinations	13.44%	Essential (primary) hypertension	12.74%	Others	18.18%
3	Antenatal screening	12.48%	Myalgia	12.59%	Other acute upper respiratory infections of multiple sites	12.30%
4	Acute pharyngitis	11.40%	Cephalgia	11.17%	Myalgia	9.42%
5	Myalgia	10.75%	Gastritis	10.36%	Cephalgia	8.08%
6	Other acute upper respiratory infections of multiple sites	9.91%	Others	7.70%	Diabetes Melitus	8.08%
7	Need for immunization against other combinations of infectious diseases	8.01%	Amenorhe	7.00%	Gastritis	6.52%
8	Necrosis of pulp	7.42%	Vulnus Laceratum	6.48%	Amenorhe	5.16%
9	Periodontal disease, unspecified	5.62%	Obs. Febris	6.41%	Dyspepsia	4.66%

No	2023		2022		2021	
	Disease	Number of Case	Disease	Number of Case	Disease	Number of Case
10	Gingivitis and periodontal diseases	5.25%	Diabetes Melitus	5.91%	Gangren Pulpa	4.46%

Source: Data of Puskesmas Kranggan

Percentage of Population Based on Building Ownership Status in Temanggung Regency 2023

Characteristic	Building Ownership Status		Total
	Owned	Not Owned	
By Gender			
Male	95,58	4,42	100
Female	91,96	8,04	100
By Expenditure			
Bottom 40%	95,03	4,97	100
Middle 40%	95,04	4,96	100
Top 20%	95,75	4,25	100
By Education			
Elementary level and below	95,61	4,39	100
Junior high level and above	94,58	5,42	100
Temanggung Regency	95,21	4,79	100

Source: BPS Temanggung Regency, 2024

Percentage of Population Based on Used of Toiet Facilities Status in Temanggung Regency 2023

Characteristic	Use of Toilet Facilities		Total
	Owned	Other	
By Gender			
Male	91,63	8,37	100
Female	88,78	11,22	100
By Expenditure			
Bottom 40%	90,78	9,22	100
Middle 40%	89,98	10,02	100
Top 20%	94,4	5,6	100
By Education			
Elementary level and below	89,46	10,54	100
Junior high level and above	94,23	5,77	100
Temanggung Regency	91,34	8,66	100

Source: BPS Temanggung Regency, 2024

Percentage of Population Based on Closets Type in Temanggung Regency 2023

Characteristic	Closets Type		Total
	Swan Neck	Other	
By Gender			
Male	94,99	5,01	100
Female	96,73	3,27	100
By Expenditure			
Bottom 40%	92,86	7,14	100
Middle 40%	95,8	4,2	100
Top 20%	97,39	2,61	100
By Education			
Elementary level and below	93,58	6,42	100
Junior high level and above	97,51	2,49	100
Temanggung Regency	95,16	4,84	100

Source: BPS Temanggung Regency, 2024

Percentage of Population Based on Final Septic Sludge Disposal Site in Temanggung Regency 2023

Characteristic	Final Septic Sludge Disposal Site		Total
	Septictank	Other	
By Gender			
Male	42,06	57,94	100
Female	48,23	51,77	100
By Expenditure			
Bottom 40%	41,56	58,44	100
Middle 40%	40,53	59,47	100
Top 20%	47,65	52,35	100
By Education			
Elementary level and below	37,85	62,15	100
Junior high level and above	49,82	50,18	100
Temanggung Regency	42,68	57,32	100

Source: BPS Temanggung Regency, 2024

Percentage of Population Based on Primary Water Source for Bathing/Washing/etc in Temanggung Regency 2023

Characteristic	Primary Water Source for Bathing/Washing/etc						
	Branded Bottled Water/Refillable Water	Piped Water Supply	Borehole/Well Pump	Protected Well/Unprotected Well	Protected Spring/Unprotected Spring	Others	Total
By Gender							
Male	0	16,89	7,86	22,14	50,46	2,66	100,0
Female	0	15,97	5,96	31,62	44,67	1,77	100,0
By Expenditure							
Bottom 40%	0	17,05	5,99	26,19	47,41	3,36	100,0
Middle 40%	0	15,59	8,07	19,8	54,62	1,92	100,0
Top 20%	0	18,44	9,42	24,12	45,53	2,49	100,0
By Education							
Elementary level and below	0	12,07	8,65	21,87	54,21	3,21	100,0
Junior high level and above	0	24,08	6,15	25,02	43,17	1,58	100,0
Temanggung Regency	0	16,8	7,66	23,11	49,86	2,57	100,0

Source: BPS Temanggung Regency, 2024

Appendix J Minutes of the Public Disclosure Meeting for the ESMPF and ESIA Documents

BAHASA VERSION

Online Public Disclosure

Notulensi Kegiatan Pengungkapan Publik (*Public Disclosure*)

***Draft* Dokumen *Safeguards* Kabupaten Temanggung untuk Kegiatan *Solid Waste Management for Sustainable Urban Development* (SWM-SUD)**

Acara	:	Pengungkapan Publik *Draft* Dokumen *Safeguards* Kabupaten Temanggung untuk Kegiatan *Solid Waste Management for Sustainable Urban Development* (SWM-SUD)			
Tanggal	:	2 Juni 2025	**Waktu**	:	08.30 – 11.30
Fasilitator	:	ESC	**Lokasi**	:	Daring (*Zoom Meeting*)

Peserta

Terdapat di dalam Lampiran 1 dan 2

Agenda

1. Pemaparan *draft* Dokumen ESMPF
2. Pemaparan *draft* Dokumen ESIA

No	Topik	Deskripsi
1	Dokumen ESMPF	Pemaparan Materi: 1. Dokumen ESMPF bertujuan untuk memastikan komponen proyek dilaksanakan secara berkelanjutan dan risiko lingkungan dan sosial dikelola sesuai peraturan Indonesia dan standar AIIB 2. Tersedia 18 lampiran pendukung Dokumen ESMPF
2	Gambaran Umum Proyek dan Lokasi Sub-proyek	Pemaparan Materi: 1. Proyek bertujuan untuk meningkatkan layanan pengelolaan sampah serta meningkatkan akses terhadap pengelolaan sampah dengan teknologi tinggi yang berkelanjutan 2. Ruang lingkup proyek mencakup rehabilitasi TPA eksisting dan pembangunan TPST 3. Kondisi sampah eksisting didominasi oleh sampah makanan (31%)
3	Identifikasi Dampak dan Risiko	Pemaparan Materi: 1. Wilayah terdampak langsung terdiri dari dua desa (Desa Sanggrahan dan Desa Pendowo) dan wilayah terdampak tidak langsung terdiri dari dua desa (Desa Klepu dan Desa Gentan) 2. Kualitas permukaan air di titik sampling tidak memenuhi batas baku mutu yang ditetapkan. 3. Teridentifikasi Terdapat 185 spesies flora darat dan 5 di antaranya penting untuk konservasi. 4. Teridentifikasi 29 spesies fauna darat dan 2 spesies akuatik 5. Terdapat sekitar 47 rumah tangga pemulung, 4 rumah tangga pengguna lahan, dan 3 rumah tangga pengepul yang berpotensi terdampak proyek di TPA Sanggrahan. 6. Berikut merupakan dampak proyek yang berpotensi memiliki risiko tinggi terhadap lingkungan dan masyarakat: - Pra Konstruksi: Peningkatan kekhawatiran masyarakat

No	Topik	Deskripsi
		- Konstruksi: Pencemaran air permukaan, pencemaran air tanah, gangguan transportasi, peningkatan kecelakaan di masyarakat - Operasi: Gangguan terhadap mata pencaharian pemulung
4	Mekanisme Penanganan Keluhan	Pemaparan Materi: 1. Terdapat lima alur dalam mekanisme pengadaan keluhan, yakni penerimaan pengadaan, catatan/delegasi, pencarian fakta, resolusi/banding, dan umpan balik/penutupan 2. Kabupaten Temanggung saat ini telah memiliki kanal pengaduan

No	Umpan Balik	Tanggapan
1	**DPRKPLH Temanggung:** 1. Dokumen UKL-UPL TPA Sanggrahan akan dikaji ulang sehingga tersinkronisasi dengan dokumen ESIA yang telah disusun. 2. Jumlah desa dan Kelurahan sebanyak 289 (266 Desa dan 23 Kelurahan). Hingga saat ini yang sudah terlayani sebanyak 220 desa dan Kelurahan (76%).	**Konsultan ESC:** 1. Jumlah desa dan Kelurahan serta persentase desa terlayani akan disesuaikan dengan data terbaru yang didapat.
2	**Kemendagri (Pak Azzam)** 1. Diharapkan insiatif pengelolaan persampahan dalam kegiatan SWM-SUD ini juga dituangkan dalam RPJMD, Renstra dan RKPD Kab. Temanggung. 2. Kelembagaan operasional UPTD TPA dapat secara bertahap diubah menjadi UPTD Pengelolaan Sampah, sebelum nantinya menjadi BLUD. Kemendagri akan melakukan pendampingan dalam proses ini. 3. Perda persampahan yang ada disusun tahun 2011 akan difasilitasi untuk diperbarui jika dirasa sudah kurang relevan. 4. RIPS perlu disesuaikan kembali dengan proyek ini.	**DPRKPLH Temanggung** 1. Persampahan saat ini menjadi Prioritas Bupati dan sudah dimasukkan dalam Renstra RPJMD dan Renstra RPD. 2. Terkait perubahan status kelembagaan akan dikaji lebih lanjut
3	**Bappenas (Pak Faiq)** Diharapkan melalui dokumen ESIA identifikasi dan mitigasi atas berbagai dampak sosial sudah dilakukan, meliputi 1. Mitigasi dampak terhadap fasilitasi sekolah untuk	**Konsultan ESC** 1. Potensi dampak terhadap fasilitas pendidikan yang akan mengakibatkan relokasi akan relatif kecil karena jaraknya yang cukup jauh dari lokasi (kurang lebih 700 m). Namun,

No	Umpan Balik	Tanggapan
	menghindari pengalaman adanya relokasi sekolah akibat proyek pengelolaan sampah 2. Bagaimana upaya melibatkan pemulung yang ada saat ini yang terdiri dari berbagai kelompok usia, termasuk lansia.	konsultan menekankan potensi risiko keselamatan akibat peningkatan lalu lintas kendaraan yang berpotensi mengganggu aktivitas masyarakat sekitar dan warga sekolah. 2. Program pemulihan mata pencaharian perlu dilakukan diskusi lebih lanjut dengan Pemerintah Daerah (Pemda) dikarenakan kegiatan akan dilakukan oleh Pemda Temanggung. **DPRKPLH Temanggung** 1. Pelibatan pemulung tetap menjadi bagian dari kebijakan Pemda, dengan tentunya mempertimbangkan usia pemulung. Apabila pemulung sudah lanjut usia, maka kesempatan bekerja di TPA dan TPST akan diberikan kepada anak maupun anggota keluarga lainnya. 2. Melakukan rekayasa lalu lintas terutama menghindari jam-jam puncak kegiatan sehingga tidak mengganggu aktivitas masyarakat khususnya para pelajar.
4	**Pemerintah Kecamatan Kranggan** 1. Permukiman masyarakat mayoritas berada di atas (di wilayah yang lebih tinggi) daerah TPA Sanggrahan 2. Terkait dengan rekayasa lalu lintas selama kegiatan konstruksi dan operasional TPA diharapkan mempertimbangkan jam operasional sekolah 3. Masyarakat setempat hingga saat ini tidak ada keluhan Khusus terkait dengan operasional TPA. Namun diharapkan dampak dampak yang berpotensi timbul dari proyek dapat dimitigasi. 4. Terdapat dua pasar yang berada di jalur pengangkutan truk sampah, yakni Pasar Pagi dan Pasar Kranggan. Selain itu di jalur tersebut juga ada Puskesmas Kranggan, Kantor Kecamatan Kranggan, SDN 2 Kranggan, SMPN 1 Kranggan, SDN 1 Sanggrahan, Balai Desa Sanggrahan, dan SDN 2 Sanggrahan.	Dicatat sebagai informasi tambahan

No	Umpan Balik	Tanggapan
5	**Kemenkes Ditkesling (drg Esther)** 1. Mitigasi terhadap potensi timbulan vektor penyakit akibat konstruksi dan operasional TPA dan TPST perlu diperhatikan 2. Apakah sudah ada perencanaan untuk pengelolaan sampah medis yang tercampur dan berasal dari sampah rumah tangga di TPA Sanggrahan? 3. Perlu dilakukan antisipasi terhadap angka penyakit yang disebabkan oleh nyamuk, mengingat terjadi peningkatan angka kasus DBD di Kabupaten Temanggung pada tahun 2020.	**Konsultan ESC** 1. Risiko timbulan vektor penyakit telah dimasukkan dalam Dokumen ESIA dengan tingkat risiko medium. Operasional TPST diperkirakan dapat mengurangi timbulan vektor yang ada, sehingga menurunkan ringkat risikonya. **DPRKPLH Temanggung** 1. Saat ini dilakukan pengurugan berkala terhadap landfill sebagai upaya pengurangan pertumbuhan vektor penyakit yang ada di TPA. 2. Secara peraturan, sampah medis tidak boleh dibuang ke TPA Sanggrahan namun dikelola oleh masing-masing fasilitas pelayanan kesehatan. 3. Pada prakteknya, hingga saat ini belum ditemukan sampah B3 dari rumah tangga di TPA Sanggrahan. Sosialisasi hal tersebut terhadap masyarakat menjadi ranah puskesmas terkait. **AIIB** 1. Ketika proses loading di TPST, nantinya akan disediakan tempat khusus untuk melakukan pemilahan awal (pre-sorting) yang salah satunya adalah memilah sampah medis atau B3. Sampah medis atau B3 yang terpilah ini nantinya dapat diproses di puskesmas atau rumah sakit terdekat sehingga limbah B3 yang ditemukan dapat tertangani dengan baik. **DPRKPLH Temanggung** 1. Kabupaten Temanggung memiliki mitra dalam pengumpulan limbah B3, yakni dengan PT. Temanggung Hijau Lestari. 2. Sampah medis atau B3 yang terpilah di TPST akan diproses lebih lanjut mitra swatas untuk pengolahan sampah B3 ini. **Dinkes Temanggung** 1. Kasus penyakit disebabkan nyamuk di sekitar TPA tidak signifikan. 2. Inspeksi kesehatan lingkungan rutin dilakukan di TPA Sanggrahan.

No	Umpan Balik	Tanggapan
		3. Ada kenaikan kejadian DBD di seluruh Kab. Temanggung, tidak spesifik di wilayah sekitar TPA Sanggrahan.
6	**AIIB (Pak Krisnan)** 1. Pembangunan TPA Sementara diharapkan menggunakan liner. 2. Apakah wacana terkait peningkatan dana APBD persampahan sudah dikerucutkan?	**DPRKPLH Temanggung** 1. Pembangunan TPA Sementara akan menggunakan geomembran sama halnya dengan TPA, sehingga diharapkan tidak mencemari lingkungan.
7	**Wakil Bupati Temanggung** 1. Monitoring dan evaluasi aktif dilakukan dari pemerintah Kabupaten kepada DPRKPLH Kab. Temanggung untuk Persiapan pembangunan TPST Sanggrahan.	

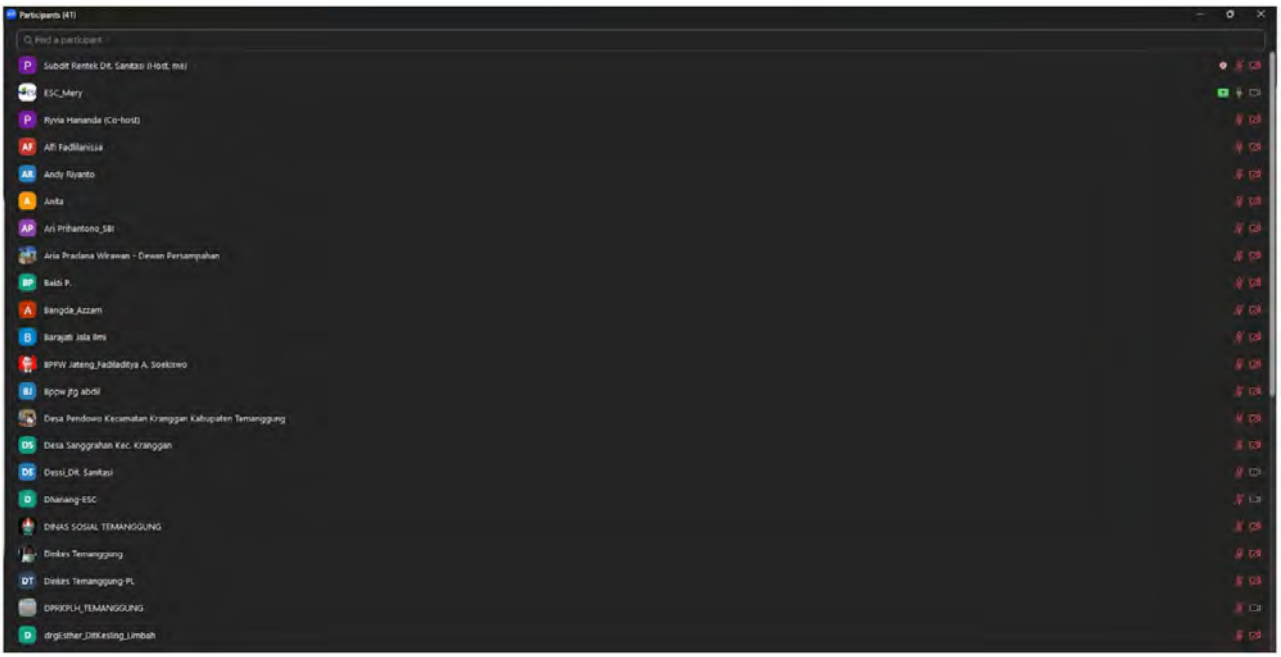
Lampiran

Lampiran 1 – Daftar Hadir

Daftar peserta berdasarkan isian Gform presensi (21 peserta)

Timestamp	Nama Lengkap	Instansi/Unit Kerja	Jabatan	No. Telepon	Alamat email
6/2/2025 9:05:29	Dhanang Tri Wuriyandoko	ESC Indonesia	Technical Lead - Solid waste management specialist	081281908643	dhanang.tri@envirosc.com
6/2/2025 9:07:15	Mery Purnamasarie	PT ESC Environment Indonesia	Konsultan Sosial	085258077990	mery@envirosc.com
6/2/2025 9:07:15	M Ichsan	Bangda Kemendagri	Tenaga Pendukung	083806270432	ojol.ican@gmail.com
6/2/2025 9:08:23	PRASODJO,S.Ag.M.M.	DINAS PERUMAHAN RAKYAT, KAWASAN PERMUKIMAN DAN LINGKUNGAN HIDUP KABUPATEN TEMANGGUNG	KEPALA DINAS	087831241754	bidangkebersihantmg2024@gmail.com
6/2/2025 9:12:01	TURKAMUN	DESA PENDOWO	KEPALA DESA	081329977127	pendowo5desa@gmail.com
6/2/2025 9:30:24	SITI KHOFIFAH,A.Md.Kep	LPBI PCNU TEMANGGUNG	Bid. Rehabilitasi dan Rekonstruksi	085712246672	khofifahs48@gmail.com
6/2/2025 9:34:56	Bakti Priyo Utomo	Dit.SSPIP	Staf Subdit PPHLN, Dit. SSPIP	08119990064	bakti.utomo@pu.go.id
6/2/2025 9:46:33	Dian Probowati	Dinas Kesehatan Kab. Temanggung	Kabid Kesmas	08157933094	dianprobowati@yahoo.com
6/2/2025 9:48:24	Fadiladitya Aryanov Soekiswo	BPPW Jawa Tengah	Teknik Penyehatan Lingkungan Terampil	081234949404	aditaryanov4433@gmail.com
6/2/2025 9:53:43	Indah Melinda	Dit. SSPIP	Staf	081385631333	indhys@gmail.com
6/2/2025 10:02:57	Murdoko	Desa Sanggrahan	Kaur Umum dan Tata Usaha	082324008678	mmurdoko41@gmail.com
6/2/2025 10:06:41	Ahmad Azzam Al Asyraf	Kemendagri	Statistisi Ahli Pertama	08989217471	ahmadazzam00@gmail.com
6/2/2025 10:10:47	Sugiharti, ST., M. Kes	Dinas Kesehatan Kabupaten Temanggung	Katimker Penyehatan Lingkungan/ Sanitarian Ahli Muda	081328678611	gathi.sugiharti@yahoo.com
6/2/2025 10:12:03	Abdillah Nur A	Bppw jawa tengah	Pkpl ahli muda	089676155675	majinbhu709@gmail.com
6/2/2025 10:23:03	R, NUZULINA ILMIATY	PU/DIT SANITASI - CK	KASUBDIT WIL 2	0818751911	lina.ilmiaty@gmail.com
6/2/2025 11:20:51	Finda Septiawati	Dit. SSPICK	Penata Kelola Bangunan Gedung dan Kawasan Permukiman Ahli Muda	08111777405	finda.septiawati@pu.go.id
6/2/2025 11:27:54	drg Esther Raflesya Bellsayda	Direktorat Kesehatan Lingkungan	adminkes	085297202838	kemenkeserbs@gmail.com
6/2/2025 11:41:05	Aria Pradana Wirawan	Dewan Persampahan Kabupaten Temanggung	Sekretaris	081327312627	wirawan.aria@gmail.com
6/2/2025 11:49:16	Elma Jane Yolanda Pertiwi	Bappeda Kabupaten Temanggung	Perencana Ahli Pertama	085727202858	elmajyp@gmail.com
6/2/2025 11:55:52	Ahmad Ali Imron Ibnu Sulthon	PT ESC Environment Indonesia	Konsultan Sosial	0895366439260	ahmad@envirosc.com
6/2/2025 17:01:42	drg. Yulfirda	Kemenkes/Direktorat Kesehatan Lingkungan	Adminkes Ahli Muda	081373824233	yulfirda@gmail.com

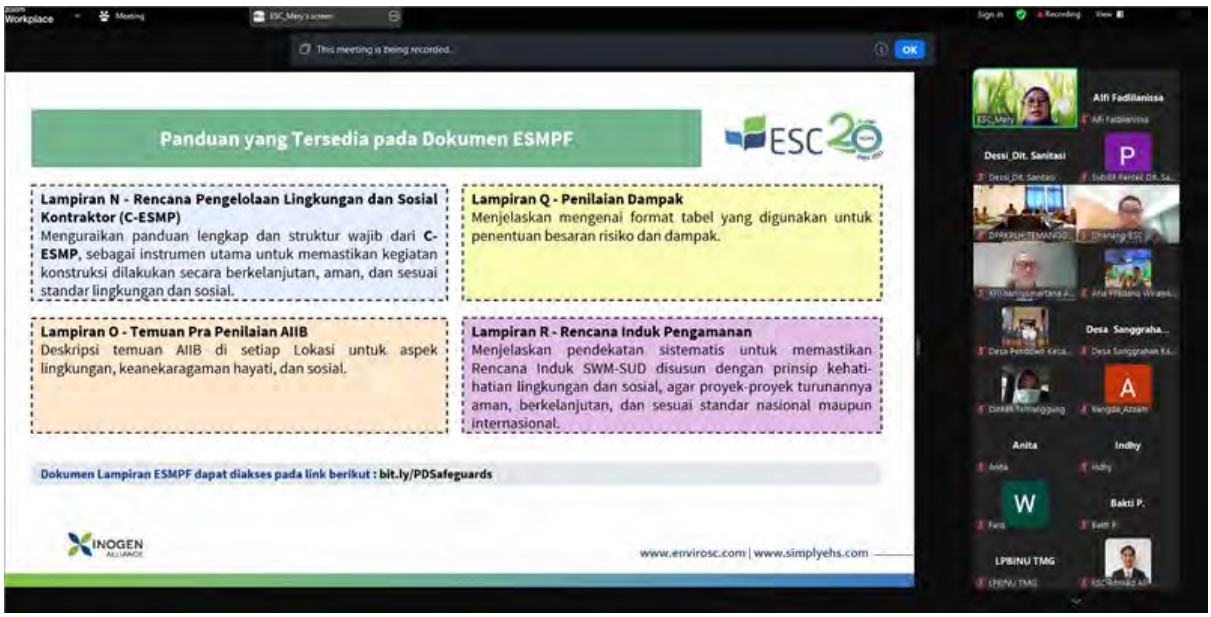
Daftar peserta yang menghadiri kegiatan Pengungkapan Publik Daring (41 peserta)



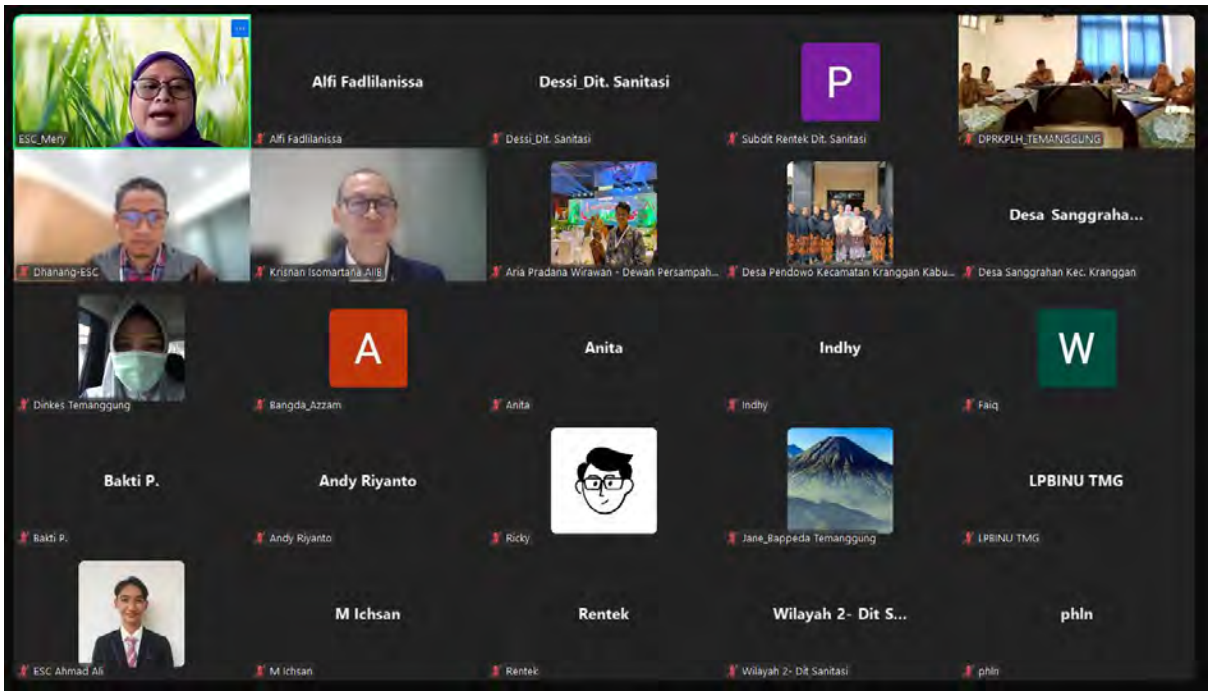

LSC Ahmad Ali
Faiq
Greenprosa
Ask to unmute
Indhy
iPhone-J933DW7TYG
Jane_Bappeda Temanggung
Kecamatan Kranggan
Krisnan Isomartana AIB
LPBINU TMG
M Ichsan
Muh Baehaqi INISNU Temanggung
Muhammad Soleh
Nicole AIB
phin
Rentek
Ricky
Wilayah 2- Dit Sanilasi
yulfirda_Dit Kesling Kemkes
Yunnadi

Lampiran 2 – Dokumentasi

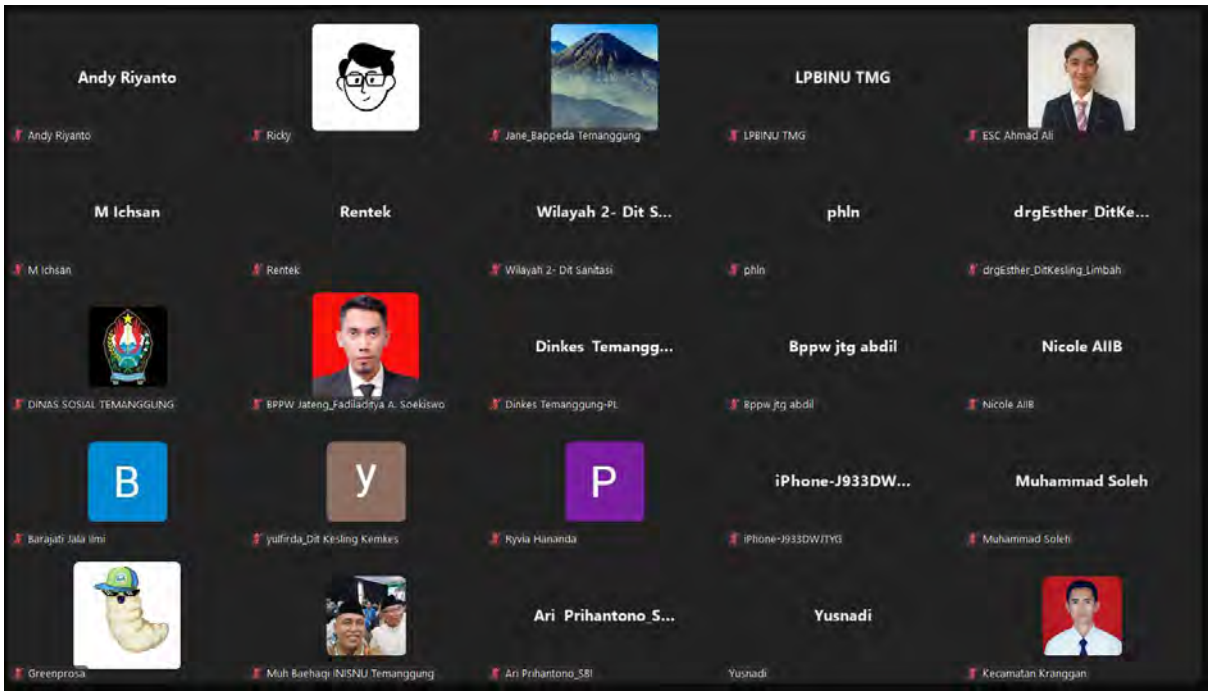
Tangkapan layar 1: paparan oleh ESC



Tangkapan layar 2: peserta pengungkapan publik (1)



Tangkapan layar 3: peserta pengungkapan publik (2)



Tangkapan layar 4: kehadiran Ibu Wakil Bupati Temanggung dalam Pengungkapan Publik



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Solutions for Environment | Safety | Sustainability

Pengungkapan Publik Kegiatan Solid Waste Management for Sustainable Urban Development (SWM-SUD)

Kabupaten Temanggung



Disiapkan untuk Pengungkapan Publik

Senin, 2 Juni 2025

Dokumen Perencanaan dan Pengelolaan Lingkungan dan Sosial (ESMPF)

Environmental and Social Management Plan Framework (ESMPF)

Latar Belakang :

Bank Infrastruktur Asia (AIIB) memberikan pinjaman kepada Pemerintah Inodonesia untuk mendanai proyek SWM-SUD. **AIIB**, **Alliance to End Plastic Waste (AEPW)**, dan **Kementerian PUPR** bekerja sama dalam pendanaan proyek ini. AEPW akan memberikan dukungan dana tambahan secara konsesional untuk memperkuat kapasitas kelembagaan pengelolaan sampah baik di tingkat nasional maupun daerah.

Tujuan Proyek :

- Meningkatkan infrastruktur pengelolaan sampah di kota dan kabupaten terpilih di Indonesia.

Fokus Proyek :

- Pengurangan sampah,
- Daur ulang,
- Ekonomi sirkular,
- Pengurangan emisi.

Environmental and Social Management Plan Framework (ESMPF)

Panduan untuk semua lokasi (10 lokasi) yang akan didanai.

Tujuan ESMPF

- Memastikan bahwa semua komponen proyek dilaksanakan secara berkelanjutan dan risiko lingkungan dan sosial dikelola sesuai peraturan Indonesia dan standar AIIB.

Isi Dokumen ESMPF

- Standar peraturan (Hukum dan Peraturan Indonesia & AIIB ESS 1-3),
- Standar *baseline* (rona awal) yang harus dipatuhi,
- Standar penentuan kategorisasi risiko lingkungan dan sosial,
- Penilaian dan pengelolaan dampak,
- Prosedur pemantauan dan pelaporan,
- Keterlibatan pemangku kepentingan dan konsultasi publik,
- Penguatan kapasitas kelembagaan,
- Ketentuan terkait akuisisi lahan dan relokasi paksa, termasuk kompensasi, biaya, dan mekanisme pengaduan.

Dokumen ESMPF dapat diakses pada link berikut : bit.ly/PDSafeguards

Panduan yang Tersedia pada Dokumen ESMPF

Lampiran A – Peraturan Perundang-undangan Indonesia untuk Pengelolaan Limbah Padat
Menjelaskan mengenai peraturan perundang-undangan Indonesia yang mengatur tentang pengelolaan sampah padat.

Lampiran B – Formulir Penapisan untuk Potensi Masalah Perlindungan Lingkungan dan Sosial
Menyediakan formulir penyaringan untuk mengidentifikasi potensi isu lingkungan dan sosial.

Lampiran C – Daftar Periksa Penilaian Lingkungan Cepat untuk Pengelolaan Limbah Padat
Menyediakan daftar pertanyaan untuk melakukan penilaian cepat terhadap aspek lingkungan dalam pengelolaan limbah padat.

Lampiran D – Daftar Isi Penilaian Dampak Kumulatif
Bagian ini akan memandu sub proyek SWM-SUD dalam mempersiapkan studi penilaian dampak kumulatif yang mematuhi Standar Lingkungan dan Sosial (ESS) AIIB dan persyaratan pemerintah Indonesia.

Lampiran E – Kerangka Acuan Pengadaan
Panduan yang merinci semua hal penting terkait proses pengadaan, agar semua pihak yang terlibat dapat memahami tugas, tanggung jawab, dan target yang harus dicapai.

Lampiran F – Templat Kode Praktik Lingkungan dan Sosial
Memastikan kepatuhan terhadap ketentuan aspek lingkungan, sosial, kesehatan dan keselamatan (L2K3) serta kesehatan dan keselamat masyarakat.

Panduan yang Tersedia pada Dokumen ESMPF

Lampiran G - Kerangka Perencanaan Pemukiman Kembali

Lampiran H - Daftar Pengecualian
Melampirkan daftar pengecualian yang diajukan

Appendix I - Example of Memorandum of Agreement
Melampirkan nota kesepakatan yang akan digunakan

Lampiran M - Contoh Formulir dan Catatan Keluhan
Menyediakan contoh formulir dan pencatatan penyampaian keluhan

Lampiran J - Laporan Kunjungan Lokasi
Mendeskrpsikan hasil kunjungan lapangan di setiap lokasi serta menyediakan rencana mitigasi yang dapat dilakukan terkait temuan di lapangan.

Lampiran K - Laporan Lokakarya
Menunjukan kronologi konsultasi dan workshop yang telah dilakukan

Lampiran L - Kondisi Rona Awal
Mendeskripsikan kondisi rona awal lingkungan, keanekaragaman hayati dan sosial di setiap lokasi berdasarkan survei.

Lampiran P - Prosedur Manajemen Tingkat Tinggi
Mendeskripsikan prosedur pengelolaan tingkat tinggi mengenai area penyimpanan sementara, keanekaragaman hayati, lingkungan dan sosial untuk jalan akses dan persediaan air, limbah B3, dan cagar budaya.

Panduan yang Tersedia pada Dokumen ESMPF

Lampiran N - Rencana Pengelolaan Lingkungan dan Sosial Kontraktor (C-ESMP)
Menguraikan panduan lengkap dan struktur wajib dari **C-ESMP**, sebagai instrumen utama untuk memastikan kegiatan konstruksi dilakukan secara berkelanjutan, aman, dan sesuai standar lingkungan dan sosial.

Lampiran Q - Penilaian Dampak
Menjelaskan mengenai format tabel yang digunakan untuk penentuan besaran risiko dan dampak.

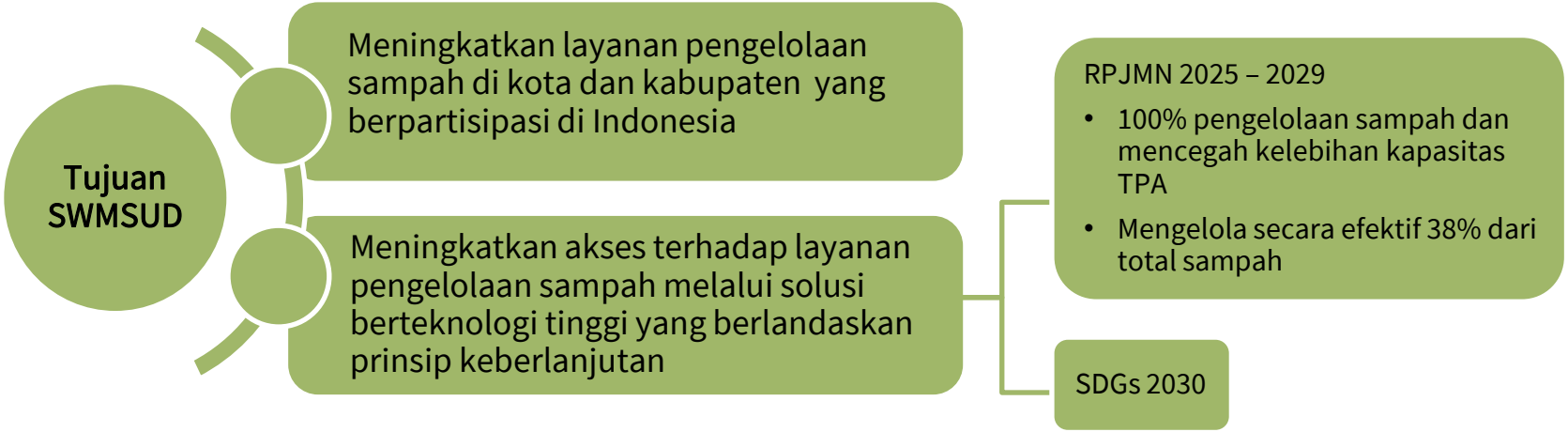
Lampiran O - Temuan Pra Penilaian AIIB
Deskripsi temuan AIIB di setiap Lokasi untuk aspek lingkungan, keanekaragaman hayati, dan sosial.

Lampiran R - Rencana Induk Pengamanan
Menjelaskan pendekatan sistematis untuk memastikan Rencana Induk SWM-SUD disusun dengan prinsip kehati-hatian lingkungan dan sosial, agar proyek-proyek turunannya aman, berkelanjutan, dan sesuai standar nasional maupun internasional.

Dokumen Lampiran ESMPF dapat diakses pada link berikut : bit.ly/PDSafeguards

Gambaran Umum Proyek dan Lokasi Sub-Proyek

Gambaran Umum



Gambaran Umum

Ruang Lingkup Proyek

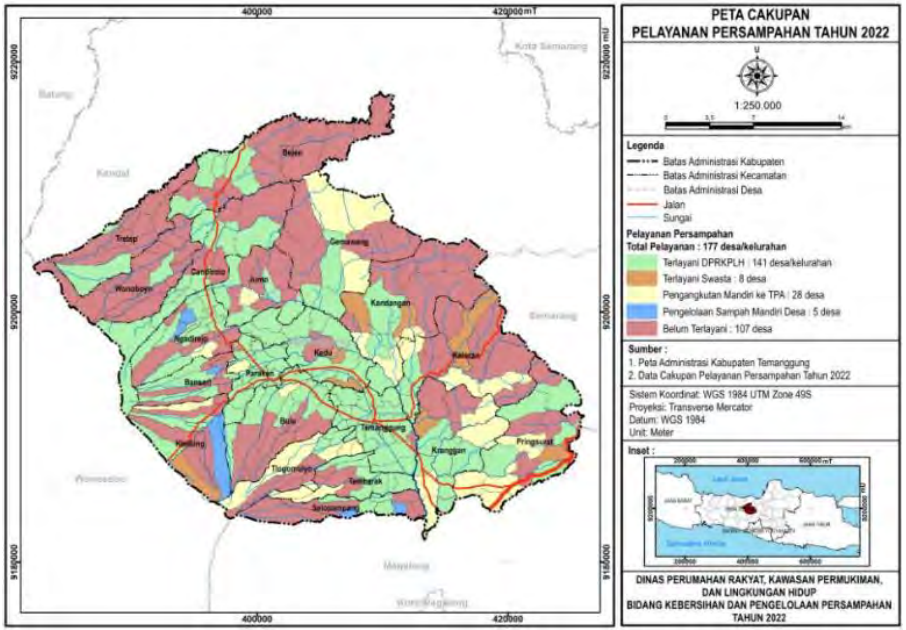
- Penutupan TPA eksisting dan pembangunan TPST berkapasitas 125 ton/ hari, termasuk landfill residu di TPA Sanggrahan
- Penyediaan layanan transportasi/peralatan berat (hibah pendamping)
- Penguatan kapasitas kelembagaan dan bantuan teknis (pelatihan dan lokakarya untuk regulator dan operator)
- Dukungan untuk pelaksanaan dan pengelolaan sub-proyek

Ruang Lingkup Studi

- Aspek Teknis dan Operasional
- Aspek Kelembagaan
- Aspek Kebijakan dan Regulasi
- Aspek Pembiayaan/Pendanaan
- Aspek Keterlibatan Pemangku Kepentingan dan Kesiapan Masyarakat
- Aspek Lingkungan dan Sosial

Cakupan Layanan

Tahun 2023	Wilayah Layanan	Total Kabupaten	Persentase
Desa	140	366	38.25%
Populasi (orang)	494,759	811,347	60.98%
Timbulan Sampah (ton/hari)	239.4	405.7	59%



Target Pengolahan dan Pengurangan

1. Target Layanan Menengah: 74% sampah terkelola pada tahun 2046 (289 Desa)
2. Telah melayani seluruh Kecamatan (20 kecamatan)
3. Penataan ulang tumpukan sampah eksisting
4. Operasional TPST pada 2027

TPA Sanggrahan



- Bertempat di Dusun Losari, Desa Sanggrahan, Kec. Kranggan
- TPA Sanggrahan memiliki luas total 6 hektare
- TPST Sanggrahan direncanakan memiliki kapasitas pengolahan sampah sebesar 125 ton/hari
- Pada tahun 2022, layanan pengelolaan sampah telah mencakup sekitar 59% dari total timbulan sampah dari 20 kecamatan
- Masih 148 dari 366 desa yang terlayani (40,7%)
- Target pengelolaan sampah mencakup tambahan 141 desa (target Pelayanan 80%)

Pengelolaan Sampah Eksisting

Sampah rumah tangga & sampah tipe rumah tangga

Atau
Pembuangan terbuka (pembakaran)

Pengumpulan
- Kendaraan sampah (1m^3)
- Motor
- Kendaraan roda tiga

Pengurangan & Pengolahan
- 3R di TPS3R/secara informal & formal
- Bank Sampah
- Pengomposan

Fasilitas
TPS3R: 38 Unit
TPSD: 94 Unit
Bank Sampah: 121 Unit

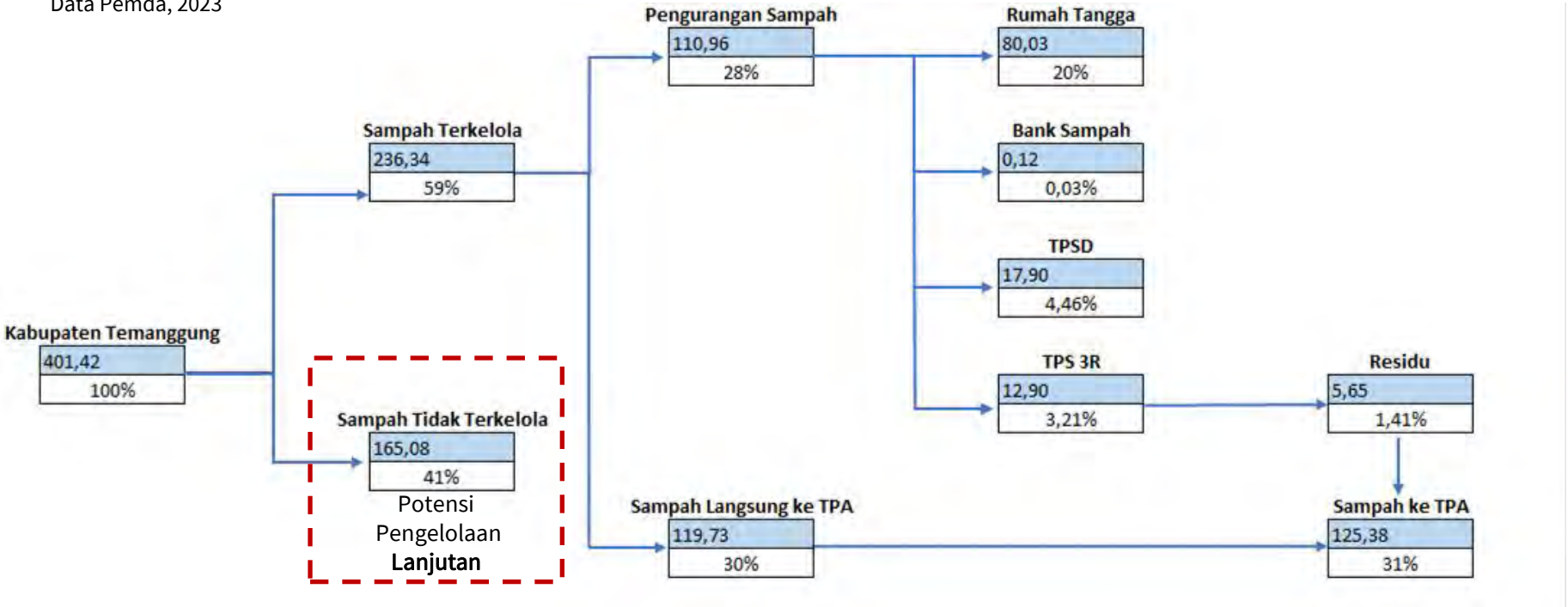
Transportasi
Truk Armroll & Truk sampah lainnya

Pembuangan Akhir
Pembuangan terbuka di TPA Sanggrahan

Kendaraan dan Fasilitas Pendukung	2022	Kondisi
Alat berat	7	2 rusak parah
Truk sampah	17	8 rusak parah
Truk armroll	11	Baik (3 milik Dindagkop)
Pick Up	9	4 rusak parah
Motor	2	Baik
Motor roda tiga	34	7 rusak parah
Gerobak sampah	59	38 rusak parah
Kontainer	32	7 milik Diperindag

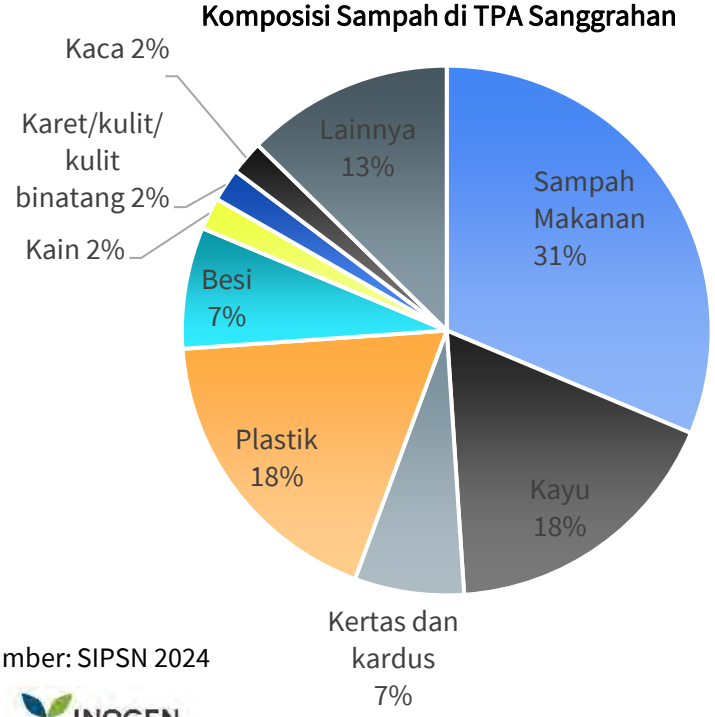
Neraca Masa (2022)

Data Pemda, 2023

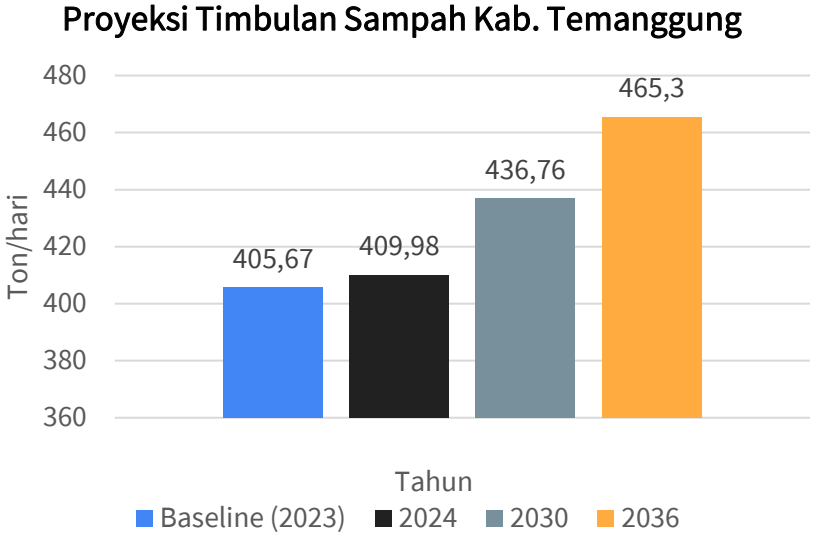


- Proyeksi sampah masuk ke TPA/TPST di tahun 2022 hingga 2046 fluktuatif dari 125 tpd hingga 225 tpd.
- Sebagai permulaan TPST Sanggrahan, direncanakan untuk kapasitas 125 tpd.

Kondisi Sampah Eksisting



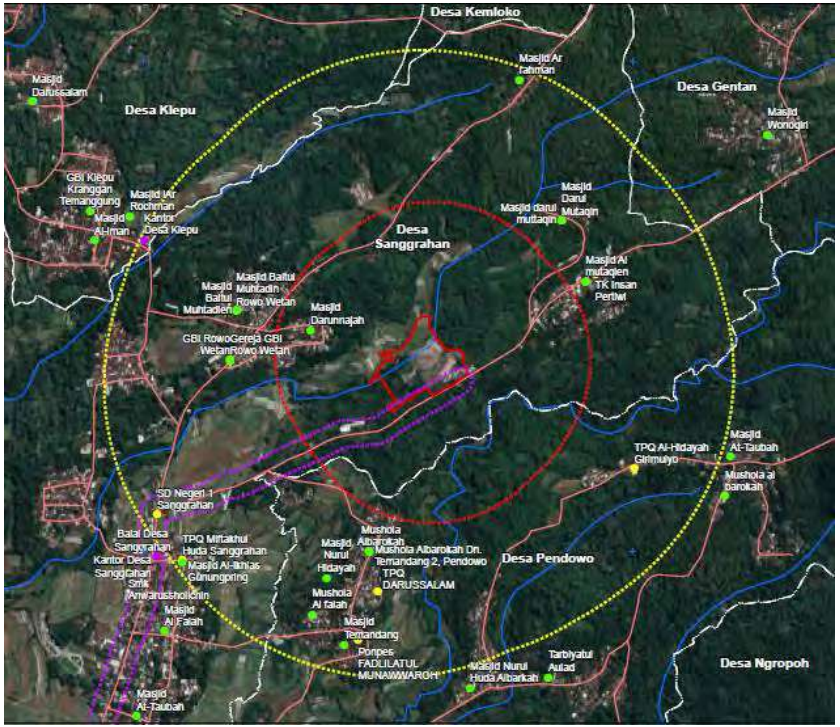
Sumber: SIPSN 2024



Sekitar 59% sampah di Temanggung yang terlayani dengan pengurangan dan sistem pengangkutan

Identifikasi Dampak dan Risiko

Wilayah Terdampak



Kawasan TPA

Wilayah Terdampak Langsung (<500 meter)

Wilayah Terdampak Tidak Langsung (500 - 1000 meter)

Potensi wilayah gangguan akibat Transportasi

Desa Terdampak langsung
Desa Sanggrahan
Desa Pendowo
Desa Terdampak Tidak Langsung
Desa Klepu
Desa Gentan

Rona Awal: Lingkungan

Iklim

Curah hujan tertinggi terjadi pada bulan Februari (>500 mm). Sementara itu, curah hujan terendah pada bulan September

Topografi

TPA terletak pada lereng dengan kemiringan 8-25%, (kategori **lereng dan agak curam**). Elevasi wilayah proyek berada di antara 520-540 mdpl.

Penggunaan Lahan

Pemanfaatan lahan di sekitar lokasi penelitian didominasi oleh **pertanian lahan kering (tembakau dan sayuran)**, **perkebunan (kopi)**, **sawah**, dan **pemukiman**.

Geologi

Lokasi penelitian terdiri dari formasi **Kaligetas dan Penyatan**, yakni lapisan batuan vulkanik akibat aktivitas Gunung Sindoro dan Gunung Sumbing.

Kualitas Udara

Seluruh parameter aman dan memenuhi standar baik dari aturan nasional maupun internasional.

Bau

Hasil analisis bau yang diperoleh ditemukan berada dalam batas yang ditetapkan persyaratan nasional untuk semua lokasi pengambilan sampel.

Kebisingan

Hasil analisis kebisingan berada di bawah batas tingkat kebisingan (60 dBA untuk AQ1 dan sisanya 55 dBA).

Getaran

Hasil analisis getaran berada di bawah batas yang ditetapkan oleh persyaratan nasional (<2 mm/s).

Rona Awal: Lingkungan

Air Tanah

Kec. Kranggan memiliki akuifer produktif dan arah aliran air tanah ke barat laut. Hasil pengukuran air tanah di daerah penelitian masih di bawah baku mutu.

Hidrologi

Kali Sari dan Kali Mandang merupakan sungai permanen yang mengalir sepanjang tahun, namun pada musim kemarau debit alirannya rendah.

Permukaan Air

Hasil analisis kualitas air permukaan menunjukkan bahwa nilai Klorin pada titik SW2, SW3 dan SW4 **tidak memenuhi baku mutu** karena melebihi batas yang diizinkan air permukaan Kelas 2.

Air Lindi

IPL belum berfungsi dengan baik sehingga dapat mencemari lingkungan. Namun, hasil analisis lindi memenuhi baku mutu yang ditetapkan dalam peraturan nasional.

Tanah

Semua sampel tanah yang diuji aman dan kadar logam beratnya masih dalam batas yang diperbolehkan.

Risiko Bencana

Kecamatan Kranggan tidak termasuk lokasi rawan bencana angin topan, tanah longsor, dan banjir. Namun, Kecamatan Kranggan berpotensi mengalami bencana kekeringan.

Rona Awal: Keanekaragaman Hayati

Flora Darat

- Sebanyak **185 spesies flora darat dari 52 famili** teridentifikasi dari survei rona awal.
- **Lima spesies flora yang penting untuk konservasi ditemukan** (palem putri, pohon putra persia, sonobrits, jati, dan kayu manis)
- Hanya satu dari lima spesies endemik di Jawa, yaitu **pohon putra persia (*Dalbergia latifolia*)** karena dieksploitasi berlebihan untuk membuat furnitur dll. Selain itu, **tanaman kayu manis** dieksploitasi berlebihan untuk penggunaan obat-obatan dll.
- Hanya **25% spesies** yang dapat diidentifikasi hingga tingkat spesies merupakan **spesies asli daerah Jawa**.

Fauna Darat

- Sebanyak **29 spesies teridentifikasi**, terdiri dari **18 burung**, **9 herpetofauna (reptil dan amfibi)**, dan **dua spesies mamalia**.
- Burung yang paling sering diamati adalah **burung layang-layang batu**. Burung umum lainnya termasuk burung sepah kecil dan burung cucak kutilang. Satu spesies yang diklasifikasikan sebagai terancam yaitu burung sikep madu.
- Dari 9 herpetofauna, 3 spesies dilindungi, yaitu **ular kobra**, **biawak air asia**, dan **tokek**.
- Hanya terdapat dua spesies mamalia, yaitu **bajing kelapa** yang merupakan satwa endemik Jawa dan **codot krawar**. Keduanya tidak memiliki status perlindungan.

Hewan Akuatik

Terdapat dua spesies akuatik yang ditemukan, yaitu **udang sungai** dan **ikan wader bitnik dua**. Ikan wader bintik dua merupakan spesies yang tersebar secara alami di Indonesia dan wilayah Jawa. Status ikan ini paling tidak perlu dikhawatirkan.

Rona Awal: Sosial

Data Agustus, 2024

Terdapat empat Kelompok masyarakat terdampak di sekitar Lokasi proyek: **Pemulung, Pengepul, Pengguna lahan, dan Pekerja lapangan**

No	Status	Laki-Laki	Perempuan	Total	Jumlah RT
1	Pemulung	28	39	67	47
2	Pengguna lahan	3	1	4	4
3	Pengepul	3	0	3	3
4	Pekerja lapangan	150	27	177	-

Kelompok Masyarakat Terdampak

Pemulung

- Terdapat setidaknya 28% janda dan sekaligus menjadi Kepala keluarga Perempuan yang menjadi pemulung di TPA Sanggrahan.
- Teridentifikasi adanya anak usia sekolah yang beraktivitas di TPA (tidak memulung)
- Rata-rata pendapatan pemulung di TPA Sanggrahan adalah Rp1.073.527 per RT per bulan.

Pengguna Lahan

- Lahan yang diakuisisi oleh Pemkab Temanggung untuk perluasan TPA Sanggrahan adalah lahan bengkok milik Desa Sanggrahan yang sbeelumnya dimanfaatkan oleh empat perangkat desa. Akuisisi lahan dilakukan Melalui skema tugar guling.
- Keempat pengguna lahan mendapatkan tanah bengkok pengganti yang terletak di Dusun Krajan

Rona Awal: Sosial

Fasilitas Pendidikan	• Fasilitas pendidikan di Kecamatan Kranggan didominasi oleh SD (29 SD pada tahun 2022). • Rasio guru terhadap murid tertinggi di Kecamatan Kranggan terdapat pada jenjang Madrasah Ibtidaiyah, yakni dengan rasio 1:17.
Fasilitas Keagamaan	• Mayoritas penduduk Kec. Kranggan merupakan penganut agama Islam, yaitu sebesar 96,64%. • Desa Sanggrahan dan Desa Klepu memiliki fasilitas ibadah di antaranya masjid, mushola, dan gereja. Sementara itu, Desa Gentan dan Desa Pendowo hanya memiliki masjid dan mushola.
Sosial Budaya	• Salah satu ritual adat yang masih dipraktekkan oleh masyarakat adalah tradisi Sadranan. • Teridentifikasi Terdapat dua Lokasi keramat yang berada radius 500 meter, yakni Makam Mbah Selo Werso dan Petilasan Nyi Gandik
Angkatan Kerja	• Sebanyak 97,68% angkatan kerja di Kabupaten Temanggung telah bekerja, sementara sisanya sedang aktif mencari pekerjaan (BPS 2024). • Mayoritas dari kelompok bukan angkatan kerja adalah ibu rumah tangga, yaitu sebesar 56,25%. • Tokoh masyarakat menyatakan bahwa sebagian besar penduduk bekerja di sektor pertanian dan manufaktur. • Hasil FGD menunjukkan bahwa banyak anak muda yang bekerja di pabrik-pabrik di sekitar wilayah tersebut. • Banyak Kelompok Perempuan yang bekerja di pabrik-pabrik lokal seperti garmen, kayu, dan Sepatu.

Rona Awal: Sosial

Kemiskinan	• Jumlah penduduk yang hidup dalam kemiskinan di Kabupaten Temanggung mencapai 72.960 orang pada tahun 2023, yang mewakili sekitar 9,26% dari total jumlah penduduk.
Fasilitas Kesehatan	• Fasilitas kesehatan di Kec. Kranggan meliputi 1 puskesmas non-rawat inap, 7 puskesmas keliling, 1 puskesmas pembantu, 1 klinik utama, 2 praktik dokter umum mandiri, 1 praktik dokter spesialis mandiri, 7 praktik bidan mandiri, dan 3 apotek. • Penyakit yang paling sering dilaporkan adalah hipertensi pada 2021 dan 2023, sementara ISPA menjadi yang paling banyak dilaporkan pada tahun 2022. • Hasil FGD menunjukkan bahwa posyandu untuk lansia dilaksanakan secara bulanan. • Berdasarkan data dari Puskesmas Kranggan 2024, tercatat sebanyak 185 anak didiagnosis mengalami stunting, dengan 117 di antaranya berasal dari desa-desa yang terdampak proyek.
Persepsi Masyarakat	• Berdasarkan wawancara dengan para kepala desa, telah diidentifikasi beberapa keluhan masyarakat terkait keberadaan TPA Sanggrahan. Masalah utama yang disampaikan adalah bau tidak sedap yang muncul selama proses pengangkutan menuju TPA. • Tumpahan sampah sesekali menyebabkan kecelakaan lalu lintas, seperti yang disampaikan oleh Kepala Desa Gentan. • Masyarakat merasakan dampak positif, seperti terciptanya peluang kerja sebagai pemulung di TPA Sanggrahan.

Dampak dan Risiko: Tahap Pra-Konstruksi

Kegiatan Proyek

Komponen/Risiko

Rencana Mitigasi

Sosialisasi Pemangku Kepentingan

Peningkatan Kekhawatiran Masyarakat	• Melakukan survei rona awal (mengidentifikasi harapan dan kekhawatiran masyarakat) • Meninjau keluhan masyarakat terkait kegiatan proyek • Menyiapkan mekanisme penanganan keluhan (GRM)

Dampak dan Risiko: Tahap Konstruksi

Kegiatan Proyek

Komponen/Risiko

Rencana Mitigasi

Pembangunan Tempat Pembuangan Sampah Sementara – Penanganan Pembuangan Sampah Selama Konstruksi

Pencemaran Air Permukaan	• Melakukan pemantauan bulanan kualitas air permukaan • Mengevaluasi Instalasi Pengolahan Lindi. • Pemasangan lapisan geosintetik di tempat pembuangan sementara dan sistem pengumpulan lindi untuk mencegah aliran ke badan air.
Pencemaran Air Tanah	• Melakukan survei rona awal kualitas air tanah. • Pemasangan lapisan geosintetik di tempat pembuangan sementara dan sistem pengumpulan lindi untuk mencegah infiltrasi ke air tanah.
Pencemaran Air Permukaan	• Melakukan sosialisasi • Melakukan penilaian dampak sosial ekonomi berbasis gender dan inklusi sosial • Menyusun rencana pemulihan mata pencaharian khususnya untuk pemulung perempuan dan lansia • Memastikan mekanisme kompensasi

Dampak dan Risiko: Tahap Konstruksi

Kegiatan Proyek

Komponen/Risiko

Rencana Mitigasi

Pembangunan Tempat Pembuangan Sampah Sementara – Penanganan Pembuangan Sampah Selama Konstruksi

Gangguan Transportasi Darat	• Melakukan penilaian dampak lalu lintas • Menerapkan rencana manajemen lalu lintas

Pembangunan Jalan Akses, Persiapan Lahan, Basecamp dan Bengkel, Mobilisasi Peralatan dan Material, dan Tempat Pembuangan Sementara

Peningkatan Kecelakaan di Masyarakat	• Membuat pagar keamanan tinggi di sekitar TPA untuk mencegah akses ilegal. • Memasang rambu peringatan dan sinyal lalu lintas di sekitar area TPA • Memantau kualitas udara dan air secara berkala Melakukan sosialisasi dan edukasi kepada masyarakat sekitar tentang bahaya TPA, terutama bagi anak-anak. • Mengelola sistem drainase secara efektif untuk mencegah kebocoran limbah cair ke area sekitar.

Dampak dan Risiko: Tahap Operasi

Kegiatan Proyek

Komponen/Risiko

Rencana Mitigasi

Pengoperasian TPST dan TPA

Gangguan terhadap Mata Pencaharian Pemulung

- Mengembangkan dan mengimplementasikan program pemulihan mata pencaharian
- Menyediakan peluang kerja alternatif

Mekanisme Penanganan Keluhan



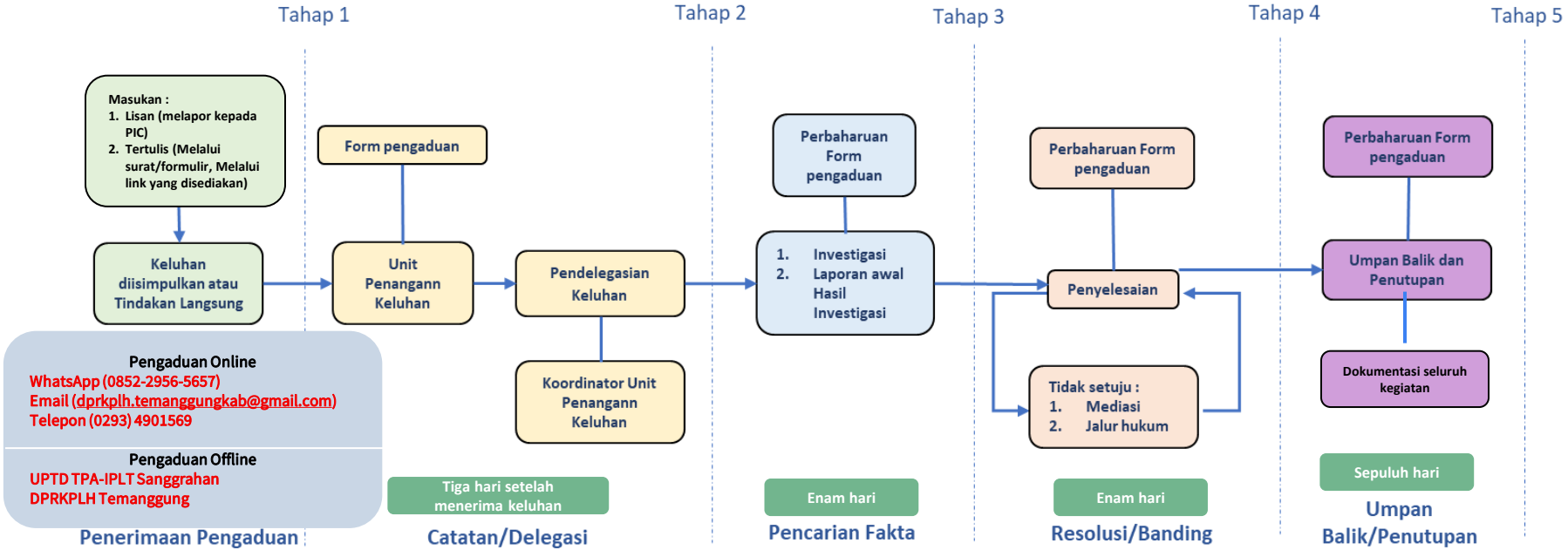
MEKANISME PENGADUAN KELUHAN

"Mekanisme Pengaduan Keluhan (GRM) menjelaskan proses dari alur yang disiapkan untuk menyampaikan keluhan atau mengajukan pengaduan terhadap proyek, staf, atau kontraktor bagi orang yang terdampak"

TUJUAN

- Menyediakan media yang mudah dan sederhana untuk melaporkan dan menyampaikan semua masukan, keluhan, dan pengaduan terkait dengan kegiatan proyek.
- Memastikan bahwa tanggapan dan penyelesaian akan dilakukan dengan cara yang tepat dan dapat diterima oleh semua pihak.
- Memastikan bahwa orang yang mengajukan keluhan merasa puas dengan hasil penyelesaian yang diambil.
- Menghindari penyelesaian akhir melalui proses pengadilan atau pra-peradilan.
- Memastikan bahwa kebutuhan komunitas yang paling rentan dalam proyek, seperti lansia, perempuan, dan anak-anak, juga dipertimbangkan dalam prosedur keluhan atau pengaduan.

ALUR MEKANISME PENGADUAN KELUHAN



Sesi Diskusi dan Umpan Balik

Sesi diskusi dan umpan balik

1. Apakah masih ada dampak & risiko yang belum teridentifikasi?
2. Apakah usulan mitigasi atas dampak dan risiko telah mencukupi?
3. Bagaimana upaya memperkuat sinergitas berbagai pemangku kepentingan untuk mengurangi dampak & risiko yang diidentifikasi secara efektif dan optimal
4. Apakah usulan alur dan mekanisme penanganan keluhan sudah memadai?

Sesi diskusi dan umpan balik

Topik atau pertanyaan kunci	Institusi	Masukan
Apakah masih ada dampak & risiko yang belum teridentifikasi?	Bappenas	[catatan hasil masukan yang diberikan]
	Kementerian Kesehatan	[catatan hasil masukan yang diberikan]
	Kementerian Dalam Negeri	[catatan hasil masukan yang diberikan]
	BPPW Jawa Tengah	[catatan hasil masukan yang diberikan]
	Perwakilan berbagai OPD Pemda Temanggung	[catatan hasil masukan yang diberikan]
	Camat Kranggan	[catatan hasil masukan yang diberikan]
	Perwakilan desa yang terdampak	[catatan hasil masukan yang diberikan]
	INISNU Temanggung	[catatan hasil masukan yang diberikan]
	Pihak/insitusi lain [sebutkan nama]	[catatan hasil masukan yang diberikan]

Sesi diskusi dan umpan balik

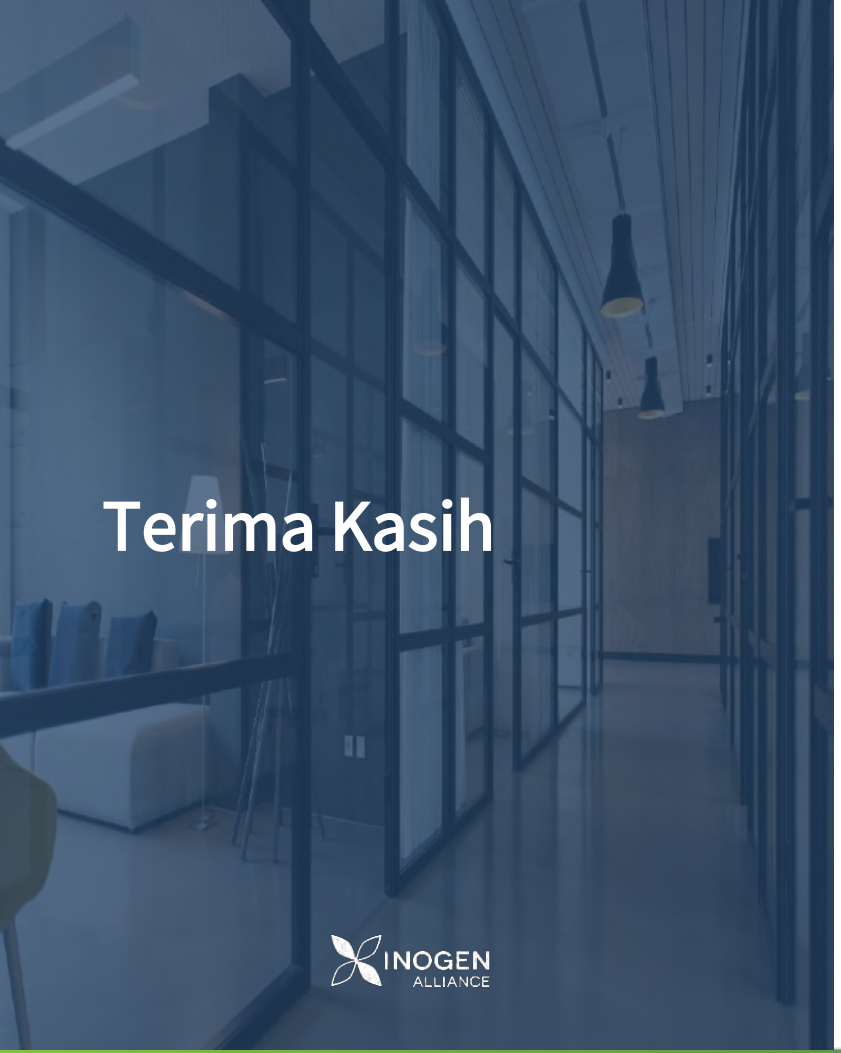
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Sesi diskusi dan umpan balik

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Terima Kasih

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Offline Public Disclosure

Notulensi Kegiatan Pengungkapan Publik (*Public Disclosure*)

***Draft* Dokumen *Safeguards* Kabupaten Temanggung untuk Kegiatan *Solid Waste Management for Sustainable Urban Development* (SWM-SUD)**

Acara	**:**	Pengungkapan Publik *Draft* Dokumen *Safeguards* Kabupaten Temanggung untuk Kegiatan *Solid Waste Management for Sustainable Urban Development* (SWM-SUD)			
Tanggal	**:**	10 Juni 2025	**Waktu**	**:**	10.00 – 11.45 WIB
Fasilitator	**:**	ESC	**Lokasi**	**:**	TPA Sanggrahan

Peserta
1. Lampiran 1 (*offline*) : Pemulung, Penggarap lahan, Masyarakat terdampak langsung dan tidak langsung, Tokoh Masyarakat, Kelompok rentan, Aparat Pemerintahan tingkat Kecamatan-Desa, dan Pemerintah Daerah 2. Lampiran 2 (*Online) :* AIIB, AEPW, dan Konsultan

Agenda
1. Pemaparan *draft* Dokumen ESMPF 2. Pemaparan *draft* Dokumen ESIA

No	Topik	Deskripsi
1	Latar Belakang Proyek	Proyek ini bertujuan untuk meningkatkan sistem pengelolaan sampah secara terpadu di wilayah kabupaten dengan cakupan kegiatan sebagai berikut: • Penutupan dan pemulihan (closure) TPA eksisting • Peningkatan sistem transportasi dan perluasan cakupan layanan pengangkutan sampah • Penguatan kapasitas kelembagaan pemerintah daerah dalam pengelolaan limbah padat • Dukungan teknis dan manajerial untuk pelaksanaan sub-proyek infrastruktur.
2	Rencana Proyek	Rencana kegiatan terbagi dalam tiga tahapan utama: • Pra-konstruksi: Telah dimulai sejak tahun 2023, meliputi penyusunan dokumen teknis dan kajian lingkungan serta sosial. • Konstruksi: Direncanakan berlangsung selama 16 bulan. • Operasional: Akan berjalan selama 18 bulan setelah penyelesaian konstruksi, termasuk fase pemantauan awal. **Dampak Sosial**: Proyek berdampak langsung pada 2 desa dan tidak langsung pada 2 desa lainnya. Selain itu, rute transportasi proyek melintasi sejumlah fasilitas publik seperti sekolah, pasar, tempat ibadah, kantor kecamatan/desadan pemukiman, sehingga perlu perhatian terhadap potensi gangguan lalu lintas dan keselamatan.
3	Mekanisme Penanganan Keluhan	- Masyarakat dapat menyampaikan keluhan atau masukan melalui lisan maupun tertulisan, sesuai dengan kanal pengadaan yang sudah tersedia.

No	Topik	Deskripsi
		Pemerintah daerah bersama pelaksana proyek berkewajiban mencatat setiap keluhan secara sistematis dan menyusun tindak lanjut penangan secara terbuka. Proses ini mencakup verifikasi, investigasi, penyampaian respon kepada pengadu, dan dokumentasi hasil penanganan.

No	Umpan Balik	Tanggapan
1	**DPRKPLH Kabupaten Temanggung** 1. Pelayanan persampahan di kab. Temanggung sudah mencakup 220 desa dari 289 desa (76%) pada tahun 2024. 2. Saat ini, Persiapan lahan untuk TPA sementara sudah dimulai dilakukan di zona 5. 3. Persiapan lahan yang digunakan untuk lahan urug residu akan dilakukan pada tahun 2026 yang juga akan ditempatkan di zona 5. 4. Lahan diperkirakan akan beroperasi 8-10 tahun. 5. Konstruksi TPA dan TPST Sanggrahan akan mengkuti peraturan yang berlaku, di mana berjarak 15 meter dari sempadan sungai.	Dicatat sebagai informasi tambahan
2	**Kepala Desa Sanggrahan** 1. Masyarakat berharap bahwa proyek TPA dan TPST Sanggrahan dapat mengurangi masalah bau yang ditimbulkan. 2. Masyarakat mengusulkan perbaikan jalan dan penambahan penerangan menuju lokasi. 3. Akses terhadap saluran air masyarakat diharapkan tidak terganggu. 4. Keluhan terkait kebocoran air lindi ke sungai di Dusun Madusari perlu ditindaklanjuti, mengingat sungai digunakan untuk keperluan MCK. 5. Masyarakat lokal, khususnya warga Desa Sanggrahan, diharapkan diprioritaskan untuk kesempatan kerja dalam proyek.	**DPRKPLH Temanggung** 1. Akses jalan menuju TPA Sanggrahan akan segera diperbaiki sesuai dengan komitmen Bupati yang telah di sampaikan di Kementerian PUPR 2. Masyarakat terdampak akan diprioritaskan dalam rekrutmen tenaga kerja, disesuaikan dengan kompetensi masing-masing. 3. TPST Sanggrahan akan menyerap tenaga kerja sebanyak 80 – 100 orang. 4. Isu akses air dan kebocoran lindi akan menjadi perhatian khusus dalam perencanaan teknis dan pengendalian lingkungan. **Kementerian PU** 1. TPA eksisting akan ditutup menggunakan geomembran untuk mencegah infiltrasi air hujan 2. Operasional TPST akan melibatkan pemulung untuk melakukan sortir sampah, di mana residu yang tidak

No	Umpan Balik	Tanggapan
		dapat disortir akan diproses Melalui mesin menjadi RDF (*Refuse-Derived Fuel)*. 3. Penutupan dengan geomembran diharapkan juga mengurangi populasi lalat di sekitar TPA dan permukiman.
3	**Kepala Desa Pendowo** 1. Terdapat banyak pemulung yang berasal dari Desa Sanggrahan maupun Desa Pendowo, yang menggantungkan mata pencahariannya dari kegiatan memilah sampah di TPA Sanggrahan. 2. Pendapatan dari aktivitas memulung menjadi sumber penghidupan utama bagi mereka. 3. Harapan agar pembangunan TPST tidak hanya menyelesaikan permasalahan lingkungan, tetapi juga tidak menimbulkan masalah sosial baru bagi para pemulung. 4. Harapan adanya perhatian khusus terhadap keberlanjutan penghidupan pemulung.	**DPRKPLH Temanggung** 1. Pemulung yang memenuhi kualifikasi akan diprioritaskan untuk bekerja di TPST Sanggrahan. 2. Apabila pemulung tidak dapat bekerja secara langsung, maka anggota keluarganya (anak atau kerabat dekat) yang memenuhi kriteria akan diprioritaskan untuk mengisi posisi yang tersedia.

Tanda Tangan Berita Acara Kegiatan Pengungkapan Publik

***Draft* Dokumen *Safeguards* Kabupaten Temanggung untuk Kegiatan *Solid Waste Management for Sustainable Urban Development* (SWM-SUD)**

Perwakilan BPPW Jawa Tengah

Daniel Diaz Mundez

Kepala DPRKPLH Temanggung

Prasodjo S.Ag, M.M

Camat Kecamatan Kranggan

Herman Santoso, SJP, M.Si

Kepala Desa Sanggrahan

Jauhari

Perwakilan Pemulung

Surat

Penggarap Lahan

Sunarno

Dipindai dengan CamScanner

Lampiran

Lampiran 1 – Dokumentasi Kegiatan Luring

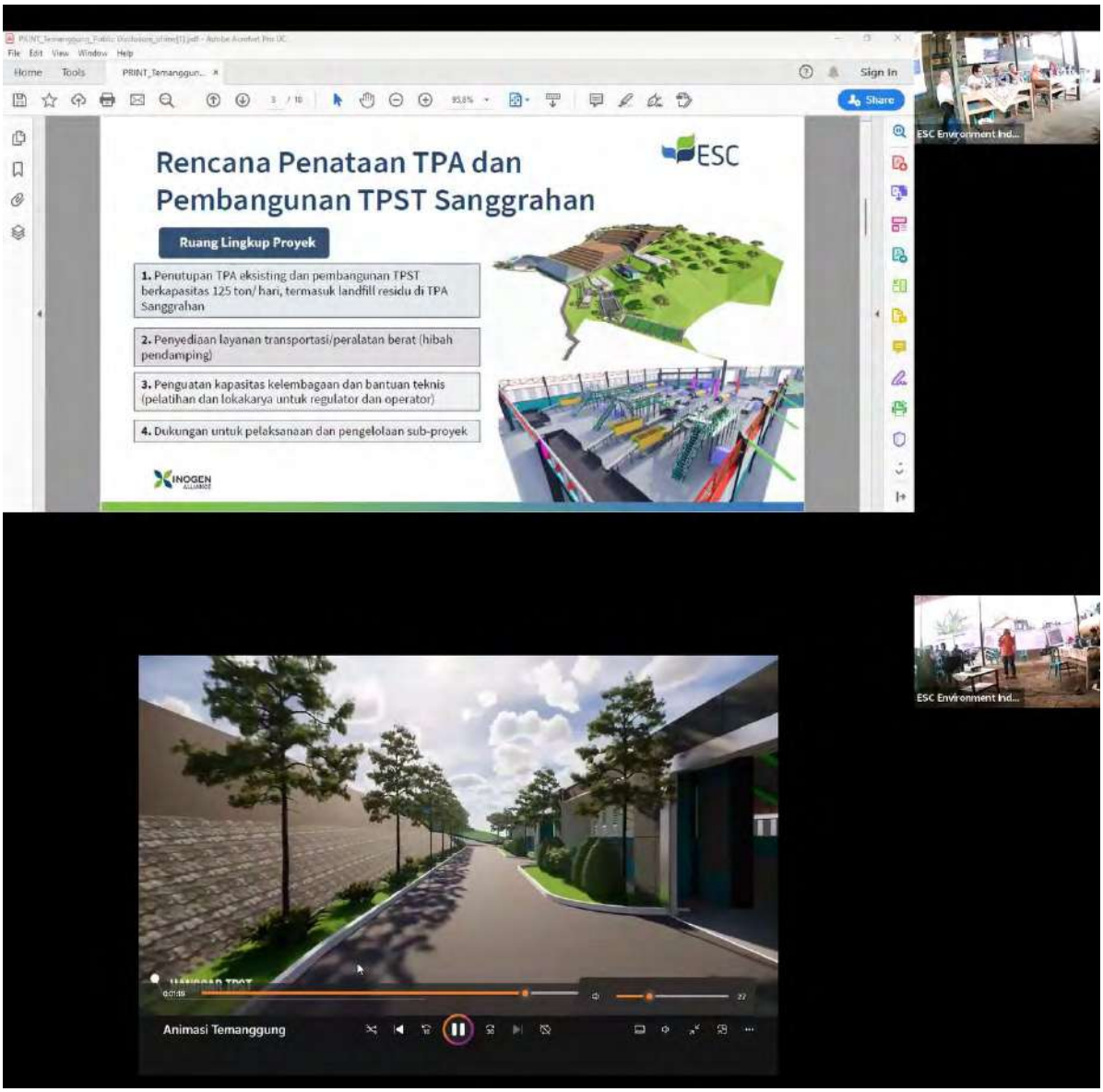








Lampiran 2 – Dokumentasi Zoom (daring)



Lampiran 3 – Daftar Hadir

DAFTAR HADIR

Pengungkapan Publik Draft Dokumen ESMPF dan ESIA dalam Kegiatan Solid Waste Management for Sustainable Urban Development

Hari/Tanggal : Selasa, 10 Juni 2025
Waktu : 09.00 – selesai
Tempat : TPA Sanggrahan
Acara : Pengungkapan Publik

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
1.	Nabila Fathonah	ESC - Jakarta			P	
2.	MUNDAKIR	DPR KPLH	Sopir pengangkut	089635535067	L	
3.	GIYARTO	DPR KPLH	Sopir pengangkut	081325836560	L	
4.	MARKUN	TPA / pemulung	pemulung		L	
5.	IMBUH	TPA / pemulung	pemulung		L	
6.	MARKHAT	TPA	pemulung		L	
7.	ISPADI.	TPA	pemulung		L	
8.	NURYATI	TPA	pemulung		P	
9.	RUWANI	TPA	pemulung		P	
10.	WINARTI.	TPA.	pemulung		P	

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
11.	DAHYONO		Pemulung		L	
12.	Mudiyono	DPRKPLH	Sopir truk			
13.	mardiyah		PPSNO / Pemulung			
14.	Gimun	Desa Losari	Tokoh masarakat		Ora	
15.	Supoyo	Desa Losari	Tokoh Agama		Hd.	
16.	paijo	Desa Klepu.	Kasun			
17.	Mariyati	Dea Gentan	Kadus			
18.	Herman S.	Kec. Kranggan	Plt Camat		L	
19.	Jauhari	Sanggrahan	Kepala Desa		L	
20.	TURKAMIN	Purbowo	Kades		L	
21.	Mariyati	Gentan	Kadus		P	
22.	Wahyudi	Losari Sanggrahan	Kadus		L	
23.	Parihem	Losari. Sanggrahan	Lansia		P	
24.	Hamadi	Tencandang, Pendowo	Pemilik lahan		L	
25.	Sardi	Losari. Sanggrahan	Tokoh masyarakat		L	

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
26.	Ahmad Alimaron	Jakarta	ESC	089536693260	L	
27.	Mery P	Jakarta	ESC	085258077998	P	
28.	Sabar	RT Losari	TOKOH		L	
29.	Sumarno	Tegalombo	pemilik lahan.	081338123649	L	
30.	Anie	Lpp ty	DPPLHP		P	
31.	WIRAWAN	TEMANGGUNG	DPRKPLH	085740539234	L	
32.	Aditya Pageodhan	Temanggung	PPRKPLH	0895178887358	L	
33.	Ir. Ubin	TEMANGGUNG	DPRKPLH	085282194 [illegible]	L	
34.	Rysia H	Dit sanitasi PU		082199298685	P	
35.	Manzel LIP	BPPW Jateng				
36.	Tourilatun	Temanggung	DPRKPLH		P	
37.	Emi	Losari	TPA	085 602 257 093	P	
38.	mukin			0823255[illegible]606	L	
39.	Paryoto	Losari	TPA		L	
40.	Iwan	Tegalombo	TPA		L	

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
41.	Febi	TPA			L	
42.	wahyudi	Cobang, Sriwung			L	
43.	Agus P	Temandang	TPA		L	
44.	Mirza	Temanggung	DPRKPLH		L	
45.	BRIOTA	Temanggung	DPRKPLH		P	
46.	Rohmat S	Semarang	BPBPK Jateng		L	
47.	Fadiaditya A.S	Semarang	BPBPK Jateng		L	
48.						
49.						
50.						
51.						
52						
53						
54						
55						

Lampiran 4 – Bahan Paparan Materi

EnviroSolutions & Consulting
Solutions for Environment | Safety | Sustainability

Pengungkapan Publik Kegiatan SWM-SUD

Kabupaten Temanggung

Disiapkan untuk Pengungkapan Publik
Senin, 9 Juni 2025



Rencana Penataan TPA dan Pembangunan TPST Sanggrahan

Latar Belakang

- Bank Infrastruktur Asia (AIIB) memberikan pinjaman kepada Pemerintah Inodonesia untuk mendanai proyek SWM-SUD
- AIIB, **AEPW,** dan **Kementerian PUPR** bekerja sama dalam pendanaan proyek ini. AEPW akan memberikan dukungan dana tambahan secara konsesional untuk memperkuat kapasitas kelembagaan pengelolaan sampah baik di tingkat nasional maupun daerah.

Tujuan Proyek

- Meningkatkan infrastruktur pengelolaan sampah di kota dan kabupaten terpilih di Indonesia.

- Bertempat di Dusun Losari, Desa Sanggrahan, Kec. Kranggan
- TPA Sanggrahan memiliki luas total 6 hektar
- TPST Sanggrahan direncanakan memiliki kapasitas pengolahan sampah sebesar 125 ton/hari

Tahun 2023	Wilayah Layanan	Total	Persentase	
			2023	Target (2046)
Desa	140	366	38.25%	80%
Populasi (orang)	494,759	811,347	60.98%	
Timbulan Sampah Terkelola (ton/hari)	239.4	405.674	59%	74%

Rencana Penataan TPA dan Pembangunan TPST Sanggrahan

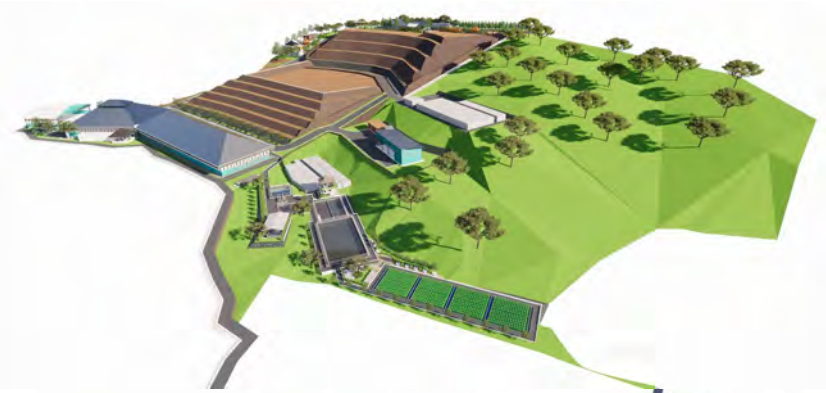
Ruang Lingkup Proyek

1. Penutupan TPA eksisting dan pembangunan TPST berkapasitas 125 ton/ hari, termasuk landfill residu di TPA Sanggrahan

2. Penyediaan layanan transportasi/peralatan berat (hibah pendamping)

3. Penguatan kapasitas kelembagaan dan bantuan teknis (pelatihan dan lokakarya untuk regulator dan operator)

4. Dukungan untuk pelaksanaan dan pengelolaan sub-proyek





Saat ini : Lahan persawahan (dibebaskan tahun 2024)

Mendatang : Akan digunakan untuk fasilitas TPST

Saat ini : IPLT dan lahan hijau

Mendatang : Akan digunakan untuk fasilitas IPLT, bengkel, dan lahan urug residu

Pada fase konstruksi digunakan untuk TPA sementara dan lapak pemulung



Saat ini : Lapak Pemulung (67 Pemulung saat ini)

Mendatang : Akan digunakan untuk rest area

Saat ini : Digunakan sebagai landfill

Mendatang : Tetap landfill namun ditata ulang

Rencana Jadwal Kegiatan

Pra konstruksi

Mulai pada tahun 2023

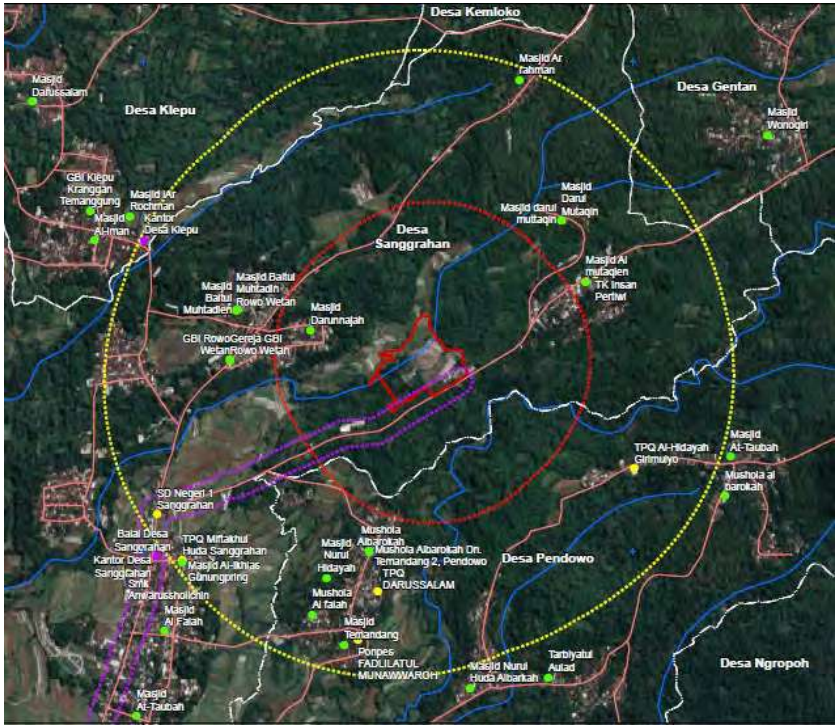
Konstruksi

Sekitar 16 bulan

Operasional

Sekitar 18 bulan

Wilayah Terdampak

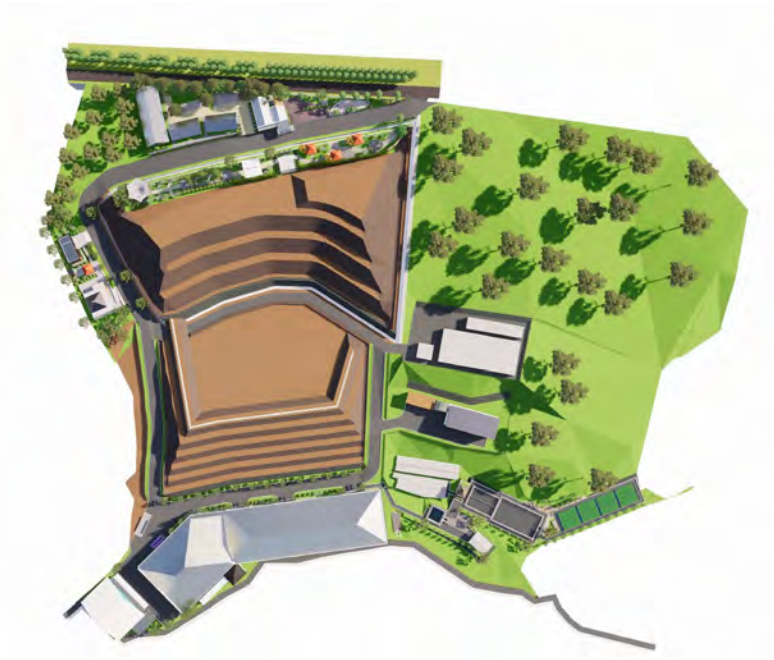


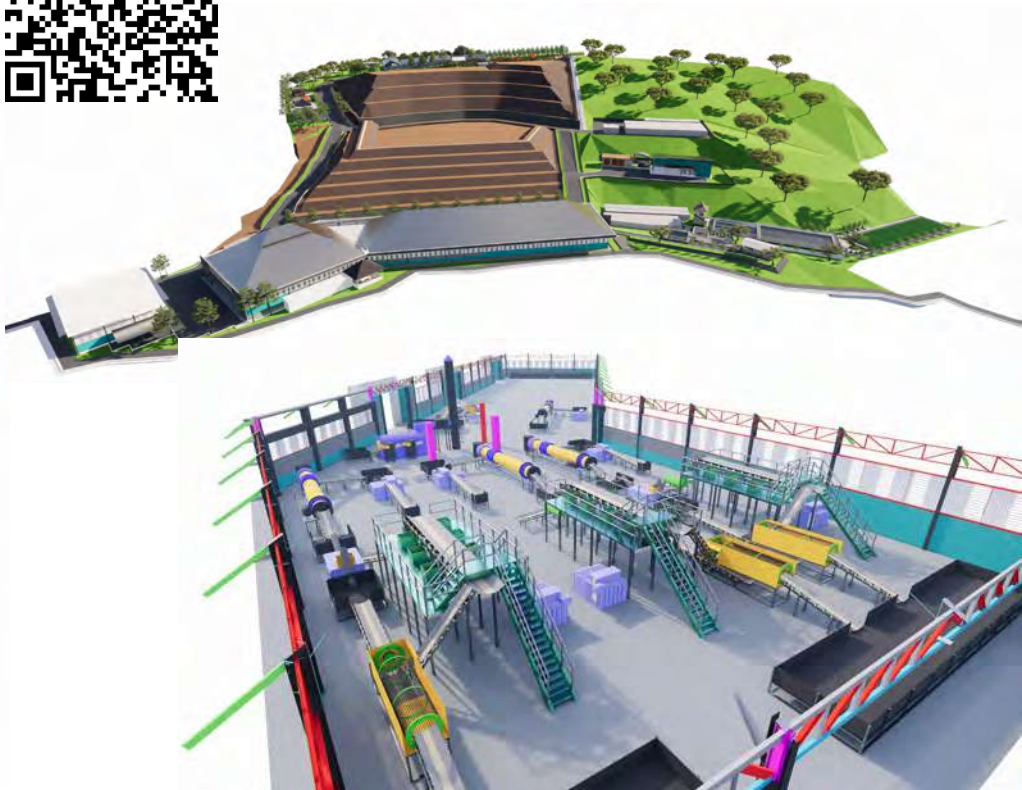
- Kawasan TPA
- Wilayah Terdampak Langsung (<500 meter)
- Wilayah Terdampak Tidak Langsung (500 - 1000 meter)
- Akses Transportasi

Desa Terdampak langsung
Desa Sanggrahan
Desa Pendowo
Desa Terdampak Tidak Langsung
Desa Klepu
Desa Gentan

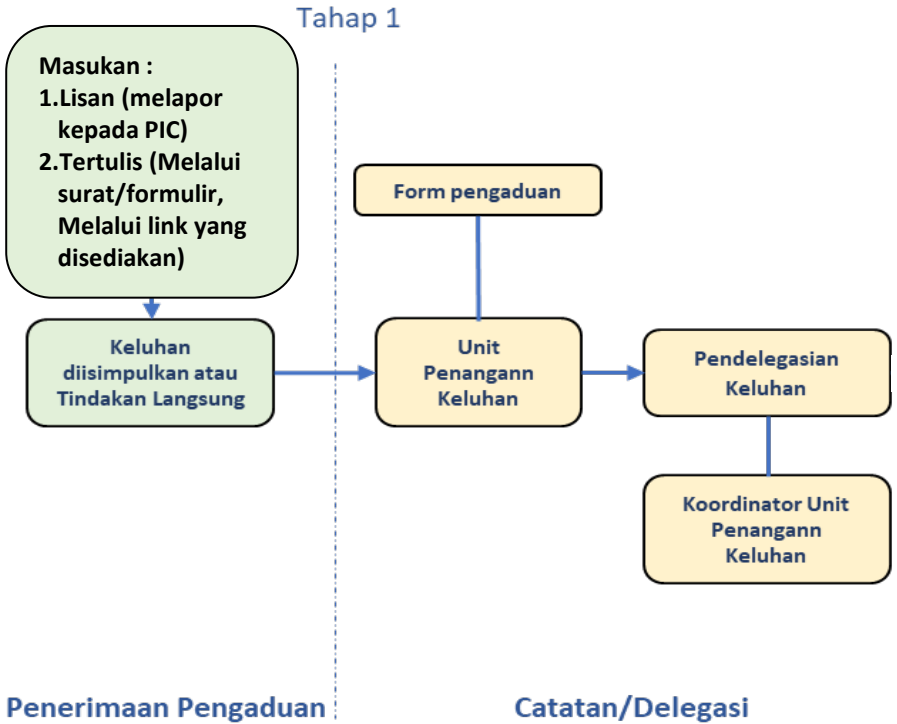
Link Video Proyek

https://nlink.at/TPST_Temanggung atau





ALUR MEKANISME PENGADUAN KELUHAN



Total estimasi waktu penanganan keluhan : 25 hari

Pengaduan Online

WhatsApp (0852-2956-5657)
Email (dprkplh.temanggungkab@gmail.com)
Telepon (0293) 4901569

Pengaduan Offline

UPTD TPA-IPLT Sanggrahan
DPRKPLH Temanggung

Risiko Dampak dan Mitigasi

AIR

Pencemaran Air Permukaan (Saat Konstruksi)

- Survei kualitas air tanah
- Pemasangan lapisan geosintetik di TPS dan IPAL

Pencemaran Air Tanah (Saat Konstruksi)

- Pemantauan bulanan
- Mengevaluasi IPAL
- Pemasangan lapisan geosintetik di TPS dan IPAL

KECELAKAAN/INSIDEN

Peningkatan Insiden (saat konstruksi)

- Membuat pagar keamanan
- Memasang rambu peringatan dan sinyal lalu lintas termasuk pengaturan Lalu lintas
- Memantau kualitas udara dan air secara berkala
- Melakukan sosialisasi tentang bahaya TPA
- Mengelola sistem drainase/air secara efektif untuk mencegah kebocoran limbah cair ke area sekitar.



IPAL



Lapisan Geosintetik

Risiko Dampak dan Mitigasi

KELUHAN

Peningkatan Keluhan (saat sebelum konstruksi)

- Melakukan survei
- Meninjau keluhan masyarakat terkait proyek
- Menyiapkan mekanisme penanganan keluhan

PEMULUNG

Relokasi Lapak dan Lokasi bekerja (saat konstruksi)

- Melakukan sosialisasi
- Melakukan survei sosial
- Menyediakan rencana pemulihan pekerjaan
- Mekanisme kompensasi

Gangguan Pekerjaan (saat operasi)

- Melakukan rencana/program pemulihan pekerjaan
- Menyediakan peluang kerja alternatif

TRANSPORTASI

Gangguan Transportasi (saat konstruksi)

- Melakukan penilaian dampak lalu lintas
- Menerapkan rencana manajemen lalu lintas

ENGLISH VERSION

Online Public Disclosure

Minutes of *Public Disclosure* Activities

Temanggung District *Draft Safeguards* Document for *Solid Waste Management for Sustainable Urban Development* (SWM-SUD) Activities

Events	:	Public Disclosure of Temanggung District *Draft Safeguards* Document for *Solid Waste Management for Sustainable Urban Development* (SWM-) Activities SUD)			
Date	:	2 June 2025	**Time**	:	08.30 - 11.30
Facilitator	:	ESC	**Location**	:	Online (*Zoom Meeting*)

Participants

Included in Appendices 1 and 2

Agenda

1. Presentation of the *draft* ESMPF Document
2. Presentation of *draft* ESIA Document

No.	Topic	Description
1	ESMPF Document	Material Presentation: 1. The ESMPF document aims to ensure project components are implemented in a sustainable manner and risks are minimised. environmental and social managed in accordance with Indonesian regulations and AIIB standards 2. 18 appendices supporting the ESMPF Document are available
2	Project Overview and Sub-project Location	Material Presentation: 1. The project aims to improve waste management services and increase access to sustainable, high-tech waste management. 2. The scope of the project includes the rehabilitation of the existing landfill and the construction of the TPST. 3. Existing waste conditions are dominated by food waste (31%)
3	Impact and Risk Identification	Material Presentation: 1. The directly affected area consists of two villages (Desa Sanggrahan and Pendowo Village) and indirectly affected areas consist of two villages (Klepu Village and Gentan Village). 2. The quality of surface water at the sampling points did not fulfil the specified quality standards. 3. Identified There are 185 species of terrestrial flora and 5 of them are important for conservation. 4. 29 terrestrial fauna species and 2 aquatic species identified 5. There are approximately 47 waste picker households, 4 land user households, and 3 collector households. potentially affected by the project at Sanggrahan Landfill. 6. The following are project impacts that have the potential to have high risks to the environment and communities: - Pre-Construction: Increased community concerns

No.	Topic	Description
		- Construction: Surface water pollution, groundwater pollution, transport disruption, increased accidents in the community - Operation: Disruption to livelihoods scavengers
4	Grievance Redress Mechanism	Material Presentation: 1. There are five flows in the procurement grievance mechanism, namely procurement intake, record/delegation, fact-finding, resolution/appeal, and feedback/closing. 2. Temanggung Regency currently has a canal complaint

No.	Feedback	Response
1	**DPRKPLH Temanggung:** 1. UKL-UPL TPA document Sanggrahan will be reviewed so that it is synchronised with the ESIA document that has been submitted. compiled. 2. There are 289 villages and sub-districts (266 villages and 23 sub-districts). To date, 220 have been served villages and sub-districts (76%).	**ESC Consultant:** 1. The number of villages and sub-districts and the percentage of villages served will be adjusted to the latest data obtained.
2	**Ministry of Home Affairs (Mr Azzam)** 1. It is expected that the waste management initiatives in the SWM-SUD activities will also be included in the RPJMD, Renstra and RKPD of Temanggung District. 2. Operational institutionalisation of UPTD TPA can be phased in gradually changed to UPTD Waste Management, before later becoming a BLUD. The Ministry of Home Affairs will conduct mentoring in this process. 3. The existing waste regulation was drafted in 2011 and will be finalised in 2011. facilitated to be updated if it is deemed less relevant. 4. RIPS needs to be readjusted with this project.	**DPRKPLH Temanggung** 1. Waste is currently a Regent's Priority and has been included in the RPJMD and RPD Strategic Plan. 2. Related to changes in institutional status will be studied further
3	**Bappenas (Mr Faiq)** It is expected that through the ESIA document identification and mitigation of various social impacts have been carried out, including 1. Mitigation of impacts on school facilitation for	**ESC Consultant** 1. Potential impact on facilities education that would result in relocation would be relatively small due to its considerable distance from the site (approximately 700 m). However,

No.	Feedback	Response
	avoid the experience of school relocation due to the project waste management 2. How to engage The current waste pickers consist of various age groups, including the elderly.	The consultant emphasised the potential safety risks due to the increase in vehicle traffic that could potentially disrupt the activities of the surrounding community and school community. 2. Livelihood restoration programmes need further discussion with the Local Government (Pemda) because the activities will be conducted by the Temanggung Pemda. **DPRKPLH Temanggung** 1. The involvement of waste pickers remains part of the Local Government's policy, by of course considering the age of the waste pickers. scavengers. If the scavenger is elderly, then the opportunity to work in the landfill and TPST will be given to the following children and other family members. 2. Conduct traffic engineering especially avoiding peak hours of activity so as not to interfere with community activities, especially the Student.
4	**Kranggan sub-district government** 1. The majority of community settlements are located above (in higher region) Sanggrahan landfill area 2. Related to traffic engineering during construction activities and Landfill operations are expected to consider the hours school operations 3. The local community to date has no specific complaints related to the landfill operations. However, it is expected that potential impacts arising from the project can be mitigated. 4. There are two markets on the garbage truck route, Pasar Pagi and Pasar Kranggan. In addition, there is also the Kranggan Community Health Centre, Kranggan Subdistrict Office, SDN 2 Kranggan, SMPN 1 Kranggan, SDN 1 Sanggrahan, Sanggrahan Village Hall, and SDN 1 Sanggrahan. 2 Sanggrahan.	Recorded as additional information

No.	Feedback	Response
5	**Ministry of Health Ditkesling (drg Esther)** 1. Mitigation of the potential generation of disease vectors due to the construction and operation of landfills and TPSTs needs to be considered 2. Has there been a plan for the management of medical waste mixed with household waste in the landfill? Sanggrahan? 3. It is necessary to anticipate the number of diseases caused by mosquitoes, considering that there was an increase in the number of DHF cases in Temanggung Regency in 2020.	**ESC Consultant** 1. Risk of disease vector generation has been included in the ESIA Document with a medium risk level. The operation of TPST is expected to reduce the existing vector generation, thereby lowering its risk rating. **DPRKPLH Temanggung** 1. Currently, periodic backfilling of the landfill is carried out in an effort to reduction in the growth of disease vectors present in the landfill. 2. By regulation, medical waste should not be disposed of in the Sanggrahan landfill but managed by each health care facility. 3. In practice, until now, no B3 waste from homes has been found. households in the Sanggrahan landfill. Socialisation of this to the community is the domain of the relevant health centre. **AIIB** 1. During the loading process at TPST, a special place will be provided for pre-sorting. sorting), one of which is sorting medical or hazardous waste. This segregated medical or hazardous waste can later be processed at the nearest health centre or hospital so that the hazardous waste found can be handled properly. **DPRKPLH Temanggung** 1. Temanggung district has a partner in hazardous waste collection, PT Temanggung Hijau Lestari. 2. Medical or hazardous waste that is segregated at the TPST will be further processed by private partners for hazardous waste treatment. **Temanggung Health Office** 1. Cases of mosquito-borne diseases around the landfill are not significant. 2. Routine environmental health inspections was conducted at the Sanggrahan landfill.

No.	Feedback	Response
		3. There is an increase in DHF incidence throughout Temanggung district, not specific to the district. the area around the Sanggrahan landfill.
6	**AIIB (Mr Krisnan)** 1. The construction of the Temporary Landfill is expected to use a liner. 2. Has the discourse related to the increase in waste budget funds been narrowed down?	**DPRKPLH Temanggung** 1. The construction of the Temporary Landfill will use the same geomembrane as the Landfill, thus is expected not to pollute the environment.
7	**Vice Regent of Temanggung** 1. Active monitoring and evaluation from the government District to DPRKPLH Kab. Temanggung for Preparation construction of TPST Sanggrahan.	

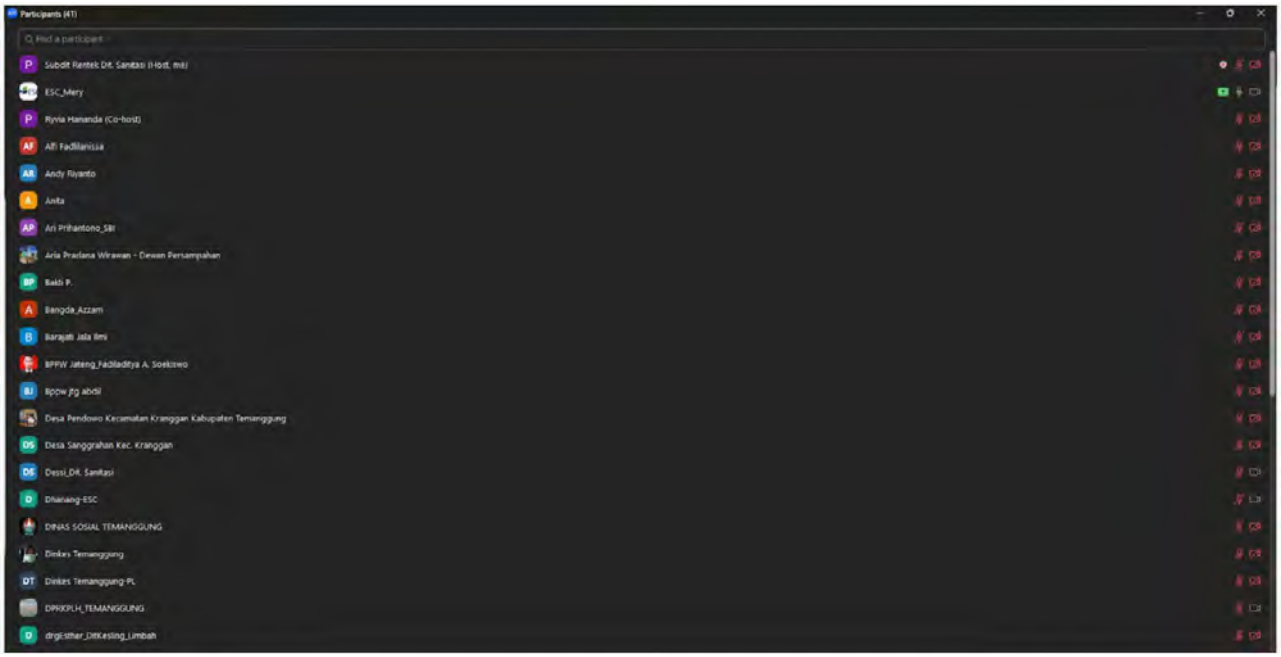
Attachment

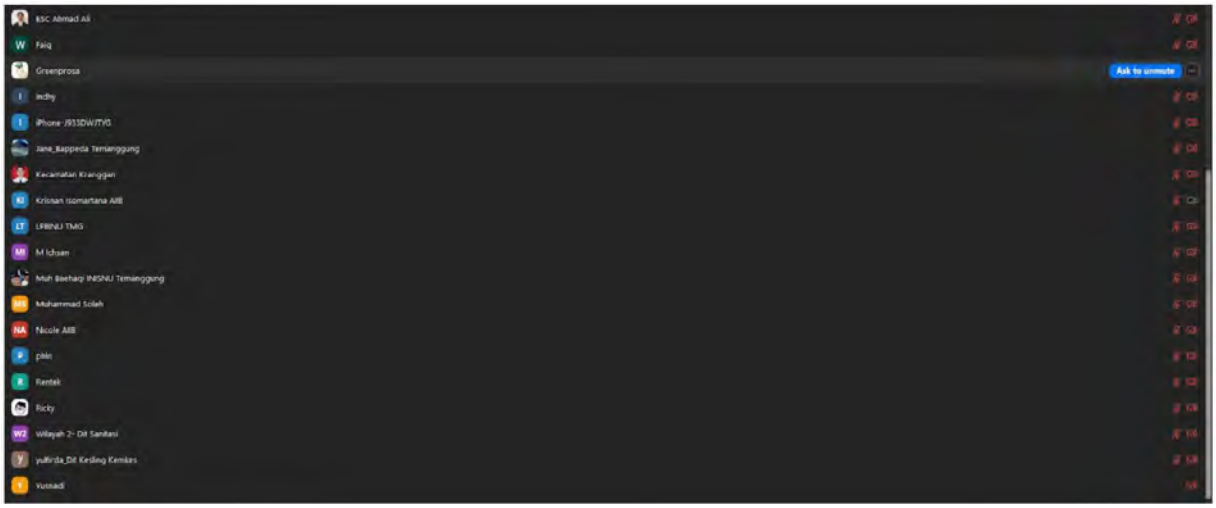
Appendix 1 - Attendance List

List of participants based on Gform attendance (21 participants)

Timestamp	Nama Lengkap	Instansi/Unit Kerja	Jabatan	No. Telepon	Alamat email
6/2/2025 9:05:29	Dhanang Tri Wuriyandoko	ESC Indonesia	Technical Lead - Solid waste management specialist	081281908643	dhanang.tri@envirosc.com
6/2/2025 9:07:15	Mery Purnamasarie	PT ESC Environment Indonesia	Konsultan Sosial	085258077990	mery@envirosc.com
6/2/2025 9:07:15	M Ichsan	Bangda Kemendagri	Tenaga Pendukung	083806270432	ojol.ican@gmail.com
6/2/2025 9:08:23	PRASODJO,S.Ag.M.M.	DINAS PERUMAHAN RAKYAT, KAWASAN PERMUKIMAN DAN LINGKUNGAN HIDUP KABUPATEN TEMANGGUNG	KEPALA DINAS	087831241754	bidangkebersihantmg2024@gmail.com
6/2/2025 9:12:01	TURKAMUN	DESA PENDOWO	KEPALA DESA	081329977127	pendowo5desa@gmail.com
6/2/2025 9:30:24	SITI KHOFIFAH,A.Md.Kep	LPBI PCNU TEMANGGUNG	Bid. Rehabilitasi dan Rekonstruksi	085712246672	khofifahs48@gmail.com
6/2/2025 9:34:56	Bakti Priyo Utomo	Dit.SSPIP	Staf Subdit PPHLN, Dit. SSPIP	08119990064	bakti.utomo@pu.go.id
6/2/2025 9:46:33	Dian Probowati	Dinas Kesehatan Kab. Temanggung	Kabid Kesmas	08157933094	dianprobowati@yahoo.com
6/2/2025 9:48:24	Fadiladitya Aryanov Soekiswo	BPPW Jawa Tengah	Teknik Penyehatan Lingkungan Terampil	081234949404	aditaryanov4433@gmail.com
6/2/2025 9:53:43	Indah Melinda	Dit. SSPIP	Staf	081385631333	indhys@gmail.com
6/2/2025 10:02:57	Murdoko	Desa Sanggrahan	Kaur Umum dan Tata Usaha	082324008678	mmurdoko41@gmail.com
6/2/2025 10:06:41	Ahmad Azzam Al Asyraf	Kemendagri	Statistisi Ahli Pertama	08989217471	ahmadazzam00@gmail.com
6/2/2025 10:10:47	Sugiharti, ST., M. Kes	Dinas Kesehatan Kabupaten Temanggung	Katimker Penyehatan Lingkungan/ Sanitarian Ahli Muda	081328678611	gathi.sugiharti@yahoo.com
6/2/2025 10:12:03	Abdillah Nur A	Bppw jawa tengah	Pkpl ahli muda	089676155675	majinbhu709@gmail.com
6/2/2025 10:23:03	R. NUZULINA ILMIATY	PU/DIT SANITASI - CK	KASUBDIT WIL 2	0818751911	lina.ilmiaty@gmail.com
6/2/2025 11:20:51	Finda Septiawati	Dit. SSPICK	Penata Kelola Bangunan Gedung dan Kawasan Permukiman Ahli Muda	08111777405	finda.septiawati@pu.go.id
6/2/2025 11:27:54	drg Esther Raflesya Bellsayda	Direktorat Kesehatan Lingkungan	adminkes	085297202838	kemenkeserbs@gmail.com
6/2/2025 11:41:05	Aria Pradana Wirawan	Dewan Persampahan Kabupaten Temanggung	Sekretaris	081327312627	wirawan.aria@gmail.com
6/2/2025 11:49:16	Elma Jane Yolanda Pertiwi	Bappeda Kabupaten Temanggung	Perencana Ahli Pertama	085727202858	elmajyp@gmail.com
6/2/2025 11:55:52	Ahmad Ali Imron Ibnu Sulthon	PT ESC Environment Indonesia	Konsultan Sosial	0895366439260	ahmad@envirosc.com
6/2/2025 17:01:42	drg. Yulfirda	Kemenkes/Direktorat Kesehatan Lingkungan	Adminkes Ahli Muda	081373824233	yulfirda@gmail.com

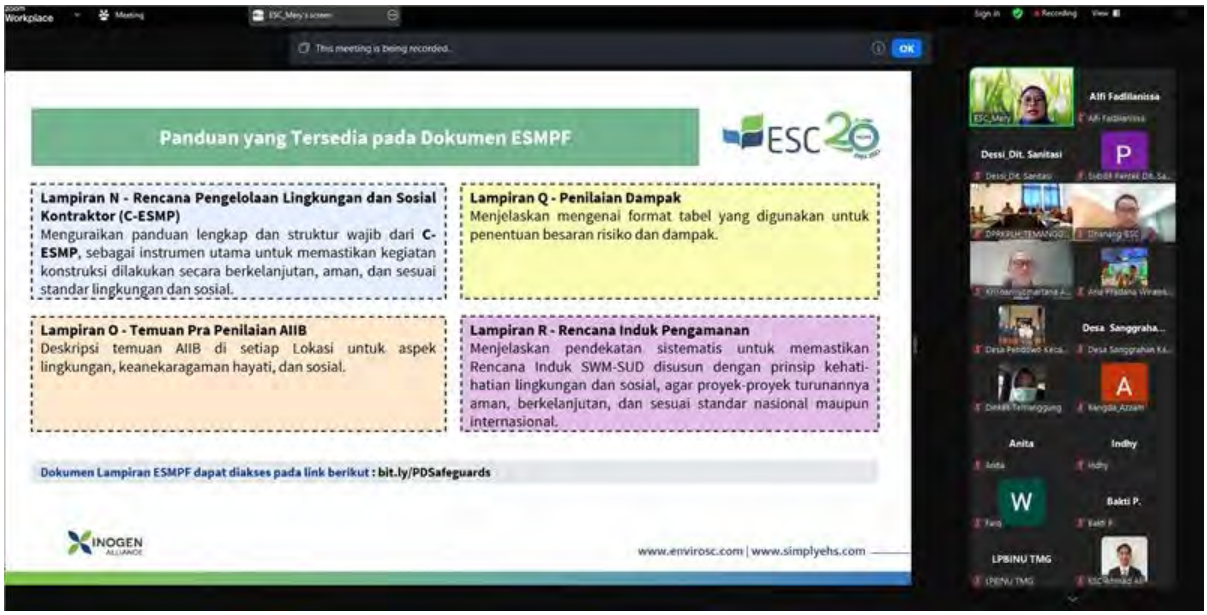
List of participants who attended the Online Public Disclosure activity (41 participants)



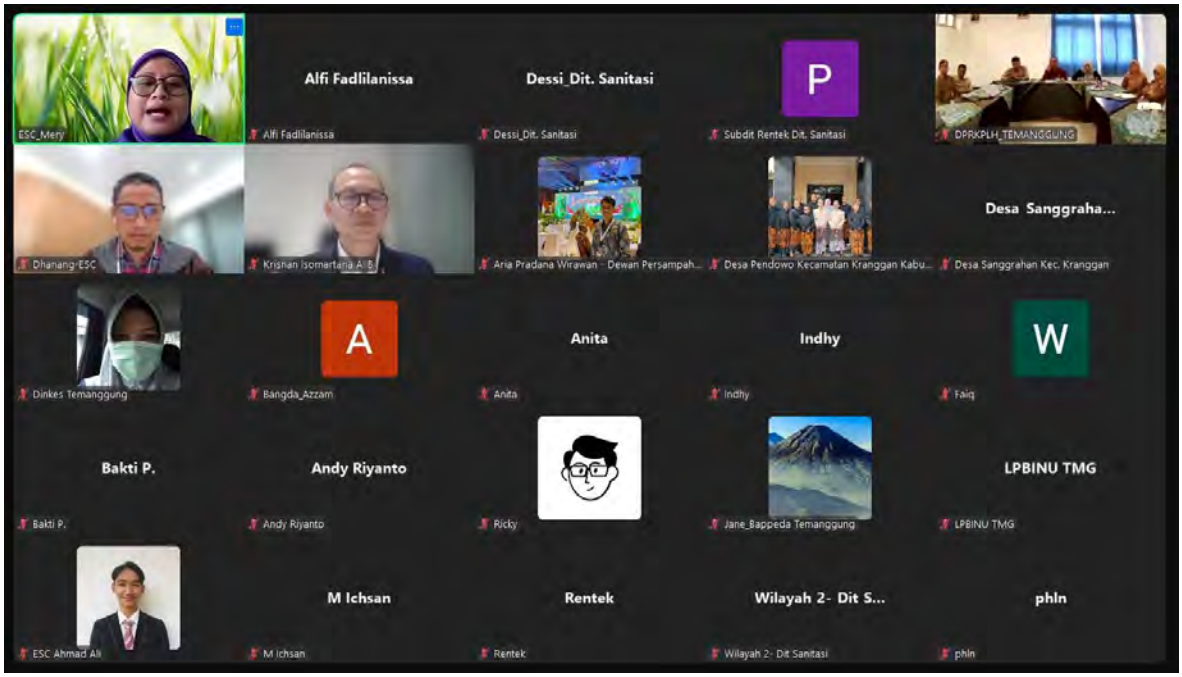

KSC Ahmad Ali
Faiq
Greenprosa
Ask to unmute
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iPhone-/933DW/TYG
Jane_Bappeda Temanggung
Kecamatan Kranggan
Krisnan Isomartana Alfil
LPBNU TMG
M Ichsan
Muh Baehaqi INISNU Temanggung
Muhammad Soleh
Nicole Alfil
pbin
Rentek
Ricky
Wilayah 2- Dit Sanitasi
yulfirda_Dit Kesling Kemkes
Yusnadi

Appendix 2 - Documentation

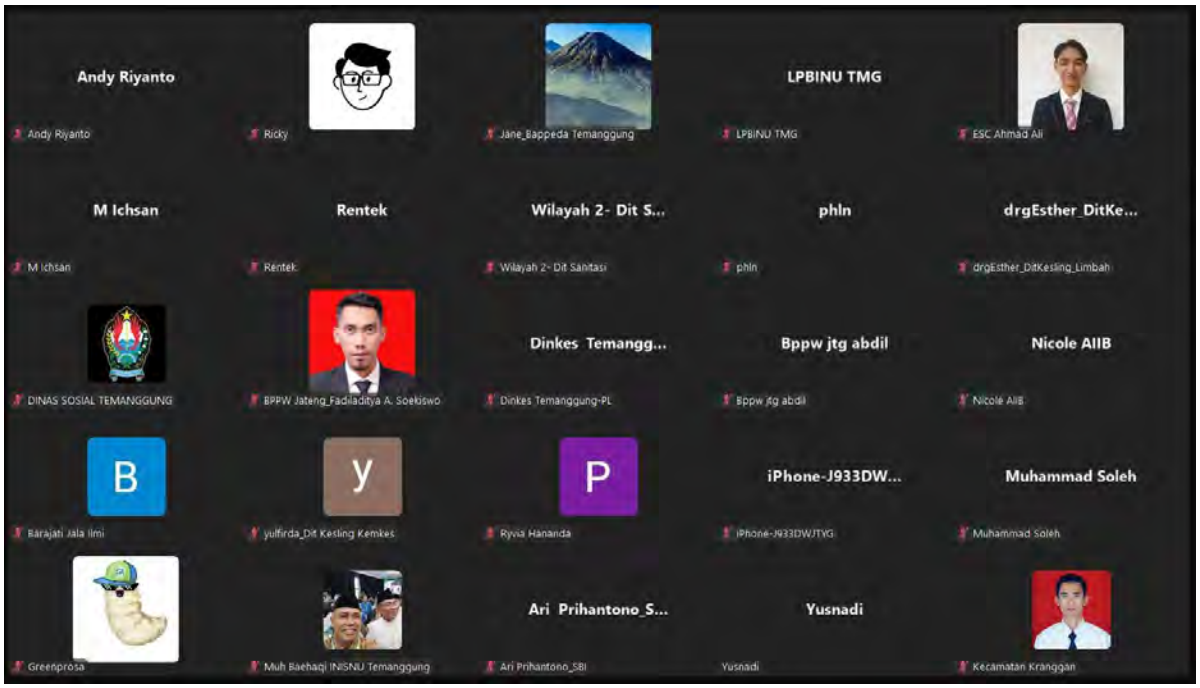
Screenshot 1: exposure by ESC



Screenshot 2: public disclosure participants (1)



Screenshot 3: public disclosure participants (2)



Screenshot 4: the presence of Ibu Wakil Bupati Temanggung in Public Disclosure



EnviroSolutions & Consulting

Solutions for Environment| Safety| Sustainability

Public Disclosure

Solid Waste Management Activities for Sustainable Urban Development (SWM-SUD)

Temanggung Regency

Prepared for Public Disclosure

Monday, 2 June 2025

www.envirosc.com www.simplyehs.com|



Environmental and Social Planning and Management Document (ESMPF)

Environmental and Social Management Plan Framework (ESMPF)

Background:

The Asian Infrastructure Bank (AIIB) provided a loan to the Government of Indonesia to fund the SWM-SUD project. AIIB, Alliance to End Plastic Waste (AEPW), and the Ministry of Public Works and Housing are working together to fund this project. AEPW will provide additional funding support on a concessional basis to strengthen the institutional capacity of waste management at both the national and local levels.

Project Objectives:

- Improving waste management infrastructure in selected cities and districts in Indonesia.

Project Focus:

- Waste reduction,
- Recycling,
- Circular economy,
- Emission reduction.

Environmental and Social Management Plan Framework (ESMPF)

Guidance for all sites (10 sites) to be funded. ESMPF Objectives

- Ensure that all components of the project are implemented in a sustainable manner and that the environmental risks and social is managed according to Indonesian regulations and AIIB standards.

ESMPF Document Contents

- Regulatory standards (Indonesian Laws and Regulations & AIIB ESS 1-3),
- Baseline standards that must be adhered to,
- Environmental and social risk categorisation standards,
- Impact assessment and management,
- Monitoring and reporting procedures,
- Stakeholder engagement and public consultation,
- Strengthening institutional capacity,
- Provisions related to land acquisition and involuntary relocation, including compensation, costs, and mechanisms complaint.

The ESMPF document can be accessed at the following link: bit.ly/PDSafeguards

Available Guidance on ESMPF Documents

Appendix A - Indonesian Legislation for Solid Waste Management
Explains about regulations legislation Indonesia that regulates solid waste management.

Appendix D - Cumulative Impact Assessment Table of Contents
This section will guide the SWM-SUD subproject in preparing a cumulative impact assessment study that complies with the AIIB Environmental and Social Standards (ESSs) and the Indonesian government requirements.

Annex B - Screening Form for Potential Environmental and Social Safeguards Issues
Provide screening forms to identify potential environmental and social issues.

Appendix E - Terms of Reference for Procurement
A guide that details all the essentials of the procurement process, so that everyone involved understands their duties, responsibilities and targets.

Appendix C - Rapid Environmental Assessment Checklist for Solid Waste Management
Provide a list of questions to conduct a quick assessment of the environmental aspects of solid waste management.

Appendix F - Environmental and Social Code of Practice Template
Ensure compliance with requirements environmental, social, health and safety (ESHS) and community health and safety.

Available Guidance on ESMPF Documents

Appendix G - Resettlement Planning Framework

Appendix H - Exclusion List
Attach a list of proposed exemptions

Appendix I - Example of Memorandum of Agreement Attach the memorandum of agreement to be used.

Annex M - Sample Grievance Forms and Records Provide sample grievance forms and records

Appendix J - Site Visit Report
Describe the results of the site visit at each location and provide a feasible mitigation plan for the findings.

Appendix K - Workshop Report
Show the chronology of consultations and workshops that have been held
done

Appendix L - Initial Hue Conditions
Describe conditions rona Originally environment, diversity biodiversity and social at each location
based on the survey.

Annex P - High Level Management Procedure Describe procedure management procedures level
High-level management procedures regarding temporary storage areas, biodiversity, environmental and social for access roads and water supplies, hazardous waste, and cultural heritage.

Available Guidance on ESMPF Documents

Appendix N - Environmental and Social Management Plan Contractor (C-ESMP)
Outlines the complete guidance and mandatory structure of the C-ESMP, as a key instrument to ensure construction activities are carried out sustainably, safely, and to environmental and social standards.

Appendix Q - Impact Assessment
Explained the table format used for determination of risk and impact magnitude.

Annex O - AIIB Pre-Assessment Findings
Description Findings AIIB at any Location to environmental, biodiversity, and social aspects.

Appendix R - Security Masterplan
Describes a systematic approach to ensure the SWM-SUD Master Plan is developed with environmental and social prudence, so that its derivative projects are safe, sustainable, and compliant with national and international standards.

The ESMPF Annex document can be accessed at the following link: bit.ly/PDSafeguards

Project Overview and Sub-Project Location

Overview


Destinati
on
SWMSUD
Improving waste management services in participating cities and districts in Indonesia
Improving access to waste management services through high-tech solutions based on sustainability principles
RPJMN 2025 - 2029
• 100% waste management and prevent landfill overcapacity
• Effectively manage 38% of total waste
SDGs 2030

Overview

Project Scope

- Closure of existing landfill and construction of TPST with a capacity of 125 tonnes/day, including residual landfill at Sanggrahan landfill site
- Provision of transport services/heavy equipment (matching grant)
- Institutional capacity building and technical assistance (training and workshops for regulators and operators)
- Support for sub-project implementation and management

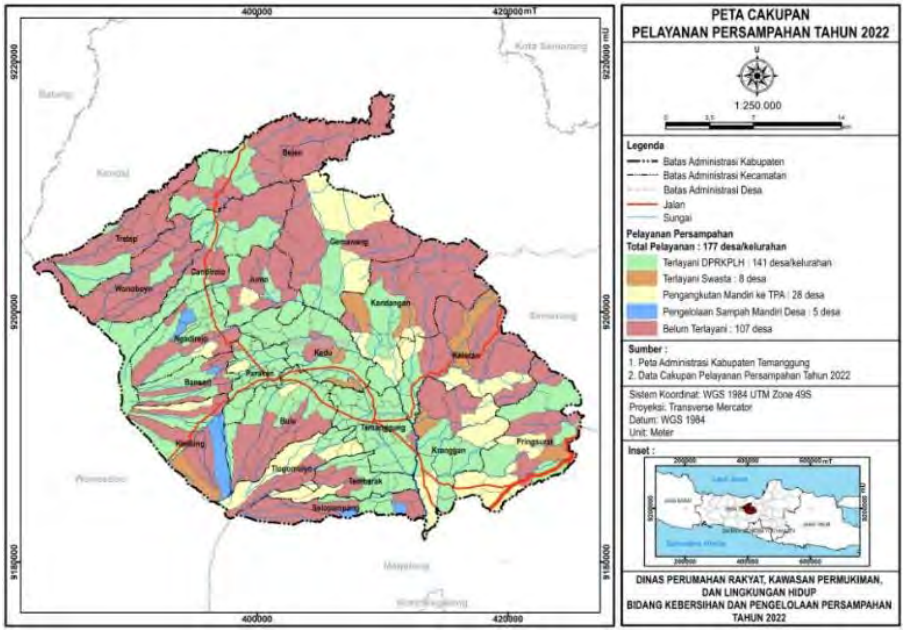
Scope of Study



- Technical and Operational Aspects
- Environmental and Social Aspects

Service Coverage

Year 2023	Region Services	Total District	Percentage
Village	140	366	38.25%
Population (people)	494,759	811,347	60.98%
Waste Generation (tonnes/day)	239.4	405.7	59%



Processing and Reduction Target

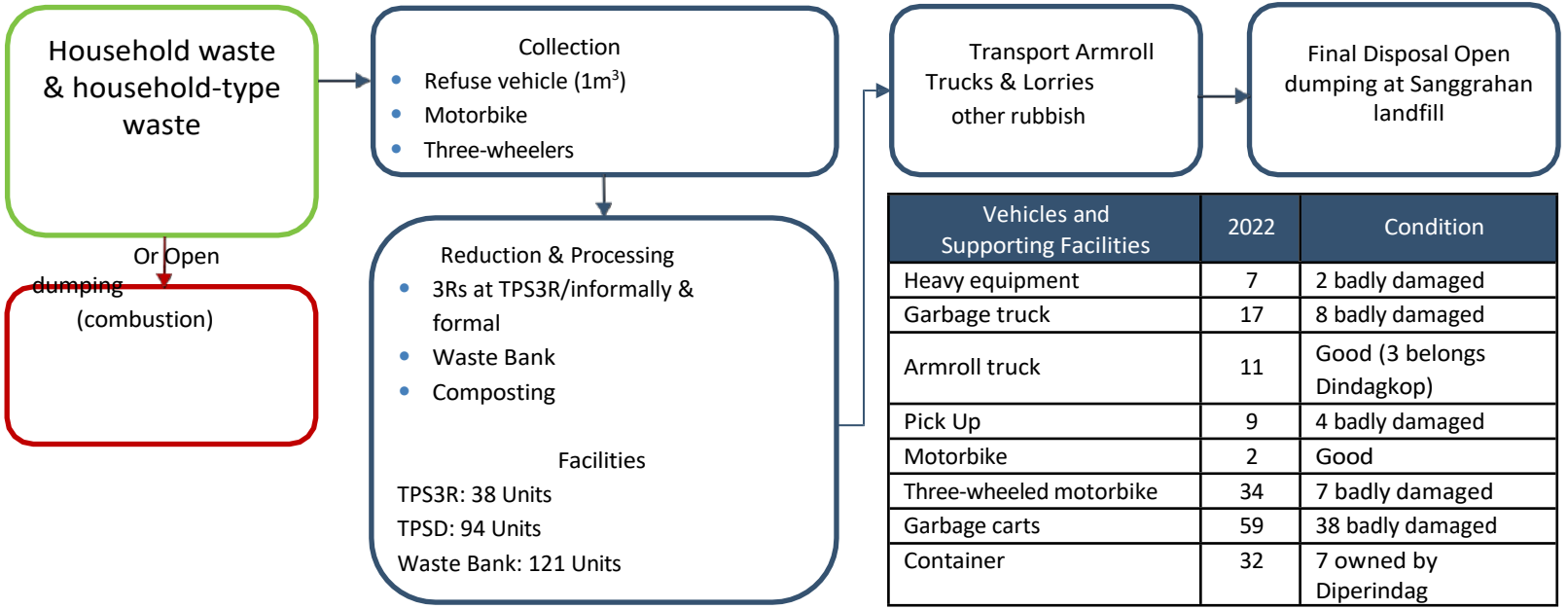
1. Intermediate Service Target: 74% of waste managed by 2046 (289 Villages)
2. Has served all sub-districts (20 district)
3. Reorganisation of existing waste piles
4. TPST Operation in 2027

Sanggrahan landfill



- Located in Losari Hamlet, Sanggrahan Village, Kranggan Kec.
- Sanggrahan landfill has a total area of 6 hectares.
- TPST Sanggrahan is planned to have a waste processing capacity of 125 tonnes/day.
- By year 2022, service management waste has covered about 59% of total waste generation from 20 sub-districts
- Still 148 out of 366 villages served (40.7%)
- Target waste management includes additional 141 villages (Service target 80%)

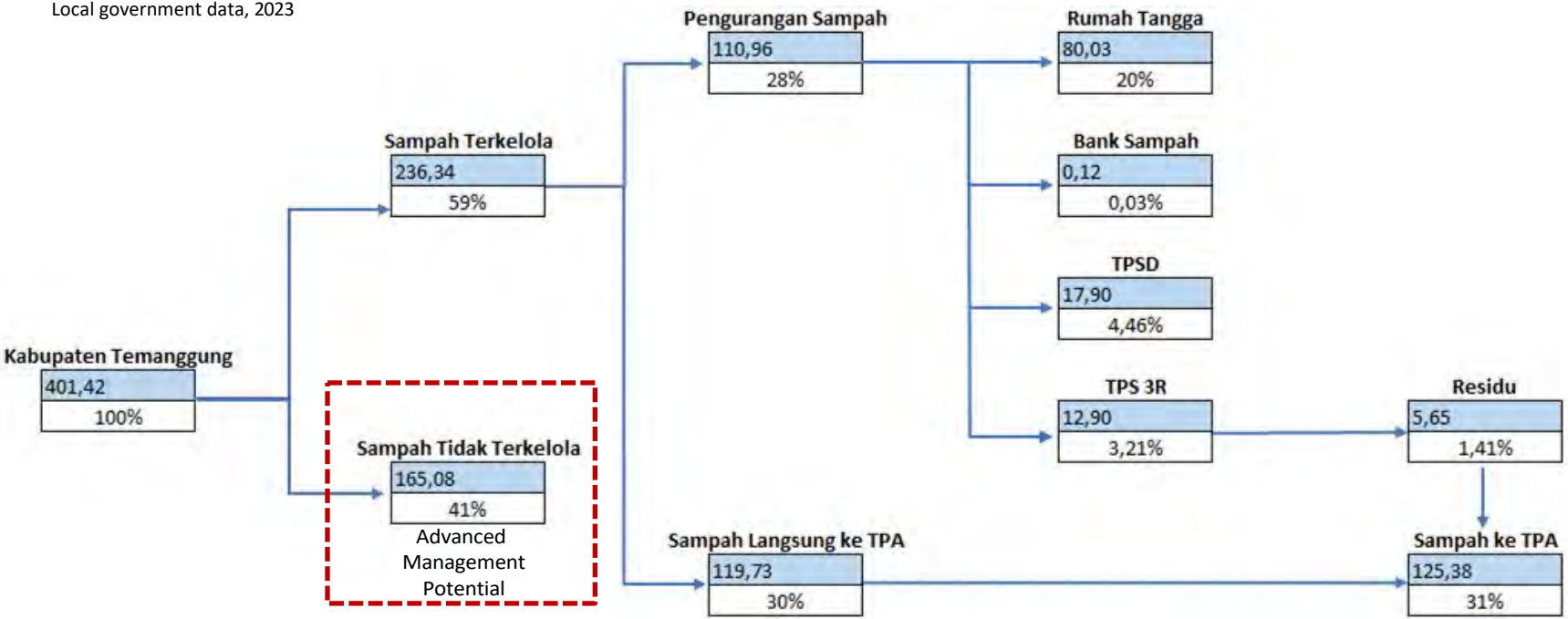
Existing Waste Management



Vehicles and Supporting Facilities	2022	Condition
Heavy equipment	7	2 badly damaged
Garbage truck	17	8 badly damaged
Armroll truck	11	Good (3 belongs Dindagkop)
Pick Up	9	4 badly damaged
Motorbike	2	Good
Three-wheeled motorbike	34	7 badly damaged
Garbage carts	59	38 badly damaged
Container	32	7 owned by Diperindag

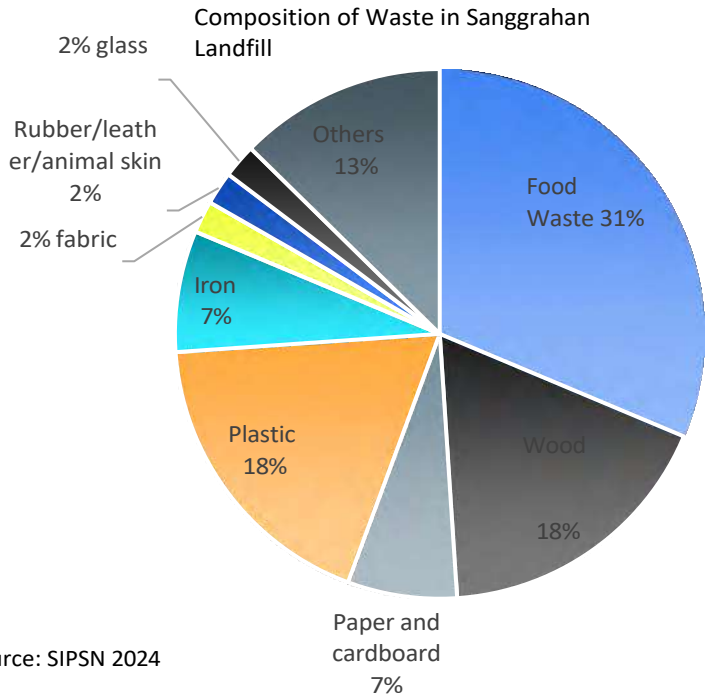
Period Balance (2022)

Local government data, 2023

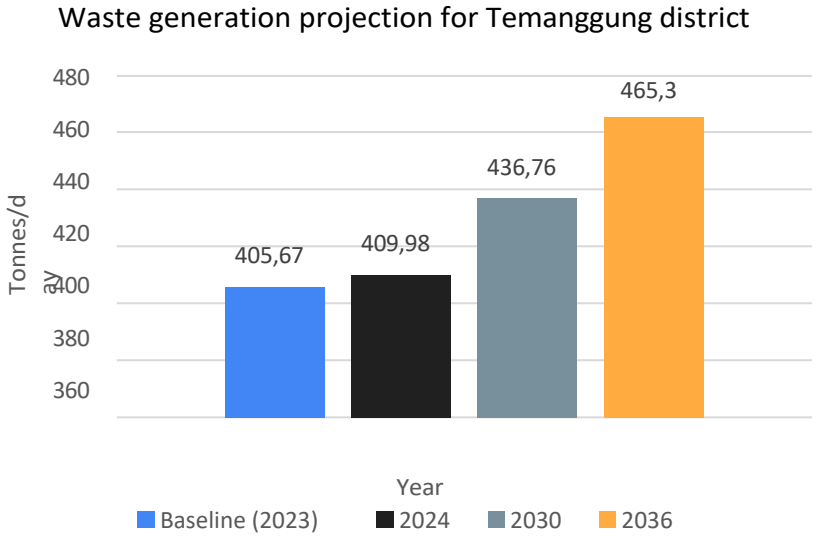


- The projected waste entering the TPA/TPST in 2022 to 2046 fluctuates from 125 tpd to 225 tpd.
- To start with, the Sanggrahan TPST is planned for a capacity of 125 tpd.

Existing Waste Condition



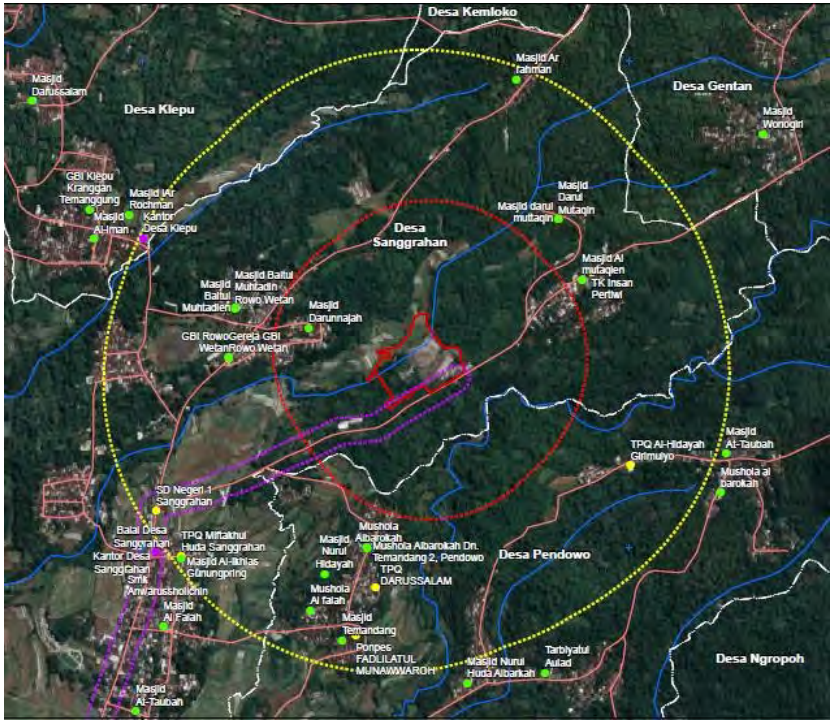
Source: SIPSN 2024



About 59% of waste in Temanggung is served by the reduction and collection system

Impact and Risk Identification

Affected Area



Landfill Area

Directly Affected Area (<500 metres)

Indirectly Affected Area (500 - 1000 metres)

Potential areas of disturbance due to Transport

Directly affected village
Sanggrahan Village
Pendowo Village
Indirectly Affected Village
Klepu Village
Gentan Village

Initial Hue: The Environment

Climate

The highest rainfall occurred in February (>500 mm). Meanwhile, the lowest rainfall was in September

Topography

The landfill is located on a slope with a slope of 8- 3. 25%, (slope and moderately steep categories). The elevation of the project area is between 520-540m above sea level.

Usage Land

Land utilisation around the study site is dominated by dryland agriculture (tobacco and vegetables), plantations (coffee), rice fields, and settlements.

Geology

The research site consists of the Kaligetas and Penyatan formations, which are layers of volcanic rocks resulting from the activities of Mount Sindoro and Mount Sumbing.

Air Quality

All parameters are safe and meet the standards of both national and international regulations.

Smell

The odour analysis results obtained were found to be within the limits set by national requirements for all sampling locations.

Noise

The noise analysis results are below the noise level limit (60 dBA for AQ1 and the rest 55 dBA).

Vibration

The vibration analysis results were below the limits set by national requirements (<2 mm/s).

Initial Hue: Neighbourhood

Groundwater

Kranggan sub-district has productive aquifers and the groundwater flow direction is to the northwest. The results of groundwater measurements in the study area are still below the quality standard.

Hydrology

Kali Sari and Kali Mandang are permanent rivers that flow throughout the year, but in the dry season the flow rate is low.

Surface Water

The results of the surface water quality analysis show that the Chlorine value at points SW2, SW3 and SW4 does not meet the quality standards because it exceeds the permissible limit for Class 2 surface water.

Leachate Water

The leachate treatment plant is not functioning properly and may pollute the environment. However, the leachate analysis results meet the quality standards set out in national regulations.

Land

All soil samples tested were safe and the levels of heavy metals were within acceptable limits.

Disaster Risk

Kranggan Sub-district is not prone to cyclones, landslides and floods. However, Kranggan sub-district has the potential to experience drought disasters.

Rona Awal: Biodiversity

Land Flora

- A total of 185 species of terrestrial flora from 52 families were identified from the baseline survey.
- Five species of flora important for conservation were found (princess palm, persian son tree, sonobrits, teak, and cinnamon)
- Only one of the five species is endemic to Java, the Persian son tree (*Dalbergia latifolia*) due to overexploitation.
  to make furniture etc. In addition, the cinnamon plant is over-exploited for medicinal uses etc.
- Only 25% of the species identified to species level are native to Java.

Land Fauna

- A total of 29 species were identified, consisting of 18 birds, 9 herpetofauna (reptiles and amphibians), and two mammal species.
- The most commonly observed bird is the rock swallow. Other common birds include the lesser sepah and the cutthroat thrush. One species classified as threatened is the honeycreeper.
- Of the nine herpetofauna, three species are protected: cobras, Asian water monitor lizards and geckos.
- There are only two mammal species, the Javanese endemic coconut bajing and the krawar codot.
  Both have no protected status.

Aquatic Animals

Two aquatic species were found, namely river shrimp and two-spotted wader. The two-spotted wader is a naturally distributed species in Indonesia and the Java region. The status of this fish is of least concern.

Initial Hue: Social

August data, 2024

There are four groups of affected communities around the project site: Scavengers, Collectors, Land users, and Field labourers.

No.	Status	Male-Laki	Female	Total	Total RT
1	Scavengers	28	39	67	47
2	Land users	3	1	4	4
3	Collectors	3	0	3	3
4	Field worker	150	27	177	-

Affected Community Groups

Scavengers

- There are at least 28% of widows and female heads of households who are scavengers at the Sanggrahan landfill.
- Identified school-age children who are active in the landfill (not scavenging)
- The average income of waste pickers in Sanggrahan landfill is Rp1,073,527 per household per month.

Land User

- The land acquired by the Temanggung District Government for the expansion of the Sanggrahan landfill is a land plot owned by Sanggrahan Village, which was previously utilised by four village officials. The land acquisition was done through a tugar guling scheme.
- The four land users received replacement bengkok land located in Krajan Hamlet.

Initial Hue: Social

Education Facilities	• Education facilities in Kecamatan Kranggan are dominated by primary schools (29 primary schools in 2022). • The highest teacher-to-student ratio in Kecamatan Kranggan is at the Madrasah Ibtidaiyah level, with a ratio of 1:17.
Religious Facilities	• The majority of the population of Kranggan sub-district is Muslim, at 96.64%. • Sanggrahan and Klepu villages have worship facilities including mosques, prayer rooms, and churches. Meanwhile, Gentan Village and Pendowo Village only have mosques and prayer rooms.
Social Culture	• One of the traditional rituals that is still practised by the community is the Sadranan tradition. • Identified There are two sacred locations within a radius of 500 metres, namely the Mbah Selo Werso Tomb. and Petilasan Nyi Gandik
Force Work	• 97.68% of the labour force in Kabupaten Temanggung is employed, while the remainder is actively seeking work (BPS 2024). • The majority of the non-labour force group were housewives, at 56.25%. • Community leaders stated that most of the population works in the agricultural sector and manufacturing. • FGD results show that many young people work in factories around the area. • Many of the Women's Groups work in local factories such as garments, wood, and shoes.

Initial Hue: Social

Poverty	• The number of people living in poverty in Kabupaten Temanggung reached 72,960 people in 2015. 2023, which represents about 9.26% of the total population.
Facilities Health	• Health facilities in Kranggan sub-district include 1 non-inpatient puskesmas, 7 mobile puskesmas, 1 auxiliary puskesmas, 1 main clinic, 2 independent general practitioners, 1 independent specialist, 7 independent midwives, and 3 pharmacies. • The most commonly reported disease was hypertension in 2021 and 2023, while ARI became the most reported in 2022. • FGD results show that posyandu for the elderly is conducted on a monthly basis. • Based on data from the Kranggan Community Health Centre in 2024, there were 185 children diagnosed with stunting, with 117 of them coming from project-affected villages.
Perception Community	• Based on interviews with village heads, several community complaints regarding the Sanggrahan landfill were identified. The main issue raised is the unpleasant odour that arises during the transport process to the landfill. • Rubbish spillages occasionally cause traffic accidents, as stated by the Head of the Ministry of Health. Gentan Village. • The community felt positive impacts, such as the creation of job opportunities as scavengers at the Sanggrahan landfill.

Impacts and Risks: Pre-Construction Phase

Project Activity

Component/Risk Mitigation

Plan

Stakeholder Socialisation

Increased Concern Community	• Conduct baseline survey (identify community expectations and concerns) • Review community grievances related to project activities • Setting up a grievance redress mechanism (GRM)

Impacts and Risks: Construction Phase

Project Activity

Component/Risk Mitigation Plan

Construction of Temporary Waste Disposal Site - Waste Disposal Handling During Construction

Surface Water Pollution	• Conduct monthly monitoring of surface water quality • Evaluating leachate treatment plants. • Installation of geosynthetic linings in temporary disposal sites and leachate collection systems to prevent flow into water bodies.
Groundwater Pollution	• Conduct a baseline survey of groundwater quality. • Installation of geosynthetic linings at temporary disposal sites and leachate collection systems to prevent infiltration into groundwater.
Surface Water Pollution	• Conduct socialisation • Conduct gender and social inclusion-based socio-economic impact assessments • Develop a livelihood restoration plan especially for women waste pickers and the elderly • Ensure compensation mechanisms

Impacts and Risks: Construction Phase

Project Activity

Component/Risk Mitigation Plan

Construction of Temporary Waste Disposal Site - Waste Disposal Handling During Construction

Land Transport Disruption	• Conduct a traffic impact assessment • Implement a traffic management plan

Construction of Access Road, Land Preparation, Basecamp and Workshop, Mobilisation of Equipment and Materials, and Temporary Disposal Sites

Increase in Accidents in Community	• Create a high security fence around the landfill to prevent illegal access. • Install warning signs and traffic signals around the landfill area • Periodically monitor air and water quality Conduct socialisation and education to surrounding communities about the dangers of landfill, especially for children. • Effectively manage the drainage system to prevent leakage of liquid waste into neighbouring areas.

Impacts and Risks: Operation Phase

Operation of TPST and TPA

Eye disorders
Scavenger's livelihood

- Develop and implement livelihood restoration programmes
- Provide alternative employment opportunities

Project Activity

Component/Risk Mitigation

Plan

Grievance Redress Mechanism



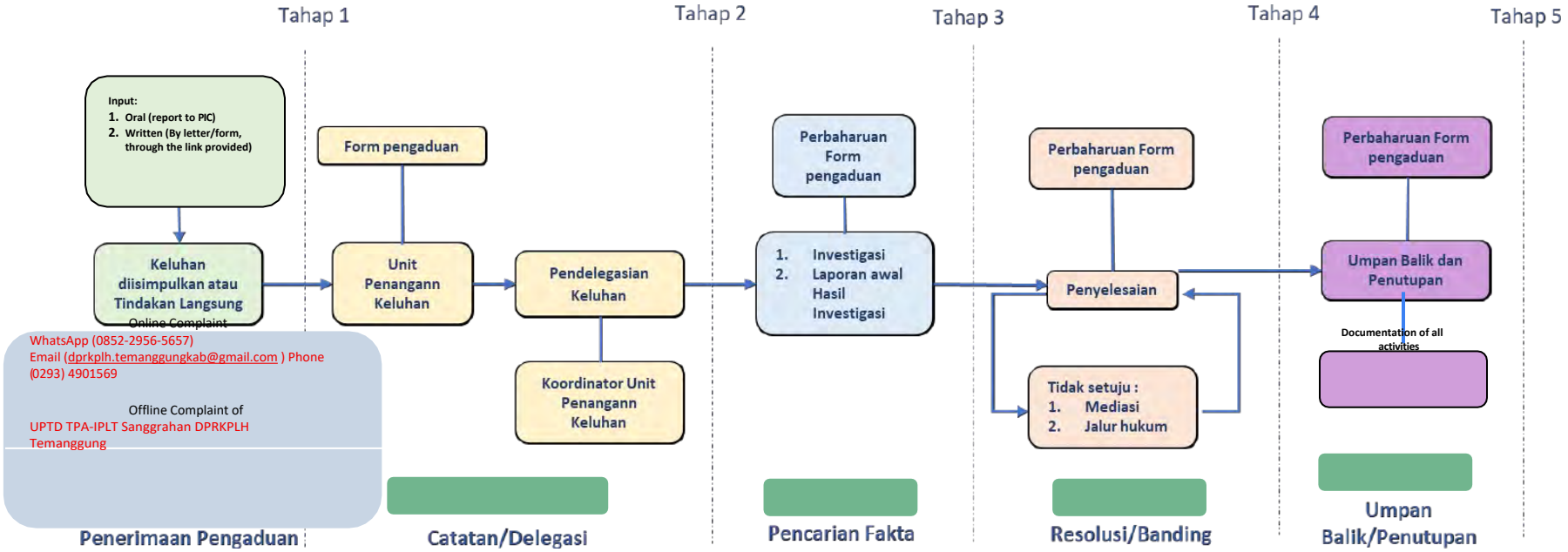
GRIEVANCE MECHANISM

"The Grievance Redress Mechanism (GRM) describes the process of the pathway set up for affected people to raise complaints or lodge grievances against the project, staff, or contractors"

PURPOSE

- Provide easy and simple media to report and submit all inputs, complaints, and grievances related to project activities.
- Ensure that responses and resolutions will be made in a manner that is appropriate and acceptable to all
- Ensure that the person making the complaint is satisfied with the outcome of the resolution.
- Avoid final resolution through litigation or pre-trial proceedings.
- Ensure that the needs of the most vulnerable communities in the project, such as the elderly, women, and children, are also considered in the grievance procedure.

FLOW OF GRIEVANCE MECHANISM



Discussion and Feedback Session

Discussion and feedback session

1. Are there still impacts & risks that have not been identified?
2. Is the proposed mitigation of impacts and risks sufficient?
3. How to strengthen the synergy of various stakeholders to effectively and optimally reduce the impacts & risks identified
4. Is the proposed grievance flow and mechanism adequate?

Discussion and feedback session

Key topics or questions	Institution	Enter
Are there still impacts & risks that have not been identified?	Bappenas	[note on feedback provided]
	Ministry of Health	[note on feedback provided]
	Ministry of Home Affairs	[note on feedback provided]
	BPPW Central Java	[note on feedback provided]
	Representatives of various OPDs of Temanggung Local Government	[note on feedback provided]
	Kranggan Sub-District Head	[note on feedback provided]
	Representatives of affected villages	[note on feedback provided]
	INISNU Temanggung	[note on feedback provided]
	Other parties/institutions [specify name]	[note on feedback provided]

Discussion and feedback session

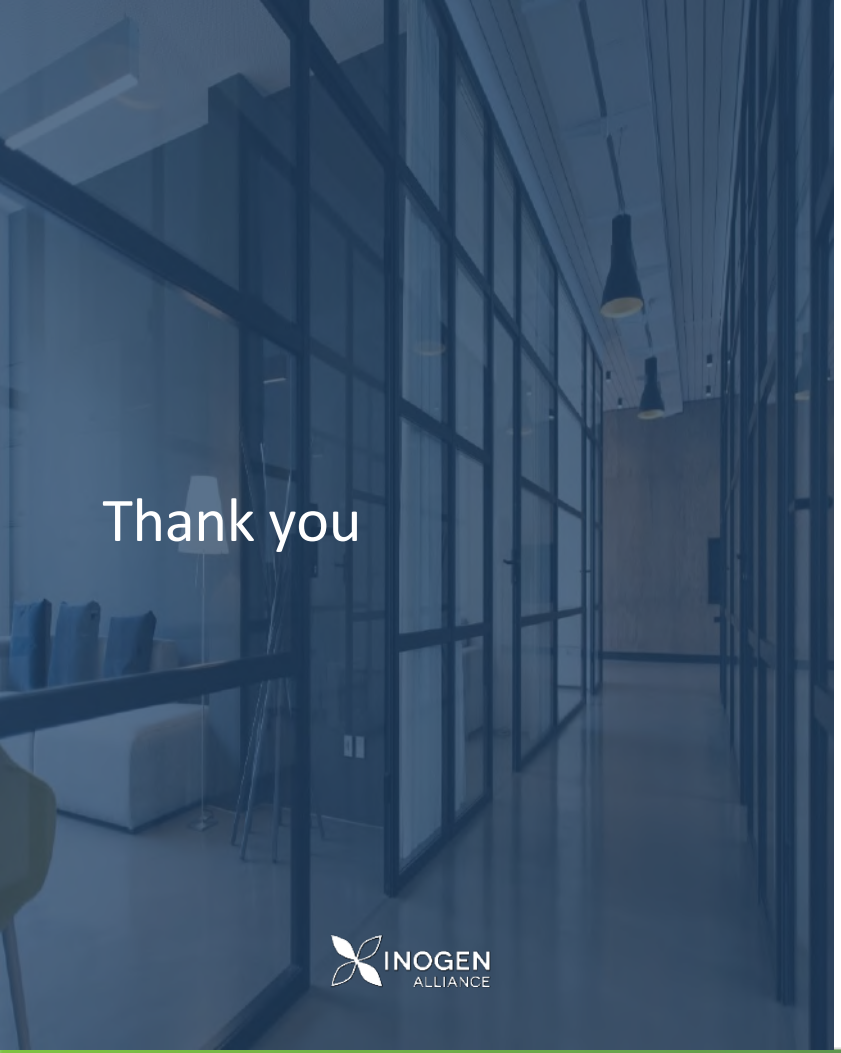
Key topics or questions	Institution	Enter
Is the proposed mitigation of impacts and risks sufficient?	Bappenas	[note on feedback provided]
	Ministry of Health	[note on feedback provided]
	Ministry of Home Affairs	[note on feedback provided]
	BPPW Central Java	[note on feedback provided]
	Representatives of various OPDs of Temanggung Local Government	[note on feedback provided]
	Kranggan Sub-District Head	[note on feedback provided]
	Representatives of affected villages	[note on feedback provided]
	INISNU Temanggung	[note on feedback provided]
	Other parties/institutions [specify name]	[note on feedback provided]

Discussion and feedback session

Key topics or questions	Institution	Enter
How to strengthen the synergy of various stakeholders to effectively and optimally reduce the impacts & risks identified	Bappenas	[note on feedback provided]
	Ministry of Health	[note on feedback provided]
	Ministry of Home Affairs	[note on feedback provided]
	BPPW Central Java	[note on feedback provided]
	Representatives of various OPDs of Temanggung Local Government	[note on feedback provided]
	Kranggan Sub-District Head	[note on feedback provided]
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	Other parties/institutions [specify name]	[note on feedback provided]

Discussion and feedback session

Key topics or questions	Institution	Enter
Is the proposed grievance flow and mechanism adequate?	Bappenas	[note on feedback provided]
	Ministry of Health	[note on feedback provided]
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	BPPW Central Java	[note on feedback provided]
	Representatives of various OPDs of Temanggung Local Government	[note on feedback provided]
	Kranggan Sub-District Head	[note on feedback provided]
	Representatives of affected villages	[note on feedback provided]
	INISNU Temanggung	[note on feedback provided]
	Other parties/institutions [specify name]	[note on feedback provided]



Thank you

INOGEN ALLIANCE

ESC

Offline Public Disclosure

Minutes of *Public Disclosure* Activities

Temanggung District *Draft Safeguards* Document for *Solid Waste Management for Sustainable Urban Development* (SWM-SUD) Activities

Events	:	Public Disclosure of Temanggung District *Draft Safeguards* Document for *Solid Waste Management for Sustainable Urban Development* (SWM-) Activities SUD)			
Date	:	10 June 2025	**Time**	:	10.00 - 11.45 AM
Facilitator	:	ESC	**Location**	:	Sanggrahan landfill

Participants
1. Appendix 1 (*offline*): Scavengers, Land cultivators, Directly and indirectly affected communities, Community leaders, Vulnerable groups, Government level officials Sub-district-Village, and Local Government 2. Annex 2 (*online):* AIIB, AEPW, and Consultants

Agenda
1. Presentation of the *draft* ESMPF Document 2. Presentation of *draft* ESIA Document

No.	Topic	Description
1	Project Background	The project aims to improve the integrated waste management system in the district with the following scope of activities: • Closure and restoration of existing landfill sites • Improved transport system and expanded waste collection service coverage • Strengthening local government institutional capacity in solid waste management • Technical and managerial support for the implementation of infrastructure sub-projects.
2	Project Plan	The activity plan is divided into three main stages: • Pre-construction: Has started since 2023, including the preparation of technical documents and environmental and social studies. • Construction: Planned to last 16 months. • Operational: Will run for 18 months after completion of construction, including the initial monitoring phase. **Social Impact**: The project has direct impacts on 2 villages and indirect impacts on 2 other villages. In addition, the project's transport route crosses a number of public facilities such as schools, markets, places of worship, sub-district/district offices and settlements, thus the need for attention to potential traffic and safety disruptions.
3	Handling Mechanism Complaint	- The public can submit complaints or feedback verbally or in writing, in accordance with the channel procurement that is already available.

No.	Topic	Description
		Local governments and project implementers are obliged to systematically record each grievance and compile a list of grievances. follow-up handling in an open manner. This process includes verification, investigation, delivery of response to the complainant, and documentation of handling results.

No.	Feedback	Response
1	**DPRKPLH Temanggung District** 1. Solid waste services in Temanggung district have covered 220 out of 289 villages (76%). in 2024. 2. Currently, land preparation for the temporary landfill has begun in zone 5. 3. Land preparation used for residual sludge land will be carried out in 2026 which will also be located in zone 5. 4. The land is expected to be operational for 8-10 years. 5. The construction of the Sanggrahan landfill and TPST will follow the following applicable regulations, where it is 15 metres from the boundary River.	Recorded as additional information
2	**Head of Sanggrahan Village** 1. The community expects that The Sanggrahan Landfill and TPST project can reduce the odour problem. 2. The community proposes road improvements and additional lighting to the site. 3. Access to community waterways is expected to be uninterrupted. 4. Complaints related to leachate leakage into the river in Madusari Hamlet need to be followed up, considering that the river is used for the water supply. toilet purposes. 5. The local community, especially the residents of Sanggrahan Village, expected to be prioritised for employment opportunities within the project.	**DPRKPLH Temanggung** 1. Road access to Sanggrahan landfill will soon be repaired in accordance with the Regent's commitment that has been conveyed at the Ministry of PUPR 2. Affected communities will prioritised in workforce recruitment, tailored to their respective competencies. 3. TPST Sanggrahan will absorb 80-100 workers. 4. The issues of water access and leachate leakage will be of particular interest in technical planning and environmental control. **Ministry of Public Works** 1. The existing landfill will be covered using geomembrane to prevent infiltration of rainwater 2. TPST operations will involve waste pickers to sort the waste. waste, where residues that are not

No.	Feedback	Response
		can be sorted will be processed through the machine into RDF (*Refuse-Derived Fuel)*. 3. Closure with geomembrane is also expected to reduce fly populations around the landfill and settlements.
3	**Pendowo Village Head** 1. There are many scavengers who come from both Sanggrahan and Pendowo villages. dangling eyes their livelihood from sorting waste at the landfill. Sanggrahan. 2. Income from scavenging is a source of their main source of livelihood. 3. The hope that the construction of TPST will not only solve environmental problems, but also does not create new social problems for the waste pickers. 4. Hope that there will be special attention to the sustainability of waste pickers' livelihoods.	**DPRKPLH Temanggung** 1. Qualified scavengers will be prioritised to work at TPST Sanggrahan. 2. If the scavenger is unable to work directly, then a family member (child or close relative) who meets the criteria will prioritised to fill available positions.

Signature of the Event fteglatan Public Disclosure

Drafi of Temanggung District *Safeguards* Document for *Solid Waste Management for Sustalnable Urban* Development (SWM-SUD) Activities

Representative of BPPW Central Java

Daniel Diaz Mundez

Kepalá DPRKPLH Temanggung

Prasodjo S.Ag, M.M

Sub-district Head of Kranggan

H ran Santoso, SJP, M.Si

Perwakilan Periiulung

AB6P§

Kepala Desa Songgrahan

uhari

Land Cultivator

Letter

Sunarno

Scanned with CamScanner

Attachment

Appendix 1 - Documentation of Offline Activities

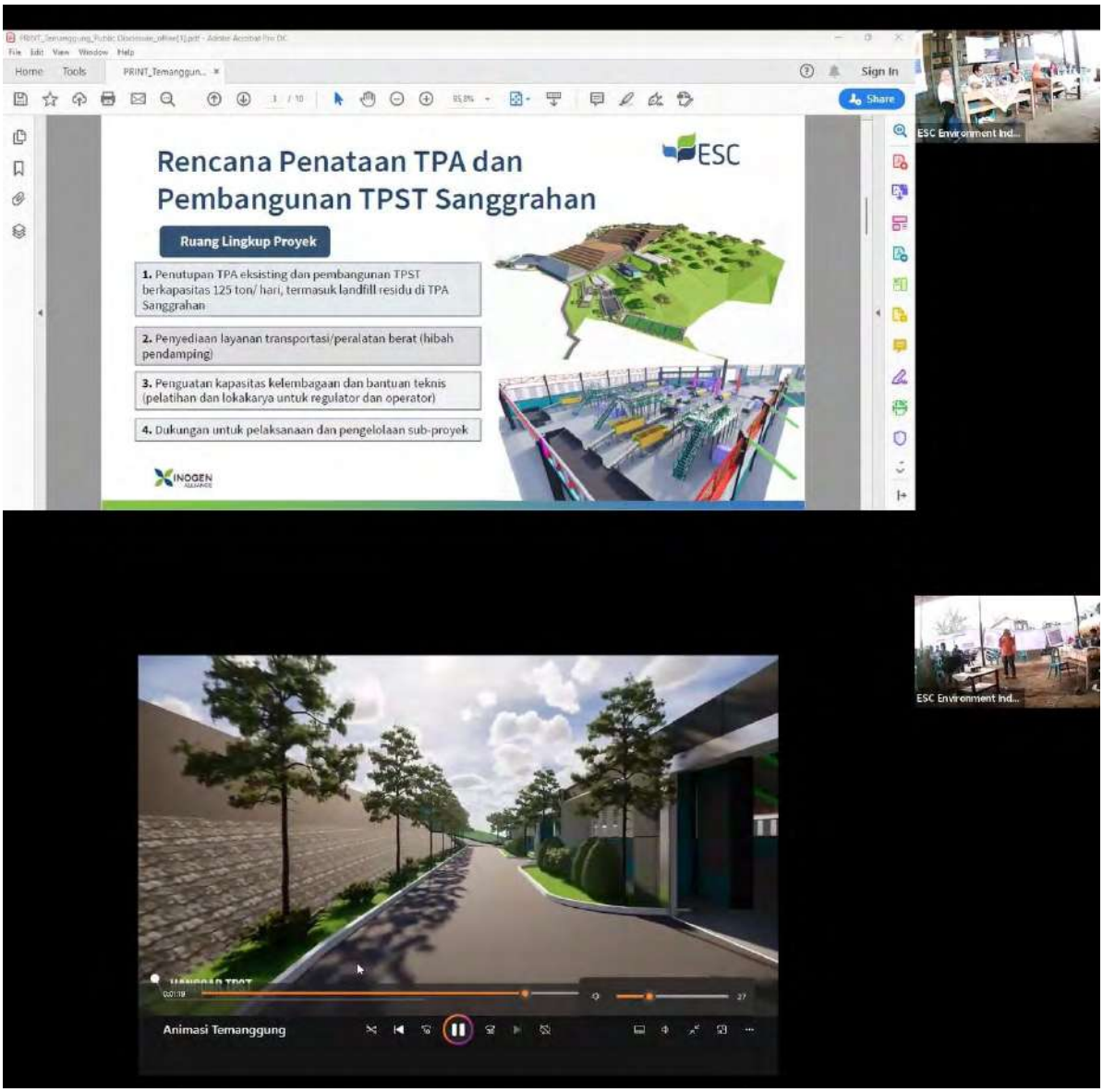








Appendix 2 - Zoom Documentation (online)



Appendix 3 - Attendance List

ATTENDANCE LIST

Public Disclosure of Draft ESMPF and ESIA Documents in Solid Waste Management for Sustainable Urbå0 Development Activity

Date: Tuesday, 10 June 2025 Time
: 09.00 - finish
IempQt : Sanggrahan Landfill
ACBF$: Publjc Disclosure

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
1.	Nabila Fathonah	ESC - jakarta			P	
2.	MUNDAKIR		Sop penga		L	
3.	GIYARTO	DPRKPLH	Sopir pung	ggrdS6y6o	L	
4.	MARKUN	pemulung	LFMR		L	
5.	IMBUH	TPA / pemulung	pe		L	
6.	MARKLIAT	TPA	pemulung		L	
7.	ISPADI.	TPA	pemulung		L	
8.	NURYATI	TPA	pemulung		P	
9.	RUWANI	TPA	pemulung		P	
10.	WINARTI.	TPA.	pemulung		P	

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
11.	DAHYONO		pemulung		L	
12.	MUDIYONO	DPRKPLH	Sopir truk			
13.	mardiyah		PPSKO / Pemulung			
14.	Gimun	Desa Losari	Tokoh masarakat		Ora	
15.	Supoyo	Desa Losari	Tokoh Agama		Ora	
16.	paiji	Desa Klepon.	kasun			
17.	Mariyati	Dea Gentan	kaqus		Pmpt	
18.	Herman S.	kec. Kranggan	Plt Camat		L	
19.	Jauhari	Sanggrahan	Kepala Desa		L	
20.	TURKAMAN	Petrowo	KADES		L	
21.	Mariyati	Gentan	Kadus		P	
22.	Wahyudi	Losari Sanggrahan	kadus		L	
23.	Parihem	Losari. Sanggrahan	lansia		P	
24.	Hamadi	Tencandang, Kendowo	Pemilik lahan		L	
25.	Sardi	Losari. Sanggrahan	Tokoh masyarakat		L	

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
26.	Ahmad Alimron	Jakarta	ESC	0895366439260	L	
27.	Mery P	Jakarta	ESC	085258077998	P	
28.	Sabar	RT Losari	~~BK~~ Tokoh		L	
29.	Sumarno	Tegalombo	pemilik lahan.	081338123649	L	
30.	Anie	Lpp ty	DPRKPLH		P	
31.	WIRAWAN	TEMANGGUNG	DPRKPLH	085740359284	L	
32.	Aditya Pageacha	Temanggung	PPRKPLH	0895178087358	L	
33.	Ms. Ubm	TEMANGGUNG	BPRKPLH	085282194545	L	
34.	Rysia H	Dit sanitasi PU		082299298685	P	
35.	Danzel LP	BPPW Jateng				
36.	Tourilatun	Temanggung	DPRKPLH		P	
37.	Emi	Losari	TPA	085602257093	P	
38.	Mukin			082325[illegible]9606	L	
39.	Paryoto	Losari	TPA		L	
40.	Iwan	Tegalombo	TPA		L	

No	Nama	Alamat	Posisi (Kelompok Masyarakat/Organisasi)	No. Hp	Jenis Kelamin (L/P)	Tanda Tangan
41.	Febi	TPA			L	
42.	wahyudi	Cobang, Sriwung			L	
43.	Agus P	Temandang	TPA		L	
44.	Mirza	Temanggung	DPRKPLH		L	
45.	BRIOA	Temanggung	DPRKPLH		P	
46.	Rohmat S	Semarang	BPBPK Jateng		L	
47.	Fadiaditya A.S	Semarang	BPBPK Jateng		L	
48.						
49.						
50.						
51.						
52						
53						
54						
55						

Appendix 4 - Material Exposure Materials

EnviroSolutions & Consulting

Solutions for Environment| Safety| Sustainability

Public Disclosure

SWM-SUD activities

Temanggung Regency

Prepared for Public Disclosure

Monday, 9 June 2025

www.envirosc.com www.simplyehs.com|

INOGEN ALLIANCE



Landfill Arrangement Plan and Sanggrahan TPST Construction

Backgrou nd.

The Asian Infrastructure Bank (AIIB) provided a loan to the Government of Indonesia to fund the SWM-SUD project

AIIB, **AEPW,** and **the Ministry of Public Works and Housing are** cooperating in funding this project. AEPW will provide additional funding support on a concessional basis to strengthen the institutional capacity of waste management at both the national and local levels.

Project Objectiv es

Improving waste management infrastructure in selected cities and districts in Indonesia.

- Located in Losari Hamlet, Sanggrahan Village, Kranggan Kec.
- Sanggrahan landfill has a total area of 6 hectares.
- TPST Sanggrahan is planned to have a waste processing capacity of 125 tonnes/day.

Year 2023	Service Area	Total	Percentage	
			2023	Target (2046)
Village	140	366	38.25%	80%
Population (people)	494,759	811,347	60.98%	
Managed Waste Generation (tonnes/day)	239.4	405.674	59%	74%

Landfill Arrangement Plan and Sanggrahan TPST Construction

Project Scope

1. Closure of the existing landfill and construction of a TPST with a capacity of 125 tonnes/day, including a residual landfill at Sanggrahan Landfill

2. Provision of transport services/heavy equipment (matching grant)

3. Institutional capacity building and technical assistance (training and workshops for regulators and operators)

4. Support for sub-project implementation and management





Currently: Paddy fields (acquired in 2024)

Upcoming: Will be used for TPST facilities

Currently: STP and green space

Upcoming: Will be used for STP facilities, workshop, and residue landfill.

In the construction phase, it is used for temporary landfill and scavenger stalls



Currently: Scavenger Stalls (67 Scavengers at present)

Upcoming: Will be used for rest area

Currently: Used as landfill

Upcoming: Keep landfill but reorganised

Activity Schedule Plan

Pre-construction

Starting in 2023

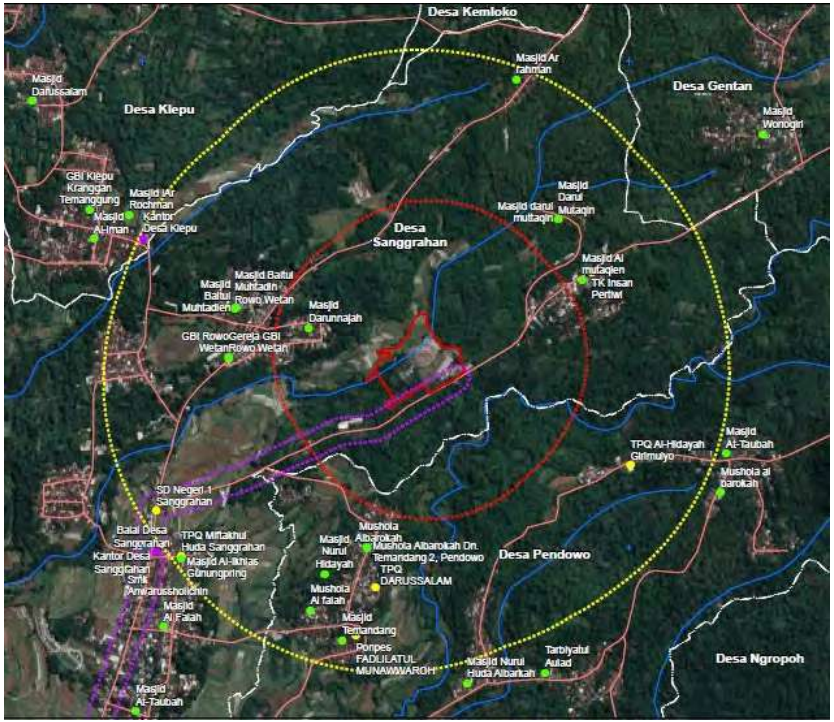
Construction

About 16 months

Operational

Around 18 months

Affected Area



Landfill Area

Directly Affected Area (<500 metres)

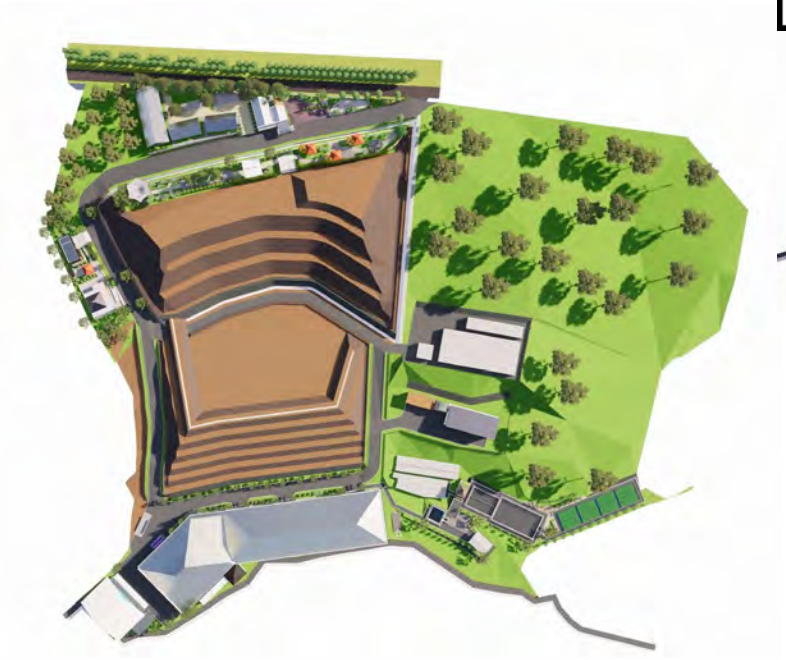
Indirectly Affected Area (500 - 1000 metres)

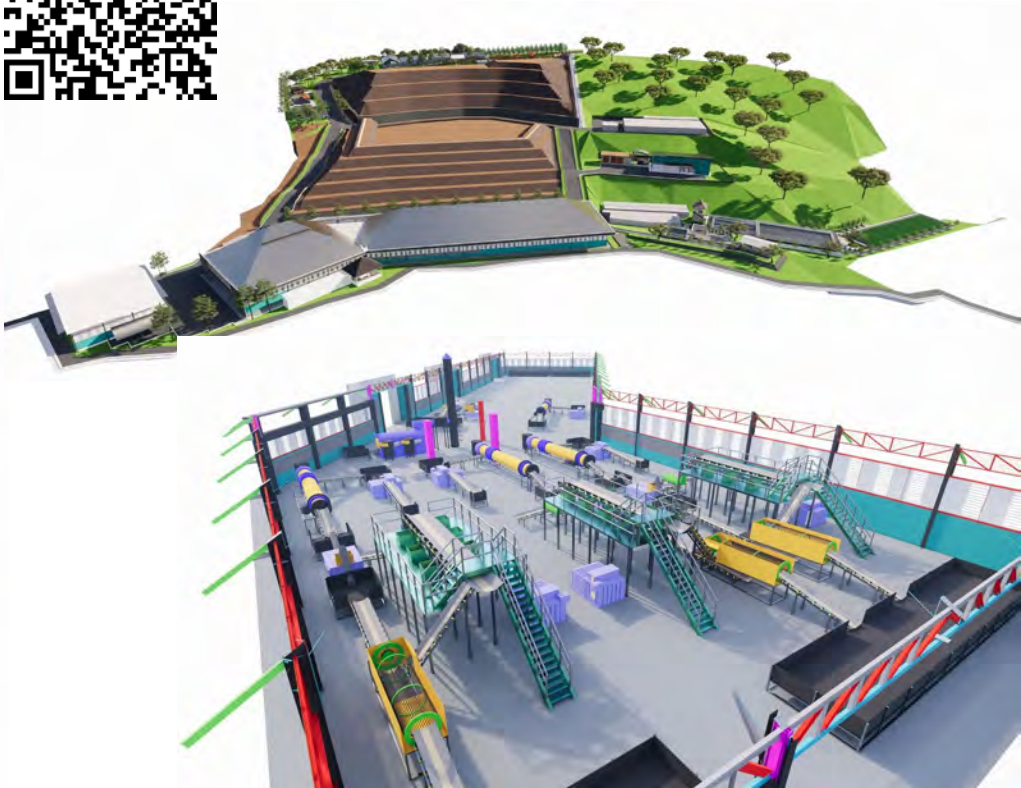
Transport Access

Directly affected village
Sanggrahan Village
Pendowo Village
Indirectly Affected Village
Klepu Village
Gentan Village

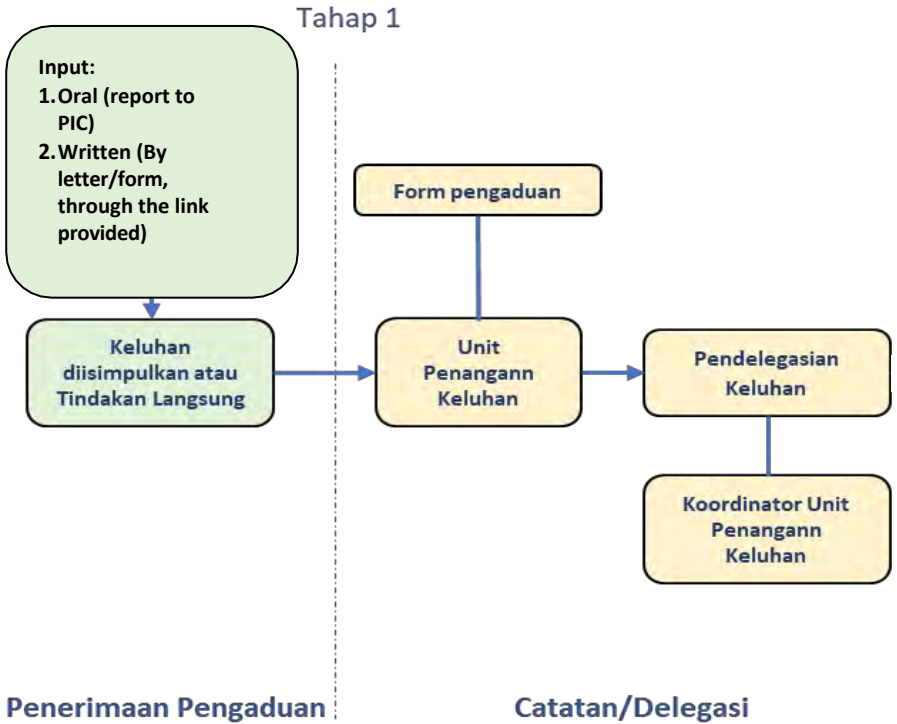
Project Video Link

https://nlink.at/TPST_Temanggung or





FLOW OF GRIEVANCE MECHANISM



Total estimated complaint handling time: 25 days

Online Complaint

WhatsApp (0852-2956-5657)
Email (dprkplh.temanggungkab@gmail.com)
Phone (0293) 4901569

Offline Complaints

UPTD TPA-IPLT Sanggrahan DPRKPLH Temanggung

Risk Impact and Mitigation

AIR

Surface Water Pollution (During Construction)

- Groundwater quality survey
- Installation of geosynthetic layers in TPS and WWTPs

Groundwater Pollution (During Construction)

- Monthly monitoring
- Evaluate the WWTP
- Installation of geosynthetic layers in TPS and WWTPs

ACCIDENT/INCIDENT

Incidental Increase (during construction)

- Creating a security fence
- Installing warning signs and traffic signals including traffic regulation
- Monitor air and water quality regularly
- Conduct socialisation on the dangers of landfill
- Effectively manage drainage/water systems to prevent leakage of liquid waste into the surrounding area.



WWTP



Layer(Geosynthetic) www.envirosc.com

Risk Impact and Mitigation

COMPLAINTS

Increase in Complaints (pre-construction)

- Conduct a survey
- Reviewing community complaints related to the project
- Setting up a mechanism complaint handling

RETURNER

Relocation of stalls and work sites (during construction)

- Conduct socialisation
- Conduct social surveys
- Provide a job recovery plan
- Compensation mechanism

Job Interruption (during operation)

- Conduct a job recovery plan/programme
- Provide alternative employment opportunities

TRANSPORTATION

Transport Disruption (during construction)

- Conduct a traffic impact assessment
- Implement a traffic management plan