

# Environmental and Social Impact Assessment

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## Uzbekistan: Kungrad 1 Wind Power BESS Project

### PART 2

Prepared by ACWA Power and ECO Consult for the Asian Development Bank (ADB).

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## 6. STAKEHOLDER CONSULTATION AND ENGAGEMENT

This section discusses in detail the stakeholder consultation and engagement plans which were undertaken as part of the ESIA process for the Project and provides an overview of the findings. In addition, this section also discusses the future stakeholder consultation and engagement plans which are to take place at a later stage of the ESIA process as well the Project development.

### 6.1 Objectives

Stakeholder engagement is an integral part of ESIA good practice. The Developer is committed to a technically and culturally-appropriate approach to consultation and engagement with all stakeholders affected either directly or indirectly by the Project. The consultation program for the Project is based on informed consultation and participation in line with good international practice requirements with affected people, and is designed to be both fair and inclusive. Consultation activities have been an ongoing process since the commencement of the ESIA study in December 2022.

Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively.

Stakeholders may include: (i) locally affected communities or individuals and their formal and informal representatives, (ii) national or local government authorities, politicians, religious leaders, civil society organizations and groups with special interests, (iii) the academic community, or other businesses.

The objective of stakeholder consultation is to ensure that a participatory approach takes place, which in turn documents concerns of all stakeholder groups and makes sure that such concerns are considered, responded to, and incorporated into the decision-making process of the development. Stakeholder consultation needs to be a two-way communication process that imparts information to stakeholders, but also obtains additional and on-the-ground information from them. Stakeholder consultation and engagement must take place at the inception phase of the ESIA process and implemented all through the study period.

The specific objectives of this chapter are to:

- Describe and identify the stakeholders affected and/or with an interest in the Project;
- Summarize stakeholder engagement and consultation conducted to date. In addition, describe how the views and issues raised have informed and influenced the development of the Project; and
- Outline the future plans and approach to stakeholder engagement.

### 6.2 Stakeholder Identification and Analysis

The purpose of stakeholder identification is to identify and prioritize Project stakeholders for consultation. Stakeholder identification is an ongoing process, and thus key stakeholders will be identified during different stages of the Project. A systematic approach is used to map the stakeholders based on the Project zone of impacts. In this approach, by mapping the zone of social impacts, stakeholders are identified by the impact area.

As a result of the stakeholder mapping, Project stakeholders are categorized into the following main categories:

1. People and groups who will be directly or indirectly affected by the Project (such as local communities);
2. People and groups who may participate in the implementation of the Project (such as investors and lenders);
3. People and groups who are not affected by the Project development per se may but have a possibility to influence and make decisions on implementation of the Project (such as Ministries or regulatory agencies).

The main groups of stakeholders identified so far are listed in the table below. The list can be updated and modified in the course of the Project development and as a result of cooperation of the parties.

**Table 14: Identified Groups of Stakeholders**

Stakeholder Group	Description	Relevance
<b>Stakeholders who may be directly or indirectly affected by the Project</b>		
Local communities which as identified in “Section 2.2” earlier includes:	<ul style="list-style-type: none"> <li>▪ Kirkkiz town;</li> <li>▪ Elobod town;</li> <li>▪ Jasliq town; and</li> <li>▪ Kungrad City Center.</li> </ul>	<p>This includes the following groups within the local communities in specific:</p> <ul style="list-style-type: none"> <li>▪ <u>Community Members</u>: local community members have a vested interest in the Project due to mainly potential for job opportunities. In addition, local community members could be impacted by other potential negative impacts (e.g. worker influx, noise &amp; shadow flicker, etc.). Such impacts are discussed and identified within the ESIA.</li> <li>▪ <u>Community Leaders</u>: They are socially active members and known figureheads for local community members, who may or may not hold government positions.</li> <li>▪ <u>Business Community (local subcontractors)</u>: such groups have a vested interest in the Project due to mainly potential for procurement opportunities such as subcontracting works (e.g. civil works, provision of food and amenities, etc.).</li> </ul>
<b>Stakeholders who may Participate in Implementation of the Project</b>		
Investor / lender	Entities that will provide financing for the Project development.	They have interest in ensuring that the Project is developed and implemented in accordance with their E&S requirements and standards and will monitor the compliance of the Project against such requirements.
<b>Stakeholders who may have a possibility to influence and make decisions on implementation of the project and/or may have an interest in the Project</b>		
<b>Government Ministries</b>		
Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Karakalpakstan	Local government body mandated to implement state laws on environment protection and management and the use of natural resources within Karakalpakstan.	For this Project, this will include review and approval of ESIA, issuance of environmental permit, monitoring implementation of Environmental and Social Management Plan (ESMP) and compliance with other conditions, as applicable.

Ministry of Water Resources of Karakalpakstan	Local government body mandated to protect and manage water resources within Karakalpakstan.	For this Project, this will include ensuring water requirements of the Project do not impact and affect existing water resources.
Ministry of Health of Karakalpakstan	Official governmental entity responsible for setting health policies and legislations as well as ensuring protection of the public within Karakalpakstan.	Has a vested interest in ensuring that community health and safety is maintained for local communities in accordance with public health laws and regulations.
Ministry of Transport of Karakalpakstan	Responsible for the provision and maintenance of transport infrastructure including road networks used to transport personnel and equipment to the Project Area.	For this Project they are to ensure that transportation requirements of the project (WTG in particular) are undertaken properly and in accordance with relevant legislations.
Ministry of Labor of Karakalpakstan	Official governmental entity responsible for setting labor policies and legislations as well as ensuring protection of labor rights and working conditions.	Has a vested interest in ensuring that labor rights and proper working condition are maintained for the Project in accordance with labor laws and regulations.
Ministry of Culture and Tourism of Karakalpakstan	The ministry is the entity responsible for the preservation and protection of archeology and cultural heritage, under which operates all inspector offices within various regions.	Such entity must be notified in case of chance finds related to archeology and cultural heritage for implementation of specific requirements.
Civil Aviation Administration	Official governmental entity responsible for civil aviation management and responsible for issuing permits for projects with specific height requirements.	A permit prior to construction is to be obtained for turbines to ensure civil aviation infrastructure and operations are maintained.
Uzbekistan Air and Air Defense Forces	Official governmental entity responsible for military aviation management and responsible for issuing permits for projects with specific height requirements.	A permit prior to construction is to be obtained for turbines to ensure military aviation infrastructure and operations are maintained.
The Ministry for Development of Information Technologies and Communication	Responsible for overall regulation and administration of the telecommunication, TV and radio sector including interface with telecommunication operators and their infrastructure elements such as broadcasting towers.	Given that Project could impact such infrastructure elements (i.e. through line of sight connections of broadcasting towers), approvals might be required.
State Committee on Geology and Mineral Resources of the Republic of Uzbekistan	Official governmental body responsible for overall land use planning related to geology exploration, oil and gas exploration activities and other.	Given that Project area is located within an oil and gas exploration concessions, coordination and approvals are required from this entity in particular.
Department of Chamber of State Cadasters for the Republic of Karakalpakstan	Official governmental body responsible for overall land use planning and allocations within Karakalpakstan.	Ensuring that Project boundary does not overlap or conflict with any existing or planned governmental land uses within the area.

JSC National Electric Grid of Uzbekistan	Entity responsible for electricity transmission development projects in the country.	Off-taker and entity that signed the Power Purchase Agreement (PPA) with Company. They will also be responsible for operating the OHTL once constructed.
Youth Union of the Republic of Karakalpakstan	This is a government agency that works on programs and social issues for youth within Karakalpakstan.	Their specific focus is expected to be the potential for inclusion and engagement of young people to become part of the workforce as well as other overall development process of the project.
Family and Women's Committee of the Republic of Karakalpakstan	This is a government entity that works on programs and social issues for women within Karakalpakstan.	Their specific focus is expected to be the potential for inclusion of and engagement of women groups within the workforce as well as other overall development process of the project.
Committee for Development of Sericulture and Wool Industry	Governmental Committee established 2 years ago to oversee and manage all pasture lands across Uzbekistan.	Could be relevant in case there are grazing activities within the Project site.
<b>Regional and Local Government Ministries and District Authorities</b>		
Supreme Council / Parliament of the Republic of Karakalpakstan	Acts as the legislative body representing the interests of the population.	Specific interest areas are expected to include obtaining overall Project updates as well as ensuring benefits to local communities through procurement and employment opportunities as well as social responsibility programs.
Kungrad District Khokimiyat	Responsible for acting on behalf of its citizens for the sustainable development of the District.	Specific focus areas are expected to be grievance management, land-related impacts, local employment opportunities, and community development benefits implemented by the Developer.
Kirkkiz, Elobod, Jasliq and Kungrad Mahalla	Representing the interests of its residents.	Their specific focus is likely to include grievance management, local employment opportunities, and community development benefits implemented by the Developer.
<b>NGOs</b>		
Birdlife International	International partnership for nature conservation. BLI use bird science and collect and analyze data from around the world to implement the most effective and innovative conservation measures possible. BLI are the official scientific source of information on birds for the IUCN Red List.	Their specific focus is likely to include the potential impacts on biodiversity during construction and operation including in particular protection of birds from collisions with wind turbine blades as well as the associated OHTL.
Uzbekistan Society for the Protection of Birds	National organization involved in the protection of nature within the Project Area and wider region. <u><i>This society is the local partner for Birdlife International in Uzbekistan.</i></u>	Their specific focus is likely to include the potential impacts on biodiversity during construction and operation including in particular protection of birds from collisions with wind turbine blades.
IUCN SSC Bustard Specialist Group	NGO that works to increase communication and collaboration among bustard researchers and conservation actors, develop and communicate best practices for their	Might have relevant data as applicable relate to bustards within the Project area and/or Uzbekistan in general. In addition, they could have concerns about the Project (notably the associated OHTL).

	conservation, and raise awareness and concern for bustards.	
Karakalpak Republican State Committee for Disabled People	This is the only NGO for Disabled People in Karakalpakstan	Their specific focus is expected to be the potential for disabled people to become part of the workforce as well as other overall development process of the project.
Karakalpak branch of the Republican Social Information Center for youth “Istikbolli avlod” NGO	This is an active NGO for youth in Karakalpakstan	Their specific focus is expected to be the potential for inclusion and engagement of young people to become part of the workforce as well as other overall development processes of the Project.
<b>Other</b>		
Ustyurt Gas (Branch of Uzbekneftegas JSK)	Uzbekneftegas is the official governmental entity responsible for drilling and extraction of gas. Ustyurt Gas is the entity responsible for the Ustyurt area (under which the Project is located).	Ensuring that Project activities do not impact any of their infrastructure and utility elements within the area.
UrgenchtransGaz	This is an entity that is part of Uzbekneftegas and responsible for operation of all gas pipelines across all Uzbekistan.	Ensuring that Project activities do not impact any of their infrastructure and utility elements within the area.
Ustyurt Exploration Drilling Organization	This is an entity that is part of Uzbekneftegas and responsible for gas exploration within the Ustyurt region.	Ensuring that Project activities do not impact any of their infrastructure and utility elements within the area.
Gasprom International Limited	This is a private entity company working in Ustyurt in Gas extractions.	Ensuring that Project activities do not impact any of their infrastructure and utility elements within the area.
Saneg, IP LLC Industrial Energy Group	This is a private entity company working in Ustyurt in gas extractions.	Ensuring that Project activities do not impact any of their infrastructure and utility elements within the area.
Falcon Hunting Solutions	This is the entity managing Houbara Bustard hunting activities for Arab royal families within the Ustyurt plateau.	Such hunting activities and their locations can conflict with the proposed wind farm project location.
International Fund for Houbara Conservation in Abu Dhabi (OAE) / Emirates Bird Breeding Center for Conservation (EBCC)	This entity is managing re-introduction efforts for this species in Uzbekistan.	Such release and reintroduction efforts and their locations can conflict with the proposed wind farm project location.
<b>Academic and Research Institutions</b>		
National University of Karakalpakstan	This is the national university of Karakalpakstan.	Could have potential interest to partner with Project to provide graduates within renewable energy sector, biodiversity, etc.
RES group of the Karakalpak branch	Branch under the Academy of science with specific focus on environmental protection and management.	Potential interest to obtain information and updates on potential impacts of the Project on key E&S attributes to

of the Academy of Sciences		include biodiversity, birds, bats, archeology and cultural heritage, environment and other.
Karakalpak Research Institute for the Human Science under Academy of Science	Branch under the Academy of science with specific focus on archeology and cultural heritage.	
National Institute of Zoology under Academy of Science	Branch under the Academy of science with specific focus on biodiversity.	

### 6.2.1 Vulnerable Groups

A key stakeholder group to which particular attention must be considered during identification are vulnerable groups. Those are groups that due to their socio-economic characteristics may experience impacts more severely and/or disproportionately compared to the rest of the of the community members.

Vulnerable groups are project specific and depend on a range of issues which must be understood such as project location, socio-economic and demographic context, as well as the nature of the development and type of impacts anticipated. Vulnerable groups may be severely affected by the Project by virtue of their physical disability, social or economic standing, and limited education, lack of employment or access to land. The key vulnerable groups within the context of the Project and their relevance are summarized in the table below.

**Table 15: List of Vulnerable Groups and Their Relevance**

Group	Relevance	
Women groups	Could be considered vulnerable as cultural norms could limit their participation in the decision-making process in general that is related to the Project.	Women representatives were engaged as part of the scoping process as discussed under “Section 6.3.2”.
		Women representative will be engaged as part of the disclosure process as discussed in further details in “Section 6.4.1”.
		Stakeholder engagement strategy and plan within the Stakeholder Engagement Plan (SEP) will target women groups. Refer to “Section 6.4.3”.
Disabled groups	Could be considered vulnerable groups mainly due to physical disability which could limit their access to information on the Project as well as participation in the decision-making process in general that is related to the Project.	Representatives of disabled groups were engaged as part of the scoping process as discussed under “Section 6.3.2”.
		Representatives of disabled groups will be engaged as part of the disclosure process as discussed in further details in “Section 6.4.1”. Practical logistical support will be provided to assist disabled participants or their representatives to enable them to attend the disclosure process.
		Stakeholder engagement strategy and plan within the Stakeholder Engagement Plan (SEP) will target disabled group representatives. Refer to “Section 6.4.3”. SEP will emphasize on venue accessibility as applicable.
Ethnic Minorities	Are defined as groups within a community which has different national or cultural traditions from the main population which could include language, religion, tribe, nationality, race or a combination thereof. Such groups are considered vulnerable as they could have difficulties in accessing social protection	

	<p>benefits as well as social development opportunities (e.g. employment) usually as a result of discrimination, economic and social disadvantage and other.</p> <p>Uzbeks make up the vast majority of the country’s population (86.2%), with other communities such Tajiks, Kazakhs, Russians, Karakalpak, and Tatars making up the remaining 16.2%. Approximately 85% of the population is native Uzbek speakers, and the language is recognized as the sole official language. In addition, Russian is widely used in governmental and interethnic communication. Tajik, Kazakh, Tatar, and Kyrgyz are only some of the various ethnic languages spoken there. The majority of the population (about 88%) is Muslim, with the vast majority identifying as Sunni. There are 9% Eastern Orthodox Christians and 3% adherents to other faiths in the country.</p> <ul style="list-style-type: none"> <li>▪ <u>Karakalpak</u> are a Turkic ethnic group who live mostly in Karakalpakstan. They bring a distinct cultural identity, including their own language, to Uzbekistan’s already varied population. Karakalpak are not the only people who call the Sovereign Republic of Karakalpakstan home; various other ethnic groups also call it their home. Despite being the majority ethnic group in Uzbekistan, Uzbeks are a sizable minority in Karakalpakstan, largely residing in cities.</li> <li>▪ <u>Kazakhs</u> are a sizable minority among Uzbeks. They have deep cultural and historical ties to Kazakhstan, with whom they share a same language and bordering provinces like Tashkent and Surkhandarya.</li> <li>▪ <u>Russians</u> are the largest Slavic ethnic group in Uzbekistan and have been present the longest. Tashkent, the country’s capital and a major center of Russian influence, is home to a sizable population of Russian speakers.</li> <li>▪ <u>Tajiks</u> represent Uzbekistan’s second largest ethnic group. They are predominantly located around the borders, particularly in the provinces of Surkhandarya and Samarkand. The Tajik people have their own unique language and customs.</li> <li>▪ <u>Kyrgyz</u> people in Uzbekistan are primarily concentrated in areas bordering Kyrgyzstan, such as the Fergana Valley. They have maintained their Kyrgyz cultural identity and language. Kyrgyz in Uzbekistan engage in various economic activities, including agriculture, livestock breeding, and handicrafts.</li> </ul> <p>As noted in “Section 6.3.2” and later in “Section 17.1” the majority of the community ethnic composition is Uzbek, Karakalpak and Kazakh. There are other ethnic compositions that represent less than 1% that include Russian, Tajik, and Kyrgyz. However, all of these groups are part of the community since the Soviet Union era and are well integrated into the society and are not subject to any discrimination or economic/social disadvantage. As such these will not be considered as vulnerable groups.</p>	
<p>People living in poverty / underprivileged communities</p>	<p>Could be considered vulnerable as their status could limit their access to information on the Project as well as participation in the decision-making process in general that is related to the Project.</p>	<p>It was ensured that all consultation and engagement activities undertaken as part of the scoping process as discussed under “Section 6.3.2” entailed stakeholder materials free of charge (e.g. venue, handouts, etc.). Similarly, the stakeholder engagement strategy within the Stakeholder Engagement Plan (SEP) will emphasize such a requirement as well.</p>
<p>The Aged</p>	<p>Could be considered vulnerable by limitations of access to participate in the Project related community decision-making process.</p>	<p>Practical logistical support will be provided to assist aged participants or their representatives to enable them to attend the disclosure process as discussed in further details in “Section 6.4.1”.</p> <p>Stakeholder engagement strategy and plan within the Stakeholder Engagement Plan (SEP) will target the elder representatives. Refer to “Section 6.4.3”.</p>
<p>The Youth</p>	<p>Could be considered vulnerable due to their young adult, unmarried, non-asset owning status, yet likely to be savvy in 21<sup>st</sup> century technology</p>	<p>Youth representatives were engaged as part of the scoping process as discussed under “Section 6.3.2”.</p> <p>Youth representatives will be engaged as part of the disclosure process as discussed in further details in “Section 6.4.1”.</p>



	than their elders, but may be unable to contribute in Project related community decision-making process, which will affect their generation more than most.	Stakeholder engagement strategy and plan within the Stakeholder Engagement Plan (SEP) will target youth groups. Refer to “Section 6.4.3”.
Language	Specific groups within local communities might have difference languages. This could limit their access to information on the Project as well as participation in the decision-making process in general that is related to the Project.	All consultation and engagement activities undertaken as part of the ESIA or to be identified within the SEP (including materials and presentations) were/are undertaken in accordance with the key languages of the local communities (i.e. Karakalpak, Uzbek and Russian as applicable).

### 6.2.2 *Indigenous Populations*

As discussed in further details in “Section 9 “, there are no key land use activities undertaken onsite by any specific local community group. In addition, based on outcomes of FGD with local communities the ethnic composition was as follows:

- All local communities are mainly Karakalpak, Uzbek, and Kazakh. There are other populations within the ethnic composition in these villages which represent less than 1% of the population and which include Russians, Tajiks, or Kyrgyz.

The IFC Performance Standard (PS) 7 identifies the term “Indigenous Peoples” to refer to a distinct social and cultural group possessing the following characteristics in varying degrees:

- Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
- Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
- Customary cultural, economic, social, or political institutions that are separate from those of the mainstream society or culture; or
- A distinct language or dialect, often different from the official language or languages of the country or region in which they reside.

Taking the above, there are no indigenous populations within the Project area or local communities that meet the definition of the criteria above and therefore this is considered irrelevant.

## 6.3 Stakeholder Consultation and Engagement to Date

### 6.3.1 *Targeted Consultations*

Targeted consultations were undertaken with various stakeholder groups as highlighted below. During such targeted consultations, a handout was provided in advance in local language (mainly in Karakalpak language) which provides information on Project, its location, components, ESIA process, key impacts, and other.

- National governmental entities;

- Regional governmental entities;
- Non-Governmental Organizations (NGOs);
- Gas Exploration Entities; and
- Academic and research institutions.

**Table 16: Overall Summary of Targeted Consultations**

Entity	Date	Key Outcomes
<b>National Governmental Entities in Uzbekistan &amp; Regional Governmental Entities in Karakalpakstan</b>		
Supreme Council / Parliament of the Republic of Karakalpakstan  <b>Meeting with Deputy Chairman of the Supreme Council</b>	18 May 2023	<ul style="list-style-type: none"> <li>▪ All support will be provided that is required for the Project given its significance to the country, including facilitating any works required for the ESIA process.</li> <li>▪ It is crucial to provide employment opportunities for the local communities during the construction and operation phase. In addition, the Project is also expected to improve and increase demands on service-related activities within the area which could include food and beverage, transportation, accommodation, translation, etc.</li> <li>▪ Developer is expected to maintain continuous communication and engagement at an early stage with central governments and local stakeholders (including local Khokimiyat and Mahallas) and provide information on the Project, progress, construction schedule, plans, etc.</li> <li>▪ Khokimiyat and Mahallas can share information to local communities through their appropriate local channels.</li> <li>▪ It is important to keep Mahallas informed of any job and procurement opportunities and announcements as they will help with announcements of such opportunities.</li> <li>▪ The Project should consider risks associated with its remote location including ensuring availability of amenities such as water, gas, and transportation for workers.</li> <li>▪ Project should coordinate with ongoing geological exploration work in Ustyurt territory.</li> <li>▪ Project should consider providing local communities with discarded material which could be of value such as vehicles, furniture, equipment, and other – this includes discarded material during the construction process, or anything used throughout the 25 years of operation of the Project. This was a lesson learned from another project in Kungrad District where after completion of construction all equipment were burned and/or discarded as trash when it would have been beneficial to provide to local community organizations to be used by the local communities.</li> <li>▪ There is a private airport near Lake Sudochye and it should be considered in the construction of high-rise facilities such as WTGs.</li> <li>▪ No studies on water resources have been done for a long time in Karakalpakstan. The issue of water is considered important in general for Uzbekistan and more so for Karakalpakstan. If the Developer will be undertaking any water studies that investigates water resources, they should be provided.</li> <li>▪ The OHTL should take into account existing electricity infrastructures so that it is optimized as there are a number of existing power lines located in parallel to the path of the planned one.</li> </ul>

<p>Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Karakalpakstan / Forestry Committee</p>	<p>31 May 2023</p>	<ul style="list-style-type: none"> <li>▪ Methodology undertaken for the ESIA, and for ecological assessments in specific are considered sufficient. There are no additional requirements or issues of concern to be considered.</li> <li>▪ The Project can contribute to conservation of area habitats in collaboration with biologists and scientists and the improvement of the surrounding area to promote the growth and development of the ecosystem.</li> <li>▪ Note: as noted in “Section 9” later, small part of the Project site is designated for the Forestry Committee. During the consultation, it was confirmed that they have no current or planned activities within this area in specific. They also indicated that they have no objection and no further issues of concern.</li> </ul>
<p>Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Karakalpakstan / Department of Biodiversity Conservation, Digitization and Cadaster</p>	<p>31 May 2023</p>	<ul style="list-style-type: none"> <li>▪ There are some legal environmental requirements which should be followed in order to obtain the environmental permit / clearance for the Project.</li> <li>▪ In accordance with Paragraph 5 of the Resolution 541 of the Cabinet of Ministers of the Republic of Uzbekistan dated September 7, 2020 for the “Procedure of State Environmental Expertise”, it is required to undertake an EIA study for the Project.</li> <li>▪ Annex 1 of the Resolution classifies any electricity generation project that exceeds 300MW as Class 1 which requires an EIA study submitted to the central Ministry of Ecology, Environmental Protection and Climate Change in Tashkent to obtain a permit.</li> </ul>
<p>Ministry of Ecology, Environmental Protection and Climate Change / Hydrometeorological Center of Karakalpak Republic</p>	<p>26 May 2023</p>	<ul style="list-style-type: none"> <li>▪ Project site is considered a good location for a wind power project as the area has stronger winds.</li> <li>▪ Project area is subject to extreme temperatures, with hot summers and cold winters. Therefore, the climate of the region must be taken into account when constructing and operating the Project.</li> </ul>
<p>Ministry of Ecology, Environment Protection and Climate change Republic of Karakalpakstan</p>	<p>15 June 2023</p>	<ul style="list-style-type: none"> <li>▪ With regards to the OHTL the following should be considered:             <ul style="list-style-type: none"> <li>- Assessment should focus on the following baseline and impacts: biodiversity (flora, mammals, reptiles), avifauna, air quality, noise, soil and socio-economics (related to livelihood restorations of farmers).</li> <li>- The OHTL should avoid the National Nature Park “South Ustyurt” and the state order reserves “Barsakelmes”.</li> <li>- Project should avoid, or, if this is not possible, minimize, mitigate or compensate for adverse environmental or social impacts and problems for workers, affected communities and individuals, as well as the environment resulting from the activities of the project, including livelihood restorations.</li> <li>- Project should implement a systematic approach to stakeholder engagement to build and maintain constructive relationships with stakeholders, especially with directly affected communities.</li> <li>- Project should align with national requirements for the assessment of environmental and social impacts.</li> <li>- According to the resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 541 of September 7, 2020, a public hearing should be organized to</li> </ul> </li> </ul>

		<p>discuss the planned object among the public and an electronic application should be made to the state environmental examination center of the Ministry of Ecology, Environmental Protection and climate change of the Republic of Uzbekistan.</p>
<p>State Committee of the Republic of Uzbekistan for Ecology and Environment Protection</p>	<p>28 Dec 2022</p>	<ul style="list-style-type: none"> <li>▪ Location of southern Ustyurt National Park location is provided. An excerpt from the Regulations of the “Southern Ustyurt” National Nature Park on the restrictions and prohibitions established in the area regarding the conduct of economic activities (including the construction of wind power stations) is provided.</li> <li>▪ The State Ecological Committee in cooperation with GIZ (German cooperation organization) and the Zukov Foundation prepared and submitted the relevant documents for the candidacy of “Southern Ustyurt” National Nature Park to be included in the list of UNESCO World Heritage Sites. Currently, the application is being reviewed by UNESCO. In the National Nature Park and its adjacent areas, the types of economic activities that have a negative impact on the natural complexes, including flora and fauna should be limited.</li> <li>▪ The Park and surrounding areas are considered to be habitat for rare animals which are included in the Red Book of the Republic of Uzbekistan and the International Red List.</li> <li>▪ The borders of the Project area should be placed at a distance of at least 10 km from the borders of the “Southern Ustyurt” national nature park, because flying birds are observed to fly at low altitudes when approaching their stopover destinations on the main routes of flight. Planning the Project area should be in the meridian direction and not planning between the territories of “Southern Ustyurt” national nature park and “Borsakelmas” state order farm. The main migration routes of migratory birds during the flight pass through these areas. The deployment of wind power plants along the Project area from east to west puts their lives at risk during migration. However, it is recommended to get detailed conclusions of the Academy of Sciences of the Republic of Uzbekistan on the impacts of the Project on birds and habitats.</li> <li>▪ <i><u>Note: Please refer to “Section 4.1”. The above consultation was undertaken at an early stage of the Project development when there was a 4,600km<sup>2</sup> area provided by the Government from which the final Project boundary was to be selected. At that point, the entire 4,600km<sup>2</sup> area was provided to the Committee (not the final Project boundary as currently selected). As noted in section below, follow up discussions were undertaken to discuss the issue of the setback distance and it was agreed to reduce the setback distance in accordance with international best practice standards and requirements.</u></i></li> </ul>
<p>Department of Chamber of State Cadasters for the Republic of Karakalpakstan</p>	<p>18 May 2023</p>	<ul style="list-style-type: none"> <li>▪ Official land designation for the Project is provided. Note: the figure is provided in “Section 9” later.</li> <li>▪ Total area of the Project is 95,051.15 hectares that is under governmental ownership and allocated to the following entities: <ul style="list-style-type: none"> <li>- 47,063.01 hectares registered under State Reserve Land of Kungrad District Khokimiyat by the decision of the Council of Ministers of the Republic of Karakalpakstan 551-13-0-Q/22 dated 09.12.2022. This area is classified as “other lands not used in agriculture”.</li> <li>- 44,205.07 hectares that are registered under State Reserve Land of Khokimiyat of Kungrad District based on the decision of the Council of Ministers of the Republic No. 204-13-0-Q/21 of 16.12.2021. This area is classified as “agriculture reserve land” and sub-classified under this category as “type of other unused land.”</li> <li>- 3,782.94 hectares that are registered under the Kungrad State Forestry based on the decision No. 65-b dated 29.07.2016. This area is classified as “not used for agriculture and belongs to the type of other lands”.</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>Process for land allocation will entail the transfer of these lands to the district reserve fund and they will be given a new classification (e.g. industrial or infrastructure project) after which they will be transferred to the Ministry of Energy.</li> <li>South of the Project site there is an allocated area of 0.03 hectares to “Kungrad Main Gas networks” on 07.12.2020 through decision no. 4769/12. This land has been allocated for the construction of gas networks, taps and electricity transmission infrastructure.</li> <li>From this area a gas pipeline runs within the Project area that also includes an overhead transmission line.</li> </ul>
	15 June 2023	<ul style="list-style-type: none"> <li>Obtain information on land ownership (government, private, etc.) for the OHTL</li> <li>Obtain information on number of farmers and farmlands within which the OHTL passes</li> </ul>
Ministry of Culture and Tourism of Karakalpakstan	26 May 2023	<ul style="list-style-type: none"> <li>No secondary data is available on archeology and cultural heritage sites within the Project boundary.</li> <li>Methodology and scope of work to be undertaken for archeology and cultural heritage assessment is sufficient – in particular the site survey. Specialists could be engaged from the local archaeology department, national university, or archeology department if required.</li> <li>No additional issues of concern or additional requirements to be considered at this stage.</li> </ul>
Ministry of Culture and Tourism of Karakalpakstan / Department of Cultural Heritage of Karakalpakstan Republic	26 May 2023	<ul style="list-style-type: none"> <li>The area in general was studied 35-40 years ago but no new studies were conducted.</li> <li>The Project site should be investigated by archeologists.</li> <li>Methodology and scope of work to be undertaken for archeology and cultural heritage assessment is sufficient. If required, the organization can assist in further research by providing specialists.</li> <li>Apart from the above, no additional issues of concern or additional requirement to be considered at this stage.</li> </ul>
Ministry of Culture and Tourism of Uzbekistan / Agency of Cultural Heritage	15 Dec 2022	<ul style="list-style-type: none"> <li>There are no objects of cultural heritage on the Project site.</li> </ul>
Ministry of Water Resources of Karakalpakstan / Kungrad Water Supply Department	18 May 2023	<ul style="list-style-type: none"> <li>The key water supply pipeline runs near Highway A380 (which runs near Kirkkiz village). The pipeline has a diameter of 1000 mm and a length of 307 km was constructed for Kungrad District.</li> <li>Entity will be able to supply water requirements of the Project but details on water quantities are required for construction and operation to verify this.</li> <li>Should the Project require constructing a pipeline for water supply it will require pumping stations for pressure requirements and a separate line should be constructed so that the main pipeline for Kungrad District is not affected in any way.</li> <li>In general, source of water supply in Kungrad District is the Amu Darya River. This is supported by pipelines and pumps. On average, 300 million cubic meters of water is allocated per year from the river. The water resources within the river depend on the water levels in the Amu Darya basin.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Additional consultations were undertaken to obtain key data and information on water supply and water demand in Karakalpakstan in general and Kungrad District in specific. However, such information has not been provided to date.</li> </ul>
Ministry of Health of Karakalpakstan	17 May 2023	<ul style="list-style-type: none"> <li>▪ Before the decommissioning of the Project, a disposal/utilization plan for the turbines should be available.</li> <li>▪ Apart from the above, all Project related impacts were identified and considered by ESIA Consultant. No additional requirements or issues of concern are to be considered.</li> </ul>
Ministry of Health of Karakalpakstan / Republican Sanitary Epidemiological Service	17 May 2023	<ul style="list-style-type: none"> <li>▪ Given that the closest residential area is more than 100KM away, there are no issues of concern and Project will meet all legislative requirements related to:                         <ul style="list-style-type: none"> <li>- Protection of atmospheric air in residential areas of the Republic of Uzbekistan under “Sanitary hygiene standards No. 0350-17 for Protection of Ambient Air”.</li> <li>- Sanitary rules, norms and hygiene regulations No. 0236-07 for ensuring the safety of residents living near high-voltage power transmission networks.</li> <li>- Sanitary rules, norms and hygiene regulations No. 0008-20 on permissible noise level in residential areas, public buildings, residential areas and recreation zones.</li> </ul> </li> <li>▪ Given the remote location it is expected that worker housing will be established. Therefore, Project should create comfortable conditions for workers that should include sleeping rooms, dining rooms, rest rooms, washrooms, toilets, and laundry services.</li> <li>▪ Additional legal requirements that Project should consider include:                         <ul style="list-style-type: none"> <li>- SanQvaM No. 0294-11 “Hygienic norms for the permissible amount of harmful substances in the air of the working area”</li> <li>- SanQvaM No. 0325-16 “Sanitary norms on the permissible noise level in workplaces”</li> <li>- SanQvaM No. 0326-16 “Sanitary norms of general and local vibrations in workplaces”</li> <li>- SanQvaM No. 0269-09 “Sanitary rules and norms for working with sources of electromagnetic fields of radio frequencies”</li> </ul> </li> <li>▪ With regards to the OHTL, it must meet the “Sanitary rules, norms and hygiene regulations No. 0236-07 for ensuring the safety of residents living near high-voltage power transmission networks” which requires the following:                         <ul style="list-style-type: none"> <li>- Clause 2.2 specifies the permissible amount of electric field voltage for power transmission networks generating a voltage of up to 500 kV, according to which the electric field voltage is 0.5 kV/m in residential buildings and structures, and 1.0 kV/m in residential areas, 10 kV/m in places where power lines cross highways in uninhabited areas,</li> <li>- Clause 2.3 specifies that the magnetic field voltage for power transmission networks generating voltage up to 500 kV should not be higher than 80 A/m (100 μTI) in residential areas.</li> <li>- A sanitary-protection zone of 30 meters on both sides of the network in the direction of power transmission networks generating a voltage of up to 500 kV will be sufficient to ensure that the above limits are met.</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>▪ With regards to the OHTL, the following should be considered:                             <ul style="list-style-type: none"> <li>- The Project design must implement the appropriate fire safety measures which includes using fire-resistant materials, adequate separation distances, proper grounding and lightning protection systems. This will minimize the risk of fire incidents and ensure protection against the spread of fires</li> <li>- Measures to protect wildlife from potential risks associated with OHTLs should also be considered. This can include the use of bird diverters, marking lines to increase visibility, and avoiding installation in areas with high wildlife activity or migratory routes. Regular monitoring and assessment of the impact on wildlife should be conducted.</li> <li>- Measures must be implemented that ensure mitigation against soil erosion, preventing water pollution, and management of waste generated during construction and maintenance phases.</li> </ul> </li> </ul>
Ministry of Labor of Karakalpakstan	19 May 2023	<ul style="list-style-type: none"> <li>▪ All Project related impacts were identified and considered by ESIA Consultant.</li> <li>▪ Only addition issues to be considered include: (i) transportation modes should be ensured for workers given the remote area of the Project; and (ii) consider providing professional training for communities to be involved in job opportunities.</li> </ul>
Ministry of Transport of Karakalpakstan / Kungrad District Road Use Unitary Enterprise	19 May 2023	<ul style="list-style-type: none"> <li>▪ An analysis of the transport route should be carried out and a detailed plan should be developed that should take into account the load carrying capacity of the highways.</li> <li>▪ Depending on final route key issues should be identified and considered. For example, if the highway from Kazakhstan is used there are current sections on the main A380 Highway that are under repair.</li> <li>▪ There should be accountability in the case the transport company affects/impacts any roads. reinstatement plans should be in place.</li> <li>▪ Project will require intensive transportation requirements for the WTGs that will include heavy loads. It is recommended that Developer coordinate with the Logistics Center under the Road Use Unitary Enterprise to arrange for the logistics of the transportation requirements.</li> <li>▪ Developer should consider as part of their social responsibility program providing road upgrades.</li> <li>▪ Note: data was requested on key and major highways in Karakalpakstan (e.g. to include AM/PM traffic counts, existing conditions, etc.) but it was indicated that such information is not available.</li> </ul>
Ministry of Emergency Situations of the Republic of Uzbekistan	1 Feb 2023	<ul style="list-style-type: none"> <li>▪ Project site has a dry climate.</li> <li>▪ There are no settlement areas on the Project site.</li> <li>▪ According to records, there has not been any emergency situation within the Project area or within nearby areas up to date. However, strong sand and salt-storms, as well as sand-salt mixed winds are very likely to occur there.</li> <li>▪ Based on the above, a range of measures should be taken to prevent emergency situations that can occur on the Project site as a result of strong storms.</li> <li>▪ Construction of buildings on the Project site should follow national requirements to include: SHNK 2.01.02-04, 4.02.13-04, 2.01.01-22, KMK 2.03.11-96, PEU.</li> </ul>

<p>State Committee on geology and Mineral Resources of the Republic of Uzbekistan</p>	<p>17 Jan 2023</p>	<ul style="list-style-type: none"> <li>▪ There are important investments in hydrocarbon resources within the area.</li> <li>▪ It is recommended that the boundary area coordinates provided is considered for the Project as no geological surveys will not be carried out within this boundary for the next 30 years. The coordinates have been provided and this issue has been discussed in “Section 14”.</li> </ul>
<p>Kungrad District Khokimiyat / Deputy Hokim for Construction and Ecology</p>	<p>17 May 2023</p>	<ul style="list-style-type: none"> <li>▪ The closest villages to the Project site are considered to be Kirkkiz and Elobod.</li> <li>▪ The most appropriate and effective way for sharing any Project related information (including potential for job and procurement opportunities as applicable) with local communities is through the Mahalla Community Unions.</li> <li>▪ Job and procurement opportunities should also be announced through the Khokimiyat.</li> <li>▪ There are current contracts with particular organizations within the Ustyurt area for underground resources utilization. This includes Gazprom, Uzbekneftegas, and Jizzakh Petroleum. In addition, there are also mining projects currently within the Ustyurt area as well. These entities should be consulted to ensure there is no conflict.</li> <li>▪ Apart from the above there are no key formal land uses within the area and its surrounding.</li> <li>▪ All Project related impacts were identified and considered by ESIA Consultant.</li> <li>▪ Key impacts are believed to be those related to ecology from construction and operation activities and impacts on work health and safety. Another key risk is related to traffic and transport. The A380 highway capacity should be taken into account for the transportation of the WTG components since it is the main road that is used by many users and trucks including gas companies and it also connects with Kazakhstan.</li> <li>▪ No additional requirements or issues of concern are to be considered.</li> <li>▪ Note: as noted in “Section 9” later, most of the Project site is designated for the Kungrad District Khokimiyat. During the consultations it was confirmed that they have no current or planned activities within this area in specific. They also indicated that they have no objection and no further issues of concern.</li> </ul>
<p>Committee for Development of Sericulture and Wool Industry</p>	<p>1 May 2023</p>	<ul style="list-style-type: none"> <li>▪ There are no grazing activities in the area.</li> <li>▪ The area does not belong to the Committee.</li> <li>▪ There is a gas pipeline within the Project site.</li> <li>▪ There are no additional requirements or issues of concern to be considered.</li> <li>▪ Within the area there is a gas pipeline that should be investigated with relevant authorities.</li> </ul>
<p>Youth Union of the Republic of Karakalpakstan</p>	<p>30 May 2023</p>	<ul style="list-style-type: none"> <li>▪ Youth should receive training for skilled jobs and professions that are required at the wind farm.</li> <li>▪ The most appropriate way to ensure that youth receive Project related information (including potential for job opportunities as applicable) is through the following platforms:                         <ul style="list-style-type: none"> <li>- Social media channels</li> <li>- NGOs working with youth</li> </ul> </li> <li>▪ There are no additional requirements or issues of concern to be considered.</li> </ul>



Family and Women's Committee of the Republic of Karakalpakstan	24 May 2023	<ul style="list-style-type: none"> <li>▪ A significant number of women residing within the local communities surrounding the Project lack higher education, which makes them more inclined towards service-oriented jobs. However, for employment opportunities for women, it is crucial to consider the challenges of transportation to the Project site and ensure their safety in the area.</li> <li>▪ When providing work opportunities for women in the Project, it is important to consider their education level, social background, traditions, and safety measures. It is important to establish safe and comfortable working and commuting conditions for women.</li> <li>▪ The Project should implement procedures for developing skills and knowledge that specifically support local women.</li> <li>▪ The Family and Women's Committee of the Republic of Karakalpakstan has established branches in every Region and can be considered a key method for women groups in particular to receive Project related information (including potential for job opportunities as applicable).</li> <li>▪ The Khokimiyat is responsible for employing the unemployed and they can manage the process as well as announcement of job opportunities which can be shared through the Mahalla Community Union's Telegram Channels. In addition, they also maintain a list of unemployed individuals classified by various criteria, which can be utilized for recruitment purposes.</li> </ul>
Ministry for Development of Information Technologies and Communication	1 Aug 2023	<ul style="list-style-type: none"> <li>▪ Obtain information on telecommunication, TV and Radio broadcasting towers</li> <li>▪ Obtain any requirements on WTG project micro-siting</li> <li>▪ Obtain any other requirements that should be considered for Project</li> </ul>
Civil Aviation Administration	2 Aug 2023	<ul style="list-style-type: none"> <li>▪ Obtain any requirements on WTG project micro-siting</li> <li>▪ Obtain any other requirements that should be considered for Project</li> </ul>
Uzbekistan Air and Air Defense Forces	3 Aug 2023	<ul style="list-style-type: none"> <li>▪ Obtain any requirements on WTG project micro-siting</li> <li>▪ Obtain any other requirements that should be considered for Project</li> </ul>
State Unitary Enterprise / Ministry of Ecology, Environmental Protection and Climate Change under Republic of Uzbekistan	3 Aug 2023	<ul style="list-style-type: none"> <li>▪ Obtain information on: (i) closest municipal AND construction waste disposal facility to the Project site; (ii) wastewater facilities; and (iii) hazardous waste disposal facilities. Information was collected on location, current capacity, design capacity, whether it is operated according to international standards or not, and other.</li> <li>▪ Obtain any other requirements that should be considered for Project</li> </ul>
Regional Electricity Power Networks	15 June 2023	<ul style="list-style-type: none"> <li>▪ Key issue from an E&amp;S perspective for the OHTL is ensuring a protected area of 30 m from residential areas and population is respected to ensure no impacts on public health and safety.</li> <li>▪ No additional issues of concern or requirements were provided.</li> </ul>
<b>NGOs</b>		

<p>Uzbekistan Society for the Protection of Birds / Main Office Uzbekistan</p>	<p>26 Dec 2022</p>	<ul style="list-style-type: none"> <li>▪ The main threats to the animal species living in the proposed area for the wind farm are obstacles on the flight paths and the transformation of habitats as a result of construction.</li> <li>▪ The claimed wind farm area could prevent bird migration routes from the north and east and bird access to the coastal part of the nearby IBA.</li> <li>▪ The actual territory of the wind farm is located in the Karabaur ridge. This is a unique landscape area of the Ustyurt Plateau. It serves as a habitat for many reptiles, birds and mammals, including such rare and endemic species. This area needs to be preserved.</li> <li>▪ 60 km to the south of the wind farm is the national natural park “Southern Ustyurt”, and 15 km to the north is the Barsa-Kelmes sor, the territory of which is declared by the State Committee for Ecology of the Republic of Uzbekistan for the creation of a state reserve. Both of these protected areas are aimed at the conservation of animal species listed in the Red Book of the Republic of Uzbekistan.</li> <li>▪ Considering the comments about large-scale projects for the construction of wind farms in Uzbekistan, given in the bulletin of the CEE Bank Watch Network dated December 1, 2022, the location of the wind farm should be considered, since there will be an impact both on the unique natural landscapes and on the protected and key natural territories surrounding it.</li> <li>▪ <u>Note: Please refer to “Section 4.1”. The above consultation was undertaken at an early stage of the Project development when there was a 4,600km<sup>2</sup> area provided by the Government from which the final Project boundary was to be selected. At that point, the entire 4,600km<sup>2</sup> area was provided to the Society (not the final Project boundary as currently selected). In addition, follow up consultations were undertaken – please refer to section below.</u></li> </ul>
<p>Uzbekistan Society for the Protection of Birds / Karakalpakstan Branch</p>	<p>24 May 2023</p>	<ul style="list-style-type: none"> <li>▪ Methodology used for the biodiversity assessment for the ESIA (birds, habitats, bats, etc.) is based on international best practice.</li> <li>▪ The majority of the land is located on the Ustyurt Plateau, with a smaller portion situated in the floodplain of the Amu Darya River. The vegetation in the area is primarily desert and tugai, and the main hunting species include wolves, foxes, tolai hares, pheasants of the Khiva subspecies, and waterfowl. Although the farm does not have specially equipped places, it is still able to provide adequate conditions for hunting and fishing. Unfortunately, poaching is a prevalent issue in Ustyurt, with saigas and gazelles being the primary targets.</li> <li>▪ It is planned to release from 2,000 to 3,000 houbara bustards into the wild nature of the Republic of Karakalpakstan, a rare bird included in Appendix 1 of the CITES Convention. In 2022, a total of 2,910 yurt birds were released to the Kungrad district, the Ustyurt plain, Takhtakopir and Ellikkala districts, and the western part of the Kyzylkum desert. Before that, in 2019 – 1,002 species, in 2020 – 4,548 individuals, in 2021 – 2,028 individuals of birds were released into the wild nature of the territory of the Republic of Karakalpakstan. During 2019-2022, a total of 10,488 houbara bastards were released into the wild. But there is no accurate information about how many of them survived and how many birds are in nature today, the reason has not been fully studied to this day.</li> <li>▪ The birds were brought to the center of the International Fund for Houbara Conservation in Abu Dhabi (OAE) and brought to the framework of the partnership between State Ecology Committee and Falcon Hunting Solutions.</li> <li>▪ The above is mainly for hunting of the houbara that is undertaking in Uzbekistan by Arab state royalties.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ It is hard to find houbara bustards during hunting, despite the fact that more than 2,000 of them are released here every year.</li> <li>▪ It is necessary to build a nursery for breeding Houbara Bustard in the Ustyurt area.</li> <li>▪ To ensure the well-being of animals in the Project area, it is important to study their cycles. This includes understanding the nesting and migration periods of birds, as well as the nesting and reproduction periods of rodents and reptiles. Creating a corridor for migrating birds is necessary, and the migration patterns of other species should be considered as well.</li> <li>▪ Providing a suitable habitat for animals that nest in the Project area is also important, and consultation with botanists and zoologists can help in creating natural conditions for wild animals passing through the area.</li> <li>▪ It is also crucial to consider the source of feed for these animals when creating a healthy habitat.</li> <li>▪ If animals need to be relocated from the construction site, sound devices such as shiny papers or sounds can be used to scare them away without causing harm. During bird migration periods, the height of bird’s flight should be taken into account, as their flight patterns differ in spring and autumn.</li> <li>▪ It is important to prioritize the preservation of animals and birds that are endangered in the region, and guidelines should be developed to ensure their protection during the Project. If any objects are built in the habitats of these birds, the plants that they use for nesting should be propagated in another area.</li> </ul>
	<p>18 June 2023</p>	<ul style="list-style-type: none"> <li>▪ With regards to the OHTL: <ul style="list-style-type: none"> <li>- Provided requested information on biodiversity and avifauna in relation to Important Birds Areas (IBAs), Key Biodiversity Areas (KBAs) within the general OHTL route area as well as the Amu Darya River. Results are discussed further in “Section 23”</li> <li>- Provided information on future plans for IBAs and KBAs within the general route area. Results are discussed further in “Section 23”.</li> <li>- Stated that they are not aware of any particular special “hot spots” in relation to biodiversity and avifauna located within the OHTL route.</li> <li>- Required that appropriate biodiversity and avifauna mitigation measures be considered along the OHTL / on the pylons based on the outcomes of the assessment.</li> <li>- No additional issues of concern or requirements were provided.</li> </ul> </li> </ul>
<p>Karakalpak Republican State Committee for Disabled People</p>	<p>17 May 2023</p>	<ul style="list-style-type: none"> <li>▪ The Committee should be considered for sharing of any Project related information (including potential for job opportunities as applicable) to disabled people across Karakalpakstan. Channels and departments are available in 17 regions of the Republic that facilitate the sharing of information. Total number of members in the Republic is approximately 54,000.</li> <li>▪ Project should consider development projects for disabled people as part of their social responsibility programs.</li> <li>▪ Project should consider job opportunities for disabled people if possible</li> </ul>

Karakalpak branch of the Republican Social Information Center for youth “Istikbolli avlod” NGO	29 May 2023	<ul style="list-style-type: none"> <li>▪ The most appropriate way to ensure that youth receive project related information (including potential for job opportunities as applicable) is through the following platforms: <ul style="list-style-type: none"> <li>- Social media channels</li> <li>- Responsible government entities working with youth such as Youth Union (who was consulted earlier)</li> <li>- In some areas there are specific clubs for youth.</li> </ul> </li> <li>▪ Main entities working with youth include the Youth Union, Barkamol Avlod).</li> <li>▪ There are no additional requirements or issues of concern to be considered.</li> </ul>
<b>Gas Exploration Entities</b>		
Ustyurt Gas (Branch of Uzbekneftegas JSK)	5 June 2023	<ul style="list-style-type: none"> <li>▪ There are several gas investment blocks in the vicinity of the Project, owned by state organizations and joint ventures.</li> <li>▪ The Shakhpakhty field, discovered in 1964, could be located in the southeastern part of the Project site. Currently Gasprom has extraction rights for the field up until 2024 after which his can be extended or terminated.</li> <li>▪ For detailed information the State Committee for Geology must be contacted.</li> <li>▪ In addition, the Project area is crossed by a main gas pipeline with a diameter of 820mm. The pipeline extends from the Shakhpakhty field to Karakalpakiya with a total length of 235 km. The operator of the pipeline is UrgenchtransGaz which must be contacted (check below).</li> </ul>
UrgenchtransGaz	6 June 2023	<ul style="list-style-type: none"> <li>▪ The Shahpakhty-Karakalpakiya gas pipeline crosses the Project site and in particular points 6-7 and 28-29.</li> <li>▪ A 250m protection zone in each direction is required to be maintained as part of the Project design.</li> <li>▪ Inappropriate consideration of this could entail key and serious health and safety risks.</li> <li>▪ For additional detailed information official letter and request must be submitted.</li> </ul>
Ustyurt Exploration Drilling Organization	30 May 2023	<ul style="list-style-type: none"> <li>▪ There are no activities currently in the area nor any planned activities.</li> <li>▪ Closest planned activity areas are located away from the Project site.</li> <li>▪ There are no additional requirements or issues to be considered.</li> </ul>
Gasprom International Limited	5 June 2023	<ul style="list-style-type: none"> <li>▪ They do not have any current or planned activities in the Project area.</li> <li>▪ Based on their knowledge there could be an existing pipeline operated by UrgenchtransGaz which starts from their Shakhpakhty field.</li> <li>▪ No additional issues or requirements were raised.</li> </ul>
Saneg, IP LLC Industrial Energy Group	5 June 2023	<ul style="list-style-type: none"> <li>▪ Based on review of Project coordinates the closest drilling works are currently carried out in various areas to include Yuksalish, Western Aral and Ergazi but none within the Project site.</li> <li>▪ 2D Seismic works are planned in several investment blocks that include Sengir, Murun, Kassrmas but none are located within or even near the Project area.</li> <li>▪ There is a possibility that the Project site is located within the boundaries of “South Ustyurt” National Natural Park. This should be investigated further.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Environmental Impact Statement should be developed within the framework of the national laws and an environmental review should be carried out. In addition, it is necessary to coordinate the site work area with the district environmental inspectors.</li> <li>▪ When public hearings will be held, it is necessary to coordinate with the epidemiology department (which were consulted as noted earlier).</li> </ul>
<b>Academic and Research Institutions</b>		
National University of Karakalpakstan	19 May 2023	<ul style="list-style-type: none"> <li>▪ Support the Project and are willing to provide specialist for the studies to be undertaken as required.</li> <li>▪ Aware that both local and international specialists are being engaged in the surveys of the Project and required that they are informed about the results and outcomes.</li> <li>▪ An agreement can be signed between the University and the Developer to create master’s degree programs in areas that are relevant for the Project so that graduates can be utilized at a later stage. This could include:                         <ul style="list-style-type: none"> <li>- Masters in Ornithology, designed for students who have completed a bachelor’s degree in the field of biology.</li> <li>- Masters in engineering with focus on wind farms, intended for students who have completed a Bachelor’s degree in physics or engineering.</li> </ul> </li> </ul>
RES group of the Karakalpak branch of the Academy of Sciences of the Republic of Uzbekistan	31 May 2023	<ul style="list-style-type: none"> <li>▪ From archeological perspective there could be possible archaeological sites which include: the remains of ancient settlements, the ruins of the well-known so-called “Ustyurt Arrows” (the oldest devices for hunting antelopes), etc.</li> <li>▪ From biodiversity perspective the following should be considered                         <ul style="list-style-type: none"> <li>- It is necessary to take into account the influence of wind turbines on insects, which are the food base for many birds, rodents, reptiles and bats. These insects may not be endangered species, but it might significantly affect the animal feed base.</li> <li>- It is necessary to compile a review of methods and techniques for scaring away birds that could be applied in the operation of wind turbines in order to reduce the number of collisions of birds with the blades.</li> </ul> </li> <li>▪ From air quality perspective, it would be important to investigate the extent to which the level of dust in the surrounding land might increase as a result of the turbines.</li> <li>▪ In general, if all proper plans and procedures are carried out and implemented, the construction of this wind farm will be an efficient and important infrastructure project for the country.</li> </ul>
Academy of Sciences of Uzbekistan / Karakalpakstan Branch	18 June 2023	<ul style="list-style-type: none"> <li>▪ Provided requested information on biodiversity and avifauna in relation to Important Birds Areas (IBAs), Key Biodiversity Areas (KBAs) within the general OHTL route area as well as the Amu Darya River. Results are discussed further in “Section 23”.</li> <li>▪ Provided information on future plans for IBAs and KBAs within the general OHTL route area. Results are discussed further in “Section 23”.</li> <li>▪ Required that appropriate biodiversity and avifauna mitigation measures be considered along the OHTL / on the pylons based on the outcomes of the assessment.</li> <li>▪ No additional issues of concern or requirements were provided.</li> </ul>

Karakalpak Research Institute for the Human Science / Academy of Science	23 Dec 2022	<ul style="list-style-type: none"> <li>There are several known archaeological objects that have undergone archaeological studies on the Project site and nearby areas in the past, as well as objects that have been discovered using remote sensing. Coordinates have been provided and were discussed in “Section 4.1.2”</li> <li>Partial archaeological research was carried within the territory in 1980-1990s. Currently, there is no ongoing research there.</li> <li>The Project site is poorly explored and a site-specific survey should be undertaken.</li> </ul>
	15 June 2023	<ul style="list-style-type: none"> <li>Undertook desktop study on OHTL route and provided secondary data on archeology and cultural heritage sites of importance within the OHTL route that should be avoided. This is discussed in further details in “Section 23”.</li> </ul>
<b>Other</b>		
Kungrad Soda Plant	29 May 2023	<ul style="list-style-type: none"> <li>There are no activities currently in the area nor any planned activities.</li> <li>There are no additional requirements or issues to be considered.</li> </ul>
Emirates Bird Breeding Center for Conservation (EBBCC)	Oct 2023	<ul style="list-style-type: none"> <li>Cooperation agreement will be signed between ACWA Power and EBBCC for project activities in Uzbekistan.</li> <li>This could include for example providing support for offset requirements that ACWA Power might have related to breeding and release of certain species (if and as required).</li> </ul>

### 6.3.2 *Focus Group Discussions (FGD)*

The following key FGDs were undertaken in relation to the Project each of which is discussed in further details below:

- FGD with Supreme Council and Kungrad City Council;
- FGD with local communities; and
- FGD with key biodiversity experts from governmental entities and NGOs.

#### *(i) Supreme Council and Kungrad City Council*

A meeting was held with the Supreme Council of Karakalpakstan, and which was chaired by the Deputy Chairman of the Supreme Council. The meeting was held on 18 May 2023.

A second meeting was held at the Kungrad City Council, and which was chaired by the Deputy Chairman of the Supreme Council and Kungrad District Hokim. The meeting was held on 19 May 2023.

The attendees included ministers, local leaders, extraction gas companies, members of councils, the Hokim and other key members of the Government.

Throughout both sessions, the meeting was opened by the Deputy Chairman where he emphasized on his support for the Project given its significance for the country given the electricity crisis, as well its importance in terms of development of the region’s infrastructure and job creation. He also emphasized the need to train specialists such as ornithologists, zoologists, power engineers, and renewable energy specialists.

Then the ‘E&S Consultant’ presented various aspects of the Project, including its components, timeline, phases, as well as the overall requirements for the E&S assessments.

All attendees in general expressed their readiness to support the Project by providing essential information and data as required. General questions were raised on the Project to include its timeline, workforce required, design details, contractor requirements, and supply of electricity. All questions were answered based on available information to date.

This meeting was the basis for conducting the targeted consultations with various governmental and non-governmental entities as discussed earlier under “Section 6.3.1”.



Figure 23: Sample Photos from the Meeting

**(ii) Local Communities**

Four (4) key FGDs were undertaken with the local communities that are relevant to the Project as identified within “Section 2.2” earlier and which include:

- Session #1: Ozodlik Mahalla. Kungrad City has many Mahallas therefore one (1) was selected which is considered the most central Mahalla for Kungrad city.
- Session #2: Elobod Mahalla;
- Session #3: Kirkkiz Mahalla; and
- Session #4: Jasliq Mahalla.

All sessions were open invitation sessions that were announced to local communities through the following avenues at least five (5) days in advance of the session.

- Official news channel of Kungrad District Khokimiyat; and
- Telegram groups of each Mahalla.

<p>Пересланное сообщение От Zuhra Ora Hokimiyat <b>ХАБАРЛАНДЫРЫҰ</b></p> <p>ACWA Power компаниясы Қарақалпақстанның Қоңырат районында қууатлылығы 1500 МВт болған самал электр станциясын қурыуды режелестирмекте</p> <p>Усыған байланысты ACWA Power компаниясы ўәкиллери самал электр станциясының қоршаған орталыққа тәсирин бақалау (ESIA) бойынша жергиликли жәмәәтлер менен ушырасыулар өткереди.</p> <p>Ушырасыуға жергиликли басқарыу уйымлар ўәкиллери, ҳаял-қызлар, жаслар ҳәм билимлендириу шөлкемлери ўәкиллери қатнасыуы мүмкин.</p> <p>Ушырасыулар төмендеги кесте тийкарында усы жылдың 19-20-май күнлери болып өтеди:</p> <p>19-май күни саат 10:00 де Қоңырат районы ҳәкимлиги имаратында ҳәм саат 14:00 Елабат посёлка пуқаралары жыйынында;</p> <p>20-май саат 10:00 де Қырққыз посёлка пуқаралары жыйынында ҳәм саат 14:00 Жаслық посёлка пуқаралары жыйынында.</p> <p>Байланыс телефоны: <b>+998903197721</b></p>	<p><b>ХАБАРЛАНДЫРЫҰ</b></p> <p>ACWA Power компаниясы Қарақалпақстанның Қоңырат районында қууатлылығы 1500 МВт болған самал электр станциясын қурыуды режелестирмекте</p> <p>Усыған байланысты ACWA Power компаниясы ўәкиллери самал электр станциясының қоршаған орталыққа тәсирин бақалау (ESIA) бойынша жергиликли жәмәәтлер менен ушырасыулар өткереди.</p> <p>Ушырасыуға жергиликли басқарыу уйымлар ўәкиллери, ҳаял-қызлар, жаслар ҳәм билимлендириу шөлкемлери ўәкиллери қатнасыуы мүмкин.</p> <p>Ушырасыулар төмендеги кесте тийкарында усы жылдың 19-20-май күнлери болып өтеди:</p> <p>19-май күни саат 10:00 де Қоңырат районы ҳәкимлиги имаратында ҳәм саат 14:00 Елабат посёлка пуқаралары жыйынында;</p> <p>20-май саат 10:00 де Қырққыз посёлка пуқаралары жыйынында ҳәм саат 14:00 Жаслық посёлка пуқаралары жыйынында</p> <p>Байланыс телефоны: <b>+998903197721</b> Саида Юсупова, Green Business Innovation бөлиминиң баслығы</p>	
<p>ESIA Consultant</p> 	<p>Client</p> 	<p>Project</p> <p>Kungrad 1.5GW Wind Farm in Uzbekistan</p>

Figure 24: Sample for Announcements

However, key invitations were sent to the following groups in particular:

- Mahalla Committee including Mahalla Chair (for details on setup of the Mahallas please refer to “Section 2.1” earlier)
- Village leaders that include elected leaders, religious leaders, business leaders and key members of the local community;
- Women that include women group representatives, female-headed households, housewives, widows and single mothers, women engaged in business activities; and
- Educational workforce (teachers in schools).



At the beginning of each session, a presentation on the Project was first provided along with a handout on the following key topics. This session was attended by all of the groups above (i.e. Mahalla Committee, village leaders, women, education any of the local communities that attended based on the open invitation):

- Description of the Project location along with maps;
- Description of key Project components along with figures and illustrations;
- Description of the key activities anticipated in each key phase of the Project (planning, construction and operation)
- Description of ESIA studies and its key components and requirements;
- Explanation of key anticipated E&S impact under each phase of the Project; and
- Explanation of the methodology and scope of work that will be undertaken for the ESIA.

Upon completion of the above informative session, each group was separated for general discussions as well as discussion on any comments or key issues of concern on the overall Project and/or the ESIA process in particular. Key discussions were undertaken in relation to the following key aspects:

- Economic activities and livelihood strategies
- Land use activities
- Community quality of life
- Perceptions towards the Project
- Community structure (ethnic and tribal groups, religion, ethnic minorities, etc.)
- Cultural and Heritage sites

The presentation and handouts were provided in Karakalpak language, while the delivery of the presentation was in Karakalpak, Uzbek and Russian language depending on the audience.

The table below presents an overall summary of the outcomes of these FGD for each community.

Table 17: Outcomes of FGD

Community	Date	Key Outcomes
Ozodlik Mahalla	19 May 2023	<ul style="list-style-type: none"> <li>▪ The population of the village is 3,498.</li> <li>▪ Majority of livelihood patterns is through waged and formal employment mainly within the railway station. Agriculture and pastoralism are considered minor activities within the local communities.</li> <li>▪ Key ethnicities in the village are Karakalpak, Uzbek and Kazakh. There are small number of other ethnic composition that are less than 1% that include Russians.</li> <li>▪ Islam is the main religion in the village.</li> <li>▪ There are no sacred or cultural heritage sites within the Project site or its vicinity.</li> <li>▪ No local community members use the land within the Project area or its surroundings for any activity in particular.</li> <li>▪ Food and water security are not considered an issue if concern within this village.</li> <li>▪ Local community is supportive of the Project.</li> <li>▪ Employment opportunities are the key expectations from this Project development. <i>Note: through the consultation it was explained in detail that opportunities during the construction phase will be temporary and opportunities during operation are considered limited due to the nature of the Project.</i></li> <li>▪ Women are willing and want to be involved in job opportunities for the Project.</li> <li>▪ Some issues raised included in particular the following: (i) updates on Project including when employment will start, and specialties required; (ii) potential impacts from worker influx as based on another plant in the area this has caused in an increase in Sexually Transmitted Diseases (STDs) amongst females win the community.</li> <li>▪ Key methods for communication with local communities for engagement, providing updates, etc. is through: (i) Telegram channels; and (ii) word of mouth through Mahalla Community Union.</li> </ul>
Elobod Mahalla	19 May 2023	<ul style="list-style-type: none"> <li>▪ The population of the village is 3,455.</li> <li>▪ Majority of livelihood patterns is through waged and formal employment mainly within a soda plant and the railway station. Agriculture and pastoralism are considered minor activities within the local communities.</li> <li>▪ Key ethnicities in the village are Karakalpak and Uzbek. There are small number of other ethnic composition that are less than 1% that include Russians.</li> <li>▪ Islam is the religion in the village.</li> <li>▪ There are no sacred or cultural heritage sites within the Project site or its vicinity.</li> <li>▪ No local community members use the land within the Project area or its surroundings for any activity in particular.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Food and water security are not considered an issue of concern within this village.</li> <li>▪ Local community is supportive of the Project.</li> <li>▪ Employment opportunities are the key expectations from this Project development, especially for women and youth. <i>Note: through the consultation it was explained in detail that opportunities during the construction phase will be temporary and opportunities during operation are considered limited due to the nature of the Project.</i></li> <li>▪ Women are willing and want to be involved in job opportunities for the Project.</li> <li>▪ Some issues raised included in particular the following: (i) impacts on roads from heavy transportation of turbines to the Project site; (ii) impacts on dust from construction activities; (iii) updates on Project including when employment will start and specialties required; (iv) if transportation and facilities will be provided onsite due to remoteness of Project area (including those for women in particular).</li> <li>▪ Key methods for communication with local communities for engagement, providing updates, etc. is through: (i) Telegram channels; and (ii) word of mouth through Mahalla Community Union.</li> </ul>
<p>Kirkkiz Mahalla</p>	<p>20 May 2023</p>	<ul style="list-style-type: none"> <li>▪ The population of the village is 4,231.</li> <li>▪ Majority of livelihood patterns is through waged and formal employment mainly within a Akcholak facility (gas pipeline facility) and the railway station. Agriculture and pastoralism are considered minor activities within the local communities.</li> <li>▪ Key ethnicities in the village are Karakalpak, Uzbek and Kazak. There are small number of other ethnic composition that are less than 1% that include Russians, Tajik and Kyrgyz.</li> <li>▪ Islam is the religion in the village.</li> <li>▪ There are no sacred or cultural heritage sites within the Project site or its vicinity.</li> <li>▪ No local community members use the land within the Project area or its surroundings for any activity in particular.</li> <li>▪ There is an issue related to water shortage in the community, but no food security issues.</li> <li>▪ Local community is supportive of the Project.</li> <li>▪ Employment opportunities are the key expectations from this Project development, especially for youth. <i>Note: through the consultation it was explained in detail that opportunities during the construction phase will be temporary and opportunities during operation are considered limited due to the nature of the Project.</i></li> <li>▪ Some issues raised included in particular the following: (i) impacts on road networks from Project related transportation activities; (ii) impacts on soil layers during construction activities; (iii) how can women groups in particular benefit from the Project given that Project area is in a very remote area for women in the community to go work there (females in this community do not work in places far from their living area)</li> <li>▪ Key methods for communication with local communities for engagement, providing updates, etc. is through: (i) Telegram channels; and (ii) word of mouth through Mahalla Community Union.</li> </ul>

<p>Jasliq Mahalla</p>	<p>20 May 2023</p>	<ul style="list-style-type: none"> <li>▪ The population of the village is 4,198.</li> <li>▪ The only livelihood pattern is waged and formal employment mainly within a compressor station and the railway station. There are no agriculture and/or pastoralism activities undertaken.</li> <li>▪ Key ethnicities in the village are Kazak, Karakalpak, and Uzbek. There are small number of other ethnic composition that are less than 1% that include Russian, Tajik, and Kyrgyz.</li> <li>▪ Islam is the religion in the village.</li> <li>▪ There are no sacred or cultural heritage sites within the Project site or its vicinity.</li> <li>▪ No local community members use the land within the Project area or its surroundings for any activity in particular.</li> <li>▪ Food and water security are not considered an issue if concern within this village.</li> <li>▪ Local community is supportive of the Project.</li> <li>▪ They believe they are considered far from the site and if in this case employment opportunities are relevant and could be available for them. Employment opportunities are the key expectations from this Project development, especially for youth. <i>Note: through the consultation it was explained in detail that opportunities during the construction phase will be temporary and opportunities during operation are considered limited due to the nature of the Project.</i></li> <li>▪ They inquired if there will be community development programs targeted to the local communities by the Developer.</li> <li>▪ No issues were raised in particular as they believe they are very farm from the Project area for any potential impacts to be realized.</li> <li>▪ Key methods for communication with local communities for engagement, providing updates, etc. is through: (i) Telegram channels; and (ii) word of mouth through Mahalla Community Union.</li> </ul>
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Figure 25: FGD with Ozodlik



Figure 26: FGD with Elobod Community



Figure 27: FGD with Kirkkiz



Figure 28: FGD with Jasliq

**(iii) Biodiversity Specialists**

A workshop was held on 24 August 2023 in Tashkent for key biodiversity experts and specialists and which included the following:

- Institute of Zoology to include but not limited to the following departments: (i) Laboratory of Vertebrate Animals; (ii) Laboratory of Entomology; and (iii) Laboratory of Accounting and Cadaster of Endangered Species
- Parliament of the Republic of Karakalpakstan (*Jokari Kenes*)
- Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan to include the following departments:
  - Department of Protected Areas
  - Biodiversity Department,
  - Cadaster Department
  - Centre for State Ecological Expertise
- Department for Protected Areas of the State Committee of the Republic of Uzbekistan for Forestry
- Uzbekistan Society for the Protection of Birds (including Karakalpakstan branch)
- Falcon Hunting Solution LLC
- International Fund for Houbara Conservation in Abu Dhabi (OAE)

The objective of the workshop was to:

- Discuss and present biodiversity survey results available at that time for the Project (as well as the OHTL) to include but not limited to habitats, flora, ornithology, mammals, reptiles, invertebrates, etc. The biodiversity experts that are part of the 'E&S Team' provided a detailed presentation on the methodology for the surveys and the outcomes and results.
- Together with all stakeholders discuss scientific and ecological importance of the Project site as well as the OHTL and gather any available existing scientific research works on wind farm territory and OHTL route;
- Discuss in specific conservation efforts and requirements of the MacQueen's bustard; and
- Discuss national and international standards in defining set back distance from Key Biodiversity Areas (KBAs).



Figure 29: Selected Photos of the Workshop

Key outcomes of the meeting and discussions were as follows:

- The importance of balancing environmental protection with economic development and job creation which is always a challenge. This entails finding a compromise between investment and nature preservation;
- The importance of involving students and young talents from Karakalpakstan University in various research activities related to the Project throughout its lifecycle;
- The importance of minimizing impacts from the wind farm on biodiversity in general was emphasized including adhering to national and international standards. Some key issues raised included:
  - Impacts on invertebrate populations and their impacts on rare species of birds and mammals;
  - Impacts on wildlife, including Gazelles and houbara bustards in particular;
  - Impact of wind farms on water sources, especially in attracting birds and the potential risks to migrating birds given the importance of water for red-listed bird species;
  - Turbine height, spacing and micro-siting and their impact on bird migration;



- The use of radar technology and artificial intelligence to detect and prevent bird collisions as applicable for the Project and
- Possibility of restoring species populations off-site.
- Need for ongoing research and data collection within the area, particularly regarding the impact on birds, mammals, invertebrates, and other key species.
- The “Cabinet of Ministers Resolution No. 382” approves the regulations on buffer zones of protected areas for various activities. Due to the absence of national standards in defining the size of the buffer zone from turbine to a closest National Park, during the discussion, ***it was suggested to consider existing international standards and best practice. This is expected to be confirmed through a formal letter from the Ministry of Ecology, Environmental Protection and Climate Change.***
- The International Fund for Houbara Conservation in Abu Dhabi (OAE) expressed an interest in information and data exchange on the release of MacQueen’s bustard in Karakalpakstan. ***Note: This has not been provided to date***
- Importance of cooperation with local and international organizations and experts. This also includes cooperation with regards to research through ongoing data exchange/sharing to include: (i) outcomes of ornithology, mammals, geobotany, reptiles and entomology; (ii) identification of endangered species within Project area; (iii) other. This would support other studies undertaken on some issues such as assessing invertebrate food supply, monitoring rodent populations, impact of the wind farm on wildlife behavior and conditions and other;

The Project site and OHTL are territories at the loop of many international and government projects. Many organizations, as UNDP, GIZ, Saiga Alliance, UNESCO and others carried out projects on the territory of Ustyurt and gathered experience and information on this territory. The State Cadaster on rare and endangered species of Karakalpakstan is a good platform for data exchange/sharing. A large database that is now being digitized.

### 6.3.3 Scoping Level Stakeholder Engagement for OHTL

As part of the scoping process, a representative selection of stakeholders across the affected Regions, Districts and stakeholder groups within which the OHTL passes were targeted for engagement. Please refer to “Section 23” for additional details on Region and Districts. This included the following:

- Hokim-Governor for Karakalpakstan, Khorazm and Bukhara Region (as per availability).
- Following offices within the Districts of Kanlikul and Nukus (Karakalpakstan Region), Tuproqqala (Khorazm Region) and Karakul (Bukhara Region). These Districts were selected to cover the various regions and given that they are the districts that are most likely to be impacted by the Project (mainly related to displacement as they entail agriculture activities) as generally within the remaining Districts the OHTL mainly runs within desert lands.
  - Hokim – Mayor for these districts (as per availability)
  - Head of Lands Department Lands Officer
  - Head of Agriculture

- Head of Livestock Department
- Head of Environment Department
- Head of Health Department
- Head of Education Department
- Altynkul, Shorkol, Sarimoy, Bandboshi Mahallas. These Mahallas were selected given that they are the ones that are most likely to be impacted by the Project (mainly related to displacement as they entail agriculture activities).
  - Mahalla Chair (as per availability)
  - Women and Youth Representative in Mahalla committee
- Random samples with households in Altynkul, Shorkol, Sarimoy, Bandboshi representing the following:
  - Householder or adult representative
  - Land based livelihoods (Agriculture /Livestock Worker / Male)
  - Land based livelihoods (Agriculture /Livestock Worker / Female)
  - Land based livelihoods (Agriculture /Livestock Worker Employee / Youth)
  - Businessperson / Trader / Service / Goods Supplier / other

At the beginning of each session, a handout was provided and explained that included information on the following key topics.

- Description of the Project location along with maps;
- Description of key Project components along with figures and illustrations;
- Description of the key activities anticipated in each key phase of the Project (planning, construction and operation)
- Explanation of key anticipated E&S impact under each phase of the Project;
- Obtain qualitative and quantitative information on the baseline conditions as applicable;
- Obtain any comments or key issues of concern on the overall Project and/or the ESIA/LRP process in particular; and
- Establish direct contacts for the ESIA and LRP phase of the Project.

A total of 60 engagement sessions were undertaken. The following key issues were raised, in summary:

- Stakeholders were very supportive of the Project, and the opportunities for local job opportunities, and development opportunities created by improving the infrastructure in Uzbekistan, Republic of Karakalpakstan and the affected regions and districts of the OHTL.
- Stakeholders explained that key methods for communication with local communities for engagement, providing updates, etc. is through Mahalla Community Union.

- Stakeholders requested caution to be taken when the OHTL passes through agricultural areas to minimize the impacts on limited agricultural land. In addition, they also required that physical displacement be avoided.
- Stakeholders emphasized the importance of having respectful attitudes when implementing the compensation programs for the Livelihood Restoration Plan (LRP).
- Government authorities and communities pledged their support to the Project during planning, construction, and operation.
- Stakeholders emphasized the importance of providing job opportunities to the local communities and in particular the youth.
- Stakeholders requested the Project to consider supporting the areas it passes through with local development projects to residents along the route.
- Stakeholders explained their challenges with water shortages, salinity and air quality as a result of the longstanding and worsening situation relating to the Aral Sea drying up. Any activities that threaten to exacerbate these issues are deemed to be of major concern to the population any projects that can contribute to alleviating the situation are hugely welcomed.



Figure 30: Sample Photos from the Meeting

#### 6.4 Future Stakeholder Engagement and Consultation

Future stakeholder engagement and consultations will mainly include the following, each of which is discussed in further details.

##### 6.4.1 Undertake a Disclosure Sessions

Similar to the scoping FGDs undertaken, disclosure FGDs will be undertaken with the key stakeholders as follows:

- Session #1: Ozodlik Mahalla. Kungrad City has many Mahallas therefore one (1) was selected which is considered the most central Mahalla for Kungrad city.
- Session #2: Elobod Mahalla;
- Session #3: Kirkkiz Mahalla; and
- Session #4: Jasliq Mahalla.

All sessions will be open invitation sessions that will be announced to local communities through the following avenues at least five (5) days in advance of the session.

- Official news channel of Kungrad District Khokimiyat
- Telegram groups of each Mahalla

In addition, key invitations were sent to the following groups in particular:

- Mahalla Committee including Mahalla Chair;
- Village leaders that include elected leaders, religious leaders, business leaders and key members of the local community;
- Women that include women group representatives, female-headed households, housewives, widows and single mothers, women engaged in business activities; and
- Educational workforce (teachers in schools).

For Session #1 For this session in specific, all regional Karakalpakstan governmental entities and NGOs will be invited as well as identified within “Section 6.2” earlier.

The objective of the sessions is to:

- Introduce the Project to stakeholders;
- Identify the key anticipated impacts;
- Present the methodology for the ESIA study;
- Present key outcomes and conclusions; and
- Comments on scope of work undertaken, key issues identified and any other issues of concern.

As discussed earlier, once the public disclosure FGDs are completed, all received comments will be addressed and taken into account and an updated ESIA will be submitted.

#### **6.4.2 Disclosure of Documentation**

The below documents will be disclosed on the Developer’s website to allow any stakeholder to review the studies and comment on the scope of work undertaken, key issues identified and any other issues of concern they might have. At the end of the disclosure period, all received comments will be addressed and taken into account and an updated as appropriate.

- Environmental and Social Impact Assessment (ESIA);

- Non-Technical Summary (NTS);
- Stakeholder Engagement Plan (SEP);
- Critical Habitat Assessment (CHA); and
- Environmental, Social, Health and Safety (ESHS) Management System (MS) Manual.

### ***6.4.3 Implementation of the Stakeholder Engagement Plan (SEP)***

Stakeholder Engagement is an on-going process that involves: stakeholder analysis & planning, disclosure & dissemination of information, consultation & participation, grievance mechanism, and on-going reporting to Affected Communities. A Stakeholder Engagement Plan (SEP) is developed and implemented that is scaled to the Project risks and impacts and development stage, and be tailored to the characteristics and interests of the Affected Communities and key stakeholders.

The SEP for the Project describes the planned stakeholder consultation activities and engagement process and includes the following:

- Define the Project’s approach to future stakeholder engagement;
- Identify stakeholders within the area influenced by the Project;
- Profile identified stakeholders to understand their priorities;
- Propose an action plan for future engagement with identified stakeholders; and
- Set out the grievance/project complaints mechanism.

The Developer is committed to implementing the requirements of the SEP throughout the lifetime of the Project. The SEP is provided as a standalone document.

## 7. OVERVIEW OF STRATEGIC ENVIRONMENTAL AND ECONOMIC IMPACTS

### 7.1 Governmental Vision for the Energy Sector

The government of Uzbekistan has taken ambitious measures to alleviate the ongoing energy crisis. One of the first priorities was to reduce reliance and dependency on natural gas for electricity generation and promote renewable energy sources such as solar and wind power.

The government issued a decree titled “Measures to Increase the Use of Renewable Energy Sources” which established a goal of raising the proportion of renewable energy in the country’s entire energy mix to 25% by the year 2030.

In addition, the Government has implemented further actions to encourage investment and use of renewable energy, including the enactment of new regulations and legislation. The “Law on the Use of Renewable Energy Sources of 2017” provides a legal framework for development, use and promotion of renewable energy sources. Furthermore, the Resolution of the President of the Republic of Uzbekistan “Measures to Stimulate Investments in Renewable Energy” enacted in 2020 also aims to attract investments in the renewable energy sector by providing a range of financial incentives and support mechanisms.

***In line with the above, this development allows for more sustainable development and shows the commitment of the Government of Uzbekistan to realizing its energy strategy and meeting the set targets for renewable energy sources.***

### 7.2 Energy Security

Recently, most policy makers around the world are grappling with issues related to energy security, energy poverty, and an expected increase in future demand for all energy sources – and Uzbekistan is no exception. Almost certainly, the most spoken words by policy makers and government bodies in the last couple of years revolved around ‘energy security’.

Through various governmental strategies and policies discussed above, Uzbekistan has emphasized on the importance of energy security and diversification of energy sources.

***In line with the above, the Project in specific will contribute to increasing energy security through reliance on an indigenous, inexhaustible and mostly import-independent energy resource. The estimated electricity generation from the Project is estimated at around 5,304 Gigawatt hours (GWh) per year on average; which will serve the annual electricity needs of around 1,600,000 local households.***

The above has been calculated based on electricity that will be produced by the Project per year (5,304 GWh) and latest statistics on average electricity consumption per household in Uzbekistan from the Ministry of Energy (estimated at peak at 250 kilowatt-hours per month, equivalent to an annual consumption of 3,000 kilowatt-hours<sup>8</sup>).

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<sup>8</sup> [The social norm is 250 kWh per month. The Ministry of Energy gave calculations on the example of electrical appliances - News of Uzbekistan - Gazeta.uz](#)

### 7.3 Environmental Benefits

The negative environmental impacts from generating electricity through conventional fossil fuel burning at thermal power plants are very well known. This most importantly includes air pollutant emissions such as ozone, Sulphur Dioxide (SO<sub>2</sub>), Nitrogen Dioxide (NO<sub>2</sub>), Particulate Matter (PM), and other gases which are the cause of some serious environmental concerns such as smog, acid rain, health effects, and many others.

In addition, the burning of fossil fuels results in carbon dioxide emissions; a primary greenhouse gas emitted through human activities which contributes to global warming. The main human activity that emits CO<sub>2</sub> is the combustion of fossil fuels for electricity production and transportation. Concurrently, global climate change has become an issue of concern and so reducing greenhouse gas emissions have also emerged as primary issues to be addressed as the world searches for a sustainable energy future.

***Generating electricity through wind power is rather pollution-free during operation. Compared with the current conventional way of producing electricity in Uzbekistan through thermal power, the clean energy produced from renewable energy resources is expected to reduce consumption of fossil fuels, and will thus help in reducing GHG emissions, as well as air pollutant emissions. The Project will likely displace around 2,500,000 metric tons of CO<sub>2</sub> annually.***

The above has been calculated based on the electricity that will be produced by the Project per year (5,304 GWh) and statistics obtained from the “IFI Dataset of Default Grid Factors<sup>9</sup>” (UNFCCC, 2021) which provided a CO<sub>2</sub> generation factor for electricity production in Uzbekistan, and which was estimated at 467 gCO<sub>2</sub>/kWh.

### 7.4 Overview of Project Specific E&S Impacts

Nevertheless, the Project will result in negative E&S impacts on various E&S attributes throughout its overall development process. The table below presents an overview of the key impacts during the planning, construction, and operation phases of the Project.

The below is based on the outcomes of the detailed assessment process undertaken throughout the subsequent sections of the ESIA.

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<sup>9</sup> [IFI Default Grid Factors 2021 v3.1 | UNFCCC](#)

Table 18: Summary of Anticipated Impacts during the Planning Phase

Environmental Attribute	Likely Impact – Planning Phase	Impact Assessment								
		Nature	Duration	Reversibility	Magnitude	Sensitivity	Likelihood	Significance	Management Action	Residual Significance
Geology, Hydrology and Hydrogeology	Flood Risks – such risks are considered critical and must be taken into consideration throughout the planning phase of the Project as they could inflict damage to the Project and its various components.	No anticipated impacts							N/A	N/A
Infrastructure and Utilities	Potential Impacts on Civil and Military Aviation – Any tall structure, such as wind turbines, could impact aircraft safety if located near airports or known flight paths and routes – to include both civil aviation as well as military aviation.	No anticipated impacts.							N/A	N/A
	Potential Impacts on Radio, TV and Telecommunication Infrastructure – Inappropriate siting of Project components as well as overall management of construction activities could damage and/or disturb the telecommunication, radio and TV fiber cable as well as the broadcasting towers.	No anticipated impacts.							N/A	N/A
	Improper planning and site selection of the Project could damage/disturb existing gas pipeline, and which could in turn cause serious health and safety risks to workers.	Negative	Long term	Irreversible	Medium	High	Low	Moderate	Mitigation available	Not significant

Table 19: Summary of Anticipated impacts during the Construction Phase

Environmental Attribute	Likely Impact – Construction Phase	Impact Assessment								
		Nature	Duration	Reversibility	Magnitude	Sensitivity	Likelihood	Significance	Management Action	Residual Significance
Landscape and Visual	Visual and landscape impacts due to presence of elements typical of a construction site such as equipment and machinery.	Negative	Short term	Reversible	Medium	Low	Medium	Minor	Mitigation available	Not significant
Land Use	Project could result in land use impacts related to economic and/or physical displacement as it could provide land use value to locals for activities.	No anticipated impacts							N/A	N/A
Geology, Hydrology and Hydrogeology	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities, spillage of hazardous material, random discharge of waste and wastewater.	Negative	Short-term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Construction activities could disturb soil, and result in erosion and runoff could result in siltation of surface water (during rain events)	Negative	Short term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
Biodiversity	Construction activities could disturb existing habitats (flora, fauna, avifauna)	Negative	Short term	Irreversible	Medium	Medium	High	Moderate	Mitigation available	Not significant
	Direct Impacts on Sensitive Receptors (Habitats and Flora) – Non-native Species and Introduced Flora	Negative	Long term	Irreversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Construction activities regarding sensitive ecological receptors targeted towards the Central Asian Tortoise.	Negative	Short term	Irreversible	Medium	High	High	Moderate	Mitigation available	Not significant
	Impacts on two other species of reptiles; the Desert Sand Boa and the Blotched Rat-snake	Negative	Short term	Irreversible	Medium	Medium	High	Moderate	Mitigation available	Not significant
	The impact on the Ground Nesting Birds and Tree Nesting Birds	Negative	Short term	Reversible	Medium	Low	High	Minor	Mitigation available	Not significant
	The direct impact on the MacQueen’s Bustard	Negative	Short term	Reversible	Low	High	Low	Minor	Mitigation available	Not significant
	Direct Morality, Loss of nesting sites and the reduction in habitat quality for the Steppe Eagle.	Negative	Short term	Reversible	High	High	Medium	Major	Mitigation available	Not significant
	Direct Morality and reduction in habitat for Mammals, the Honey Badger, Caracal and the marbled polecat.	Negative	Short term	Irreversible	High	High	Medium	Major	Mitigation available	Not significant
	Direct impacts on sensitive receptors (Habitat and Vertebrates) in regards to poaching and collection.	Negative	Long term	Irreversible	High	High	Medium	Major	Mitigation available	Not significant
	Direct impacts on sensitive receptors (Vehicle collisions)	Negative	Long term	Irreversible	High	High	High	Major	Mitigation available	Not significant
	Direct and indirect impacts on sensitive receptors (vertebrates) in regards to disturbances.	Negative	Short term	Reversible	Medium	High	Medium	Moderate	Mitigation available	Not significant
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) in regards to reduced air quality / dust	Negative	Short term	Reversible	Medium	High	Medium	Moderate	Mitigation available	Not significant
Direct Impacts on Sensitive Receptors (Vertebrates) in regards to noise and vibration	Negative	Short term	Reversible	Medium	High	Medium	Moderate	Mitigation available	Not significant	
Direct Impacts on Sensitive Receptors (Vertebrates) in regards to lighting	Negative	Short term	Reversible	Medium	High	Medium	Moderate	Mitigation available	Not significant	
Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Littering, Waste Management	Negative	Long term	Irreversible	Medium	High	Medium	Moderate	Mitigation available	Not significant	



	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Pest Species	Negative	Long term	Reversible or irreversible	High	High	Medium	Major	Mitigation available	Not significant
Archaeology and Cultural Heritage	Construction activities could disturb potential archaeological remains, as well as potential archaeological remains which could be buried in the ground (if any).	Negative	Short term	Irreversible	High	Medium	Medium	Moderate	Mitigation available	Not significant
Air Quality and Noise	Construction activities will likely result in an increased level of dust and particulate matter emissions which in turn will directly impact ambient air quality.	Negative	Short term	Reversible	Medium	Low	High	Minor	Mitigation available	Not significant
	Possible noise emissions to the environment from the construction activities which will likely include the use of machinery and equipment such as generators, hammers and compressors and other activities.	Negative	Short term	Reversible	Medium	Low	High	Minor	Mitigation available	Not significant
Infrastructure and Utilities	Road network – transportation activities of the Project could affect level of service and capacity of existing highways as well as potential safety risks to users on the road. Similarly, traffic and transportation activities for workers could entail health and safety impacts related to accidents and vehicle collisions.	Negative	Short term	Reversible	Medium	Medium	High	Moderate	Mitigation available	Not significant
	Impact on health and Safety – in relation to traffic and transport is mainly related to potential for accidents occurring on roads and highways which in turn could affect the health and safety of users on the roads, workers and other. Road accidents can derive from a number of causes.	Negative	Short term	Reversible	Low	High	High	Minor	Mitigation available	Not Significant
	Potential impacts on Water Resources for potable usage (e.g., drinking, showering, etc.) and non-potable usage (e.g., cleaning of machinery and vehicles).	Negative	Short term	Reversible	Medium	High	High	Moderate	Additional requirements	Not significant
Worker Welfare, Health and Safety	Inappropriate management of the workforce during both the construction and operation phase could entail several human right risks and violations by employing entities such as the EPC Contractor and Project Operator.	Negative	Short term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Potential human rights impact – This could include but not limited to engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other.	Negative	Short term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Impacts on any and all health and safety risks to workers, such as Covid19, slips, falls, moving machinery, exposure to chemicals etc.	Negative	Short term	Irreversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Potential impacts on worker health and safety related to blasting activities expected to be undertaken onsite.	Negative	Short-term	Irreversible	Medium	Medium	Medium	Moderate	Mitigation Available	Not significant
	Worker Accommodation – and the impacts of the accommodation facilities and ensuring that they meet the basic requirements and necessities.	Negative	Short-term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
Community health, safety and Security	There will be some generic risks to workers health and safety form working on construction sites, as it increases the risk of injury or death due to accidents.	Negative	Short term	Irreversible	Medium	Medium	Low	Moderate	Mitigation available	Not significant
	Inappropriate Management of security issues and incidents by security personnel towards the local communities.	Negative	Short term	Irreversible	Medium	Medium	Low	Moderate	Mitigation available	Not Significant
	The influx of workers to the area could result in certain community health, safety and security impacts which are: Increase in social vices, risk of diseases, and inappropriate code of conduct.	Negative	Short term	Reversible	Medium	Medium	Low	Moderate	Mitigation available	Not significant
	Trespassing of Unauthorized Personnel – mainly limited to trespassing of unauthorized personnel from the local communities into the Project site which could result in potential risks from several hazards.	Negative	Short term	Irreversible	Medium	Medium	Low	Moderate	Mitigation available	Not significant
Socio-economic	The Project is expected at a minimum to provide job opportunities as well as procurement opportunities for local communities. This, to some extent, could contribute to enhancing the living environment for its inhabitants, elevate their standard of living, and bring social economic prosperity to the local community.	Positive	Not applicable.							
	However, it is important to note that if local community engagement is not implemented properly and if expectations are not properly managed and addressed, this could result in genitive impacts on local community members. This could lead to distrust and resentment with the Developer and might eventually lead to other potential escalated events.	Negative	Short Term	Reversible	Medium	Medium	Low	Moderate	Recommendations	Not significant

Table 20: Summary of Anticipated Impacts during the Operations Phase

Environmental Attribute	Likely Impact – Operation Phase	Impact Assessment								
		Nature	Duration	Reversibility	Magnitude	Sensitivity	Likelihood	Significance	Management Action	Residual Significance
Landscape and Visual	Overall impact assessment for the windfarm on landscape and visual receptors during the operation phase.	Negative	Long term	Reversible	Medium	Low	High	Minor	Mitigation available	Not Significant

Geology, Hydrology and Hydrogeology	Improper Management of Waste Streams – Risk of soil and groundwater contamination during the various operation activities from improper housekeeping activities, spillage of hazardous material, random discharge of waste and wastewater.	Negative	Short term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
Biodiversity	Indirect Impacts on Sensitive Receptors (terrestrial mammals and breeding / resident birds) – Disturbance	Negative	Short term	Reversible	Medium	High	Medium	Moderate	Mitigation available	Not significant
	Direct Impacts on Sensitive Receptors (Vertebrates and Birds) – Habitat Fragmentation and Barrier Impact	Negative	Long term	Irreversible	Low	Medium	Low	Minor	No mitigation required	N/A
	Direct and Indirect Impacts on Sensitive Receptors (Birds) – Collision with Turbines	Negative	Long term	Irreversible	Medium	High	Low	Moderate	Mitigation available	Not significant
	Direct Impacts on Sensitive Receptors (Vertebrates) – Vehicle Collisions	Negative	Long term	Irreversible	High	High	High	Major	Mitigation available	Not significant
	Direct Impacts on Sensitive Receptors (Vertebrates) – Lighting	Negative	Short term	Reversible	Medium	High	Medium	Moderate	Mitigation available	Not significant
	Direct Impacts on Sensitive Receptors (Habitats and Flora) – Non-native Species and Introduced Flora.	Negative	Long term	Irreversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Pest Species	Negative	Long term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Direct Impacts on Sensitive Receptors (Bats) – Collision with Turbines.	Negative	Long term	Irreversible	Medium	Medium	Low	Not significant	N/a	N/a
Archaeology and Cultural Heritage	Inappropriate operational activities by the Project Operator could disturb archaeological and/or cultural heritage remains present on the surface of the Project site. As noted earlier, there were several sites recorded within the Project area which are generally burial grounds.	Negative	Long term	Irreversible	High	Medium	Medium	Moderate	Mitigation Available	Not Significant
Infrastructure and Utilities	Water requirements – water requirements of the Project could entail constraints on the local community. Additionally, water will be required during the operation phase and mainly for drinking and other personal use of onsite staff (a maximum of 80 personnel).	Negative	Long term	Reversible	Low	High	High	Minor	Additional requirements	Not significant
Worker Welfare, health and Safety	Inappropriate management of the workforce during both the construction and operation phase could entail several human right risks and violations by employing entities such as the EPC Contractor and Project Operator.	Negative	Short term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
	Impacts on any and all health and safety risks to workers, such as Covid19, slips, falls, moving machinery, exposure to chemicals.	Negative	Short term	Irreversible	Medium	Medium	Medium	Moderate	Mitigation available	Not Significant
	Worker Accommodation – and the impacts of the accommodation facilities and ensuring that they meet the basic requirements and necessities.	Negative	Short term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not Significant
	Potential human rights impact – This could include but not limited to engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other.	Negative	Short term	Reversible	Medium	Medium	Medium	Moderate	Mitigation available	Not significant
Community Health, Safety and Security	Inappropriate management of security issues and incidents by security personnel towards local communities	Negative	Long term	Irreversible	Medium	Medium	Low	Moderate	Mitigation available	Not significant
	Trespassing of Unauthorized Personnel – mainly limited to trespassing of unauthorized personnel from the local communities into the Project site which could result in potential risks from several hazards.	Negative	Long term	Irreversible	Medium	Medium	Low	Moderate	Mitigation available	Not significant
	Operating wind turbines will produce noise from mechanical and aerodynamic effects. This could be a source of disturbance and nuisance to noise sensitive receptors and could create a disturbing indoor environment.	No anticipated Impacts.								
	Operating wind turbines will produce shadow flicker. This could be a source of disturbance and nuisance to sensitive receptors and could create a disturbing indoor environment.	No anticipated impacts.								
Socio-economic	The Project is expected at a minimum to provide job opportunities as well as procurement opportunities for local communities. This, to some extent, could contribute to enhancing the living environment for its inhabitants, elevate their standard of living, and bring social economic prosperity to the local community.	Positive	Not applicable							
	However, it is important to note that if local community engagement is not implemented properly and if expectations are not properly managed and addressed, this could result in genitive impacts on local community members. This could lead to distrust and resentment with the Developer and might eventually lead to other potential escalated events.	Negative	Long Term	Reversible	Medium	Medium	Low	Moderate	Recommendations	Not significant

## 8. LANDSCAPE AND VISUAL

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to landscape and visual. The section then presents an assessment of potential impacts during the various Project phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

### 8.1 Assessment of Baseline Conditions

#### 8.1.1 Methodology for Assessment

The baseline assessment of the Project site was based on secondary data review and a field survey, each of which is discussed in further detail below.

- **Secondary Data Review**

Prior to the undertaking of any site-related surveys, a full and detailed review of up-to-date high-quality satellite images for the Project area was undertaken. Such satellite images were provided the Developer and were part of the topography study undertaken. The objective was to identify any potential visual receptors within the entire Project footprint and boundary so that it can be inspected during the site survey.

In addition, desktop review was undertaken to identify any other potential visual receptors within the wider area of the site (up to 50km).

*Note: definition of visual receptors is discussed in further detail in the section below.*

- **Site Survey**

A detailed site survey for the Project area was undertaken in August 2023. The survey aimed to characterize the general topography and landscape characteristics of the Project area as well as any potential visual receptors onsite.

#### 8.1.2 Results and Outcomes

Based on a site visit, the Project site in general is characterized with wide, flat and uniform surfaces with minimal changes in topography across the entire site. The figure below presents the general landscape of the Project site while the figure that follows presents the topography variations onsite based on a 3-D Digital Elevation Model (DEM).

The Project site can be classified as a desert-like habitat that is arid and barren with bare soil dotted with saline deposits and shrubby vegetation in some areas. Typical views of the Project site are limited to the open landscape and topography of a desert-like habitat as noted within the figure below.



Figure 31: General Site Topography and Landscape

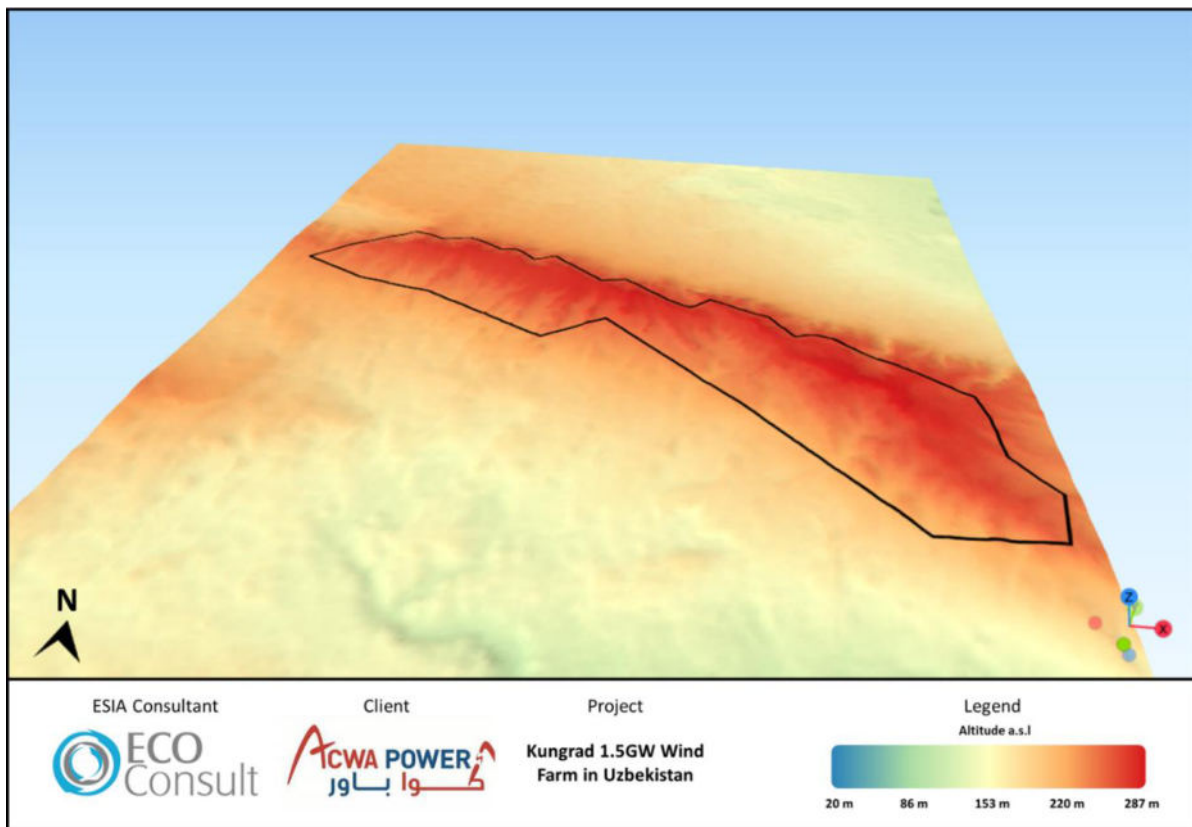


Figure 32: 3D DEM Modeling of the Project Site

In addition, based on the site visit and desktop review undertaken, critical visual receptors were mapped out as noted within the table below. The definition of key critical visual receptor was based on the “Guidelines for Landscape and Visual Impact Assessment (GLVIA)” as defined below.

**Table 21: Critical Visual Receptors**

Critical Receptors definition per GLVIA	Implication for Project
Residents at home.	Local communities to include the following as defined earlier under “Section 2.2”: <ul style="list-style-type: none"> <li>▪ Kirkkiz village</li> <li>▪ Elobod village</li> <li>▪ Jasliq village</li> <li>▪ Kungrad City</li> </ul>
People engaged in outdoor recreation, whose attention/interest is likely to be focused on the landscape or particular views, including from public rights of way.	
Communities where views contribute to landscape setting enjoyed by residents.	
Visitors to heritage assets or other attractions, where views of the surroundings are an important contributor to the experience.	<u>Ustyurt Nature Reserve in Kazakhstan.</u> It is a nature reserve, with an area of 2,230 km <sup>2</sup> which lies within Ustyurt Plateau. It mainly includes two (2) touristic routes that include: (i) Kokesem route (43.1696447, 54.8868588); and (ii) Onere route ( <b>420 36 30. 66 540 08 38.21</b> )
	<u>South Ustyurt Proposed Reserve in Uzbekistan.</u> As stated in “Section 11” the reserve is under nomination as a UNESCO World Heritage Site and will include the following key areas: <ul style="list-style-type: none"> <li>- Nature reserve zone</li> <li>- Zone of economic use</li> <li>- Recreation area</li> </ul> No details are available yet on exact location of any proposed visitor/touristic sites.
	<u>Kunya-Urgench UNESCO World Heritage site.</u> Kunya-Urgench is situated in Turkmenistan, on the left bank of the Amu Daria River. Urgench was the capital of the Khorazm region, part of the Achaemenid Empire. The old town contains a series of monuments, including a mosque, the gates of a caravanserai, fortresses, mausoleums and a 60-m high minaret
	<u>Known archaeology sites</u> within the area as identified to date (refer to “Section 12” for additional details). As noted within that section, this site has no touristic value or importance and is not considered unique nor a key site of importance as such sites are found heavily within the area.
Travelers on scenic routes	Travelers on Kungrad – Karakalpakstan Highway (Highway A380)

## 8.2 Assessment of Impacts

This section identifies the anticipated impacts on landscape and visual from the Project throughout its various phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

### 8.2.1 Overall Methodology

Note: the impact assessment methodology for landscape and visual in particular will not follow the impact assessment methodology discussed earlier under “Section 3.4” as it followed the requirements of international standards as highlighted throughout this section.

Visual impact assessments can be defined as a mechanism by which the landscape can be assessed against its capacity to accommodate change.

Visual effects relate to the changes that arise in the composition of available views as a result of changes to the landscape, to people’s responses to the changes and to the overall effects with the respect of visual amenity.

The aim of this section is to provide a full assessment of the visual effects of the Project, in line with current legislation and guidance. This document includes an appraisal of the following:

- Direct impacts of the development upon views in the landscape; and
- Overall impact on visual amenity.

The assessment was based on the following information:

- General arrangement and layout drawings of the wind farm, including topography;
- Wind Turbine supplier data – geometric sizing, rotor diameter and hub height;
- Onsite observations and landscape photography; and
- Viewpoint locations.

There are currently no laws or regulation regarding visual assessment of wind farms in Uzbekistan. However, several countries (including the UK) have developed guidelines around potential visual impacts and are aligned with the World Bank Group guidelines. The relevant guidelines include:

- Guidelines for Landscape and Visual Impact Assessment (Third Edition), published by the Landscape Institute and the IEMA (2013) (GLVIA)
- World Bank Group / IFC EHS Guideline for Wind Energy (IFC, 2015)
- Visual Representation of Wind Farms (Version 2.2), published by Scottish Natural Heritage (2017)
- Visualization Standards for Wind Energy Developments, published by The Highland Council (2016)

In accordance with the Guidelines for Landscape and Visual Impact Assessment (GLVIA) and other best practice guidance noted above, the visual assessment will include baseline studies that describe, classify and evaluate the visual resources, focusing on their sensitivity and ability to accommodate change.

The prediction and extent of the impact's forecast may not always be definitive. It is the responsibility of each evaluation to establish the evaluation criteria and the thresholds of importance, using informed and well-reasoned professional judgement supported by comprehensive rationale for their selection. Additionally, it should clarify how the conclusions regarding the significance of each assessed effect has been derived, as noted in GLVIA 3<sup>rd</sup> edition paragraphs 2.23-2.26 and 3.32-36.

### **Zone of Theoretical Visibility (ZTV)**

In order to assist in the assessment of the potential visual effects of the wind farm, a computer-generated ZTV was modelled. A ZTV is used to identify the theoretical extent of visibility of a development. Computer processing algorithms are combined with digital elevation data to model the likely extent of visibility.

The development of a ZTV for the Project was carried out using QGIS, an open-source Geographical Information System (GIS) software package.

Elevation data was acquired from a dataset made available by the Japan Aerospace Exploration Agency (JAXA). The Advanced Land Observing Satellite (ALOS) Global Digital Surface Model (AW3D30) is a global elevation dataset with a spatial resolution of 30m. It is one of the most precise elevation datasets of this type available. The algorithm operates by utilizing the elevation data of wind turbines to simulate potential visibility across the landscape.

The ZTV is used as a working tool to inform the extent of the zone in which the proposed windfarm may have an influence on visual amenity. It should be noted that this is a topographical information-based exercise with no account being taken of the visual barrier effects of vegetation or buildings.

from the ZTV it is clear that the following receptors were excluded from the assessment (as previously presented in Table 21) given that there will be no impacts from the Project on such receptors.

- Local communities
- Ustyurt Nature Reserve in Kazakhstan
- Kunya-Urgench UNESCO World Heritage site

For the remaining receptors and from the ZTV study eight viewpoints (visual receptors) were identified to give representative views at various distances from the scheme. The location of the eight viewpoints is presented in the figure below (VP 1 – VP 8).

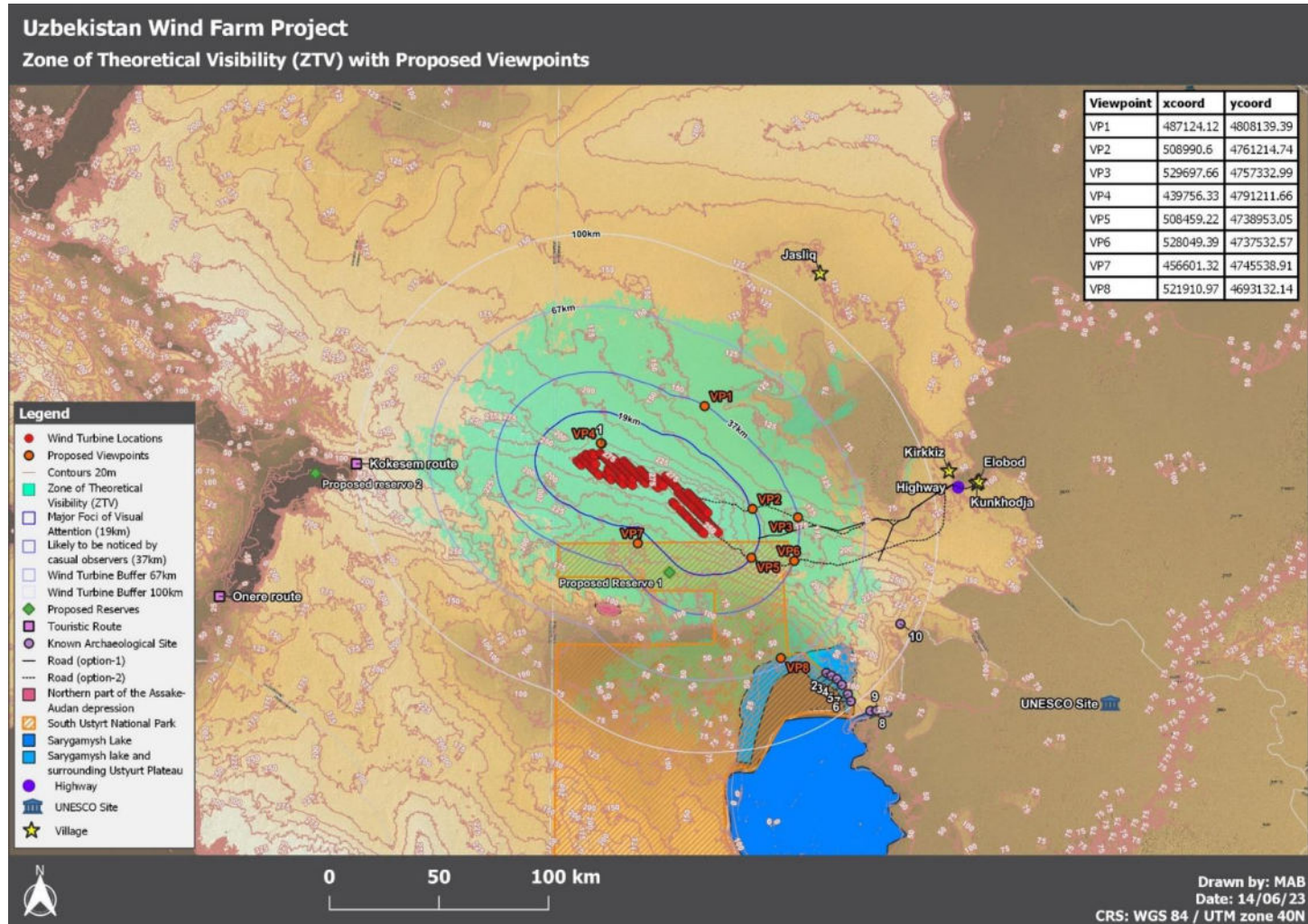


Figure 33: Zone of Theoretical Visibility



### **Visual Assessment Criteria**

The visual impact assessment has been based on an evaluation of the sensitivity of the visual receptors, and the magnitude of change associated with the introduction of the Project into the visual context of the study area.

Describing the existing situation is a prerequisite for assessing the potential visual impact of the development and determining any suitable measures for mitigating that impact if deemed necessary. The assessment of visual impact from any one location takes into account the following:

- Sensitivity of the views and viewers (visual receptor) affected.
- Nature, scale or magnitude and duration of the change.
- Extent of the proposed development that will be visible.
- Degree of visual intrusion or obstruction that will occur.
- Distance of the view.
- Change in character or quality of the view compared to the existing.
- The activity of the receptor and the expectation of the view it entails.
- The importance of the view with respect to the number of people affected.
- The popularity of the view – whether it appeals to locals, visitors, or whether it is cited in books, guides and maps.
- Their susceptibility to change, which is mainly a function of the occupation or activity of people experiencing the view, and the extent to which their attention or interest may be focused on the view.

### **Visual Receptors**

A visual impact assessment considers the sensitivity to change of visual receptors within the study area, and the magnitude of change associated with the introduction of the proposed development into the existing visual context.

A range of fixed visual receptors were initially considered, with emphasis placed on identification and selection of locations with a clear relationship to the proposed scheme where potential visual implications were deemed to be greatest. The key visual receptors include statutory and non-statutory designated or protected areas, cultural heritage resources, residential properties and farmsteads, recreational/tourist resources, panoramic hilltop views, focused or directed views, and cumulative views.

A selection of representative viewpoints was chosen to represent these visual receptor types. These representative viewpoints are used as ‘samples’ on which to base judgements on visual amenity in the area.

Field investigation from the viewpoints was used to assess the actual visibility of the proposed development within the study area.

### **Photographic Studies**

The photographic study was undertaken in May 2023. Landscape photography was captured in accordance with best practice guidelines published in Scottish Natural Heritage Visual Representation of Wind Farms Guidance (2017).

This included the use of the following:

- High-quality digital camera (Canon EOS R6 Mark II), a camera lens set to a focal length of 50 mm and a professional tripod to elevate the camera 1.5 m above the ground.
- An accurate Global Positioning System (GPS) receiver was used to accurately record (within 5 m) the location of each viewpoint.
- Sufficient photographs at each viewpoint were captured to give a complete 360° view of the surrounding landscape.

### **Photomontage Methodology**

To visualize the proposed windfarm, a technique known as photomontage was employed. This is where the proposed changes (i.e., the new turbines) are superimposed on top of an existing photo.

The technique behind a photomontage is to establish a camera model that can transform any point with known elevation and coordinates from a map to a 2-dimensional photo. Once the camera model is established, the camera model can position a 3-dimensional model of a turbine into the image with the correct proportions.

Photomontages were created from photographs captured at each of the viewpoints.

To create the photomontage, photographs were stitched together to create a panoramic view using Adobe Photoshop vs25.0. The photomontage was then created within WindPRO 3.6.

### **Visual Receptor Sensitivity**

The assessment of visual receptor sensitivity considers both the category of the visual receptor and the nature of their existing view. It takes account of the location of the receptor or viewpoint, the expectations, occupation, or activity of the people present, the quality of the existing visual context, and the importance or value likely to be attributed by them to the available view. It is therefore the case that not all receptors within a given category are deemed to display equal sensitivity.

In accordance with the GLVIA, for the purposes of the visual assessment, the visual receptors have been graded according to their sensitivity to change against criteria set out in the table below.

**Table 22: Visual Receptor Sensitivity**

<b>Receptor Sensitivity</b>	<b>Description</b>
High	Occupiers of residential properties Users of outdoor recreational facilities, including public rights of way, whose attention or interest may be focused on the landscape. Communities where the development results in changes in the landscape setting or valued views enjoyed by the community.
Medium	People travelling through or past the affected landscape in cars, on trains or other transport routes where higher speeds are involved and views sporadic and short-lived. People engaged in outdoor recreation where enjoyment of the landscape is incidental rather than the main interest.
Low	People at their place of work, Industrial facilities.

The number of people likely to be present as well as the duration that a view is likely to be experienced may also influence the visual sensitivity of a particular location.

### **Visual Magnitude of Change**

The visibility of the proposals and the magnitude of their change upon a view and the resulting significance of visual effect are dependent on the range of factors already outlined, together with, the angle of the sun, the time of year and weather conditions.

Of equal importance will be whether:

- The site is completely visible or in part.
- The site appears on the skyline.
- The site is viewed with a backcloth of land or vegetation, or with a complex foreground.
- The site forms part of an expansive landscape or is visible within a restricted view.

The aspect of dwellings and whether the view is from a main window or a secondary window, which may be used less frequently, is also a consideration.

The direction and speed of travel from highways are also a consideration. The magnitude of change, in accordance with the GLVIA, is outlined in the table below.

**Table 23: Definition of Magnitude of Visual Impact**

<b>Magnitude</b>	<b>Result</b>	<b>Description</b>
Very Large	The development would result in a dramatic change in the existing view and/or would cause a dramatic change in the quality and/or character of the view. The development would appear large scale and/or form the dominant elements within the overall view and/or may be in full view the observer or receptor.	Commanding, controlling the view.
Large	The development would result in a prominent change in the existing view and/or would cause a prominent change in the quality and/or character of the view. The development would form prominent elements within the overall view and/or may be easily noticed by the observer or receptor.	Standing out, striking, sharp, unmistakable, easily seen.
Medium	The development would result in a noticeable change in the existing view and/or would cause a noticeable change in the quality and/or character of the view. The development would form a conspicuous element within the overall view and/or may be readily noticed by the observer or receptor.	Noticeable, distinct, catching the eye or attention, clearly visible, well defined
Small	The development would result in a perceptible change in the existing view, and/or without affecting the overall quality and/or character of the view. The development would form an apparent small element in the wider landscape that may be missed by the observer or receptor.	Visible, evident, obvious
Very Small	The development would result in a barely perceptible change in the existing view, and/or without affecting the overall quality and/or would form an inconspicuous minor element in the wider landscape that may be missed by the observer or receptor.	Lacking sharpness of definition, not obvious, indistinct, not clear,

		obscure, blurred, indefinite
Negligible	Only a small part of the development would be discernible and/or it is at such a distance that no change to the existing view can be appreciated.	Weak, not legible, near limit of acuity of human eye.

### **Significance of Visual Effect**

The significance of the visual effects, in accordance with the GLVIA, is determined by the assessment of receptor sensitivity set against the magnitude of change, as indicated by the matrix in the table below.

For the purposes of this assessment, ‘Significant’ landscape effects would be those effects assessed to be severe, major or major/moderate and are indicated by blue shading in the table below.

**Table 24: Significance of Visual Effects**

Magnitude	Sensitivity		
	High	Medium	Low
Very Large	Severe	Major	Major/moderate
Large	Major	Major/moderate	Moderate
Medium	Major/moderate	Moderate	Moderate/Minor
Small	Moderate	Moderate/Minor	Minor
Very Small	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible

Note: the above table is from the GLVIA and is not to be confused with the ESIA impact assessment methodology discussed earlier under “Section 3.4”.

### **Representative Viewpoint Assessment**

Viewpoint selection has been chosen based on the assessment undertaken within the baseline section earlier. The choice of representative viewpoints has been limited due to the location of the scheme and surrounding land uses. The baseline description of each view is contained within the visual impact assessment. The following viewpoints in the table below were selected as being representative of the potential visual issues associated with the proposed wind farm.

A visual representation of viewpoint locations can be found in the figure that follows.

Viewpoint ID	Location	Distance from windfarm (km)	Direction of View	Easting (UTM)	Northing (UTM)	Rationale for selection
VP1	Landscape	37km	SSW	487124	4808139	Representative location for view in the natural landscape. Users of recreation in the landscape within ZTV.
VP2	Offroad track	19km	W	508990	4761214	Road Users within the ZTV. Users of recreation in the landscape within ZTV.
VP3	Offroad Track	37km	W	529697	4757332	Road Users within the ZTV.

						Users of recreation in the landscape within ZTV.
VP4	Known Archaeological Site	3.9km	S	440131	4791045	Users of recreation in the landscape within ZTV.
VP5	Offroad Track	19km	W	508459	4738953	Road Users within the ZTV. Users of recreation in the landscape within ZTV.
VP6	Offroad Track	37km	WNW	528049	4737532	Road Users within the ZTV. Users of recreation in the landscape within ZTV.
VP7	South Ustyurt National Park	27km	NE	456601	4745538	Users of recreation in the landscape within ZTV.
VP8	Sarykamysh lake and surrounding Ustyurt Plateau	60km	NW	521910	4693132	Users of recreation in the landscape within ZTV.

### 8.2.2 Visual Impacts during Construction

Construction works expected to have a visual impact might include the following:

- Site establishment works including temporary spoil mounds.
- Construction activities, including the location of site compound areas, laydown areas and the use of cranes and task lighting.
- Permanent features introduced as part of the operational stage wind farm proposals, including the principal visual features of the phased development which are proposed to be:
  - Raised ground levels to form building platforms.
  - Amended road infrastructure and associated vehicle parking together with external lighting.
  - Amended road infrastructure and associated car parking together with external lighting.

The potential for visual impact will fluctuate throughout the period of construction. The intermittent but temporary introduction of prominent tall features such as cranes used during the construction phases would have some short term, temporary visual effects on the visual amenity of both nearby and to a lesser degree longer distance sensitive receptors.

In particular, for Viewpoint 4 the taller cranes will be obvious, distinct and clearly visible (temporary) features within the landscape that will be readily noticed by receptors. To a much lesser degree the cranes may also be visible from Viewpoints 4 and 5.

Additional temporary visual effects will be caused as a result of construction vehicle movements to and from the construction site and for general construction operations.

During the construction phases, some temporary lighting will be required. It is not anticipated that there will be any activities requiring work on a 24- hour basis, however, the use of lighting to ensure safe working will probably be required.

For the wind turbines, lighting at higher elevations will be required, consequently the greatest potential for visual impact from construction lighting for receptors will result primarily, (but not solely), from the construction of the wind turbines.

With the introduction of all these construction activities, given that the scheme would occur over a relatively short period, it would result in a perceptible change in the existing view.

The sensitivity of visual receptors in closest proximity to the proposed construction activities can be classified as medium (people engaged in outdoor recreation).

Due to the proximity of Viewpoint 4 to the construction activities the magnitude of change would be large, however as discussed in further details in “Section 12” this site has no touristic value or importance and is not considered unique nor a key site of archaeological or cultural heritage importance as such sites are found heavily within the area. Therefore, the impact can be assessed as minor.

For the other viewpoints the construction would form an apparent small element in the wider landscape that may be missed by the observer or receptor. At most this would result in a medium magnitude of change.

Consequently, with minor receptor sensitivity set against a medium magnitude of visual change, the temporary visual effect during construction period would, as a worst case, result in a significance of effect that can be assessed as minor, i.e., not significant.

Construction Phase		
Type	Negative	N/A
Duration	Short-term	Limited to construction
Magnitude	Medium	Given that visual impacts will be noticeable
Reversibility	Reversible	With completion of construction activities
Sensitivity	Low	Given that there are no sensitive receptors
Likelihood	Medium	Given nature of activities expected
<b>Significance</b>	<b>Minor</b>	

### Mitigation Measures

The following identifies the mitigation measures to be applied by the EPC Contractor during the construction phase and which include:

- Ensure proper general housekeeping and personnel management measures are implemented which could include:
  - Ensure the construction site is left in an orderly state at the end of each work day.
  - To the greatest extent possible construction machinery, equipment, and vehicles that are not in use should be removed in a timely manner and kept in locations to reduce visual impacts to the area.
  - Ensure proper storage, collection, and disposal of waste streams generated as discussed in detail in “Section 10.2.2”.
- Implement restoration and rehabilitation measures to restore the site's visual quality through for example re-contouring the land and removing temporary structures (e.g. batching plant).

Following the implementation of these mitigation measures, the significance of the residual impact is categorized as not significant.

### Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by EPC Contractor during the construction phase:

- Inspections of the works should be carried out at all times to ensure the above measures are implemented.

### ***8.2.3 Visual Impact during Operation***

The potential visual impact of the Project during the operational phase is assessed from the photomontages that have been created from the photographic viewpoints.

The viewpoints have been selected to be representative of the types of views by a range of sensitive receptors that were identified within the table and figure earlier (VP 1 – VP 8).

**Viewpoint 1**



<b>VP1</b>	<b>Panoramic View (Distance 37km looking SSW)</b>
<b>Baseline Description</b>	This is a representative view for a location within the natural landscape and it representative of recreational users (if any). The topography is flat in this location, gently gaining in elevation towards the proposed windfarm. The landscape predominantly consists of substrate covered by low lying vegetation. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm will barely be visible for users of recreation within the landscape. It would be barely visible on the horizon.
<b>Type of Effect</b>	The development would form an apparent small element in the wider landscape that may be missed by the observer or receptor.
<b>Magnitude of Change</b>	The development would result in a perceptible change in the existing view, and/or without affecting the overall quality and/or character of the view.
<b>Assessment</b>	Sensitivity – Low Magnitude - Small
<b>Significance of Effect</b>	Minor



**Viewpoint 2**



<b>VP2</b>	<b>Panoramic View (Distance 19km looking W)</b>
<b>Baseline Description</b>	The view is from an offroad track due east of the windfarm site. The topography is flat in this location, gently gaining in elevation towards the proposed windfarm. The landscape predominantly consists of substrate covered by low lying vegetation. The view is representative of the potential views of road users using the offroad track and users of recreation in the landscape. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm will be noticeable for recreational and road users within the landscape
<b>Type of Effect</b>	The development would form a conspicuous element within the overall view and/or may be readily noticed by the observer or receptor.
<b>Magnitude of Change</b>	The development would result in a noticeable change in the existing view and/or would cause a noticeable change in the quality and/or character of the view.
<b>Assessment</b>	Sensitivity – Low
	Magnitude - Medium
<b>Significance of Effect</b>	Minor

**Viewpoint 3**



<b>VP3</b>	<b>Panoramic View (Distance 37km looking W)</b>
<b>Baseline Description</b>	The view is from an offroad track due east of the windfarm site. The topography is flat in this location gently gaining in elevation towards the proposed windfarm. The landscape predominantly consists of substrate covered by low lying vegetation. The view is representative of the potential views of road users using the offroad track and users of recreation in the landscape. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm will barely be visible for road or recreational users within the landscape. It would be just visible on the horizon.
<b>Type of Effect</b>	The development would form an apparent small element in the wider landscape that may be missed by the observer or receptor
<b>Magnitude of Change</b>	The development would result in a perceptible change in the existing view, and/or without affecting the overall quality and/or character of the view.
<b>Assessment</b>	Sensitivity – Low Magnitude - Small
<b>Significance of Effect</b>	Minor

**Viewpoint 4**



<b>VP4</b>	<b>Panoramic View (Distance 3.9km looking S)</b>
<b>Baseline Description</b>	The view is from a known archaeological site near the northwestern section of the proposed windfarm. This issue is discussed in further details in “Section 12”. As noted within that section, this site has no touristic value or importance and is not considered unique nor a key site of archaeological or cultural heritage importance as such sites are found heavily within the area. The landscape predominantly consists of substrate covered by low lying vegetation. The view is representative of the potential views of visitors to the archaeological site (which is not expected) and users of recreation in the landscape. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm will take a commanding, controlling view of the landscape.
<b>Type of Effect</b>	The development would appear large scale and/or form the dominant elements within the overall view and/or may be in full view the observer or receptor.
<b>Magnitude of Change</b>	The development would result in a dramatic change in the existing view and/or would cause a dramatic change in the quality and/or character of the view.
<b>Assessment</b>	Sensitivity – Low
	Magnitude – Very Large
<b>Significance of Effect</b>	Moderate

**Viewpoint 5**



<b>VP5</b>	<b>Panoramic View (Distance 19km looking W)</b>
<b>Baseline Description</b>	The view is from an offroad track due east of the windfarm site. The topography is flat in this location, gently gaining in elevation towards the proposed windfarm. The landscape predominantly consists of substrate covered by low lying vegetation. The view is representative of the potential views of road users using the offroad track and users of recreation in the landscape. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm will be noticeable for recreational and road users within the landscape
<b>Type of Effect</b>	The development would form a conspicuous element within the overall view and/or may be readily noticed by the observer or receptor.
<b>Magnitude of Change</b>	The development would result in a noticeable change in the existing view and/or would cause a noticeable change in the quality and/or character of the view.
<b>Assessment</b>	Sensitivity – Low Magnitude - Medium
<b>Significance of Effect</b>	Minor

**Viewpoint 6**



<b>VP6</b>	<b>Panoramic View (Distance 37km looking WNW)</b>
<b>Baseline Description</b>	The view is from an offroad track due east of the windfarm site. The topography is flat in this location gently gaining in elevation towards the proposed windfarm. The landscape predominantly consists of substrate covered by low lying vegetation. The view is representative of the potential views of road users using the offroad track and users of recreation in the landscape. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm will barely be visible for road or recreational users within the landscape. It would be just visible on the horizon.
<b>Type of Effect</b>	The development would form an apparent small element in the wider landscape that may be missed by the observer or receptor
<b>Magnitude of Change</b>	The development would result in a perceptible change in the existing view, and/or without affecting the overall quality and/or character of the view.
<b>Assessment</b>	Sensitivity – Low Magnitude - Small
<b>Significance of Effect</b>	Minor

**Viewpoint 7**



<b>VP7</b>	<b>Panoramic View (Distance 27km looking NE)</b>
<b>Baseline Description</b>	The view is from South Ustyurt National Park to the south of the windfarm site. The topography is flat in this location gently gaining in elevation towards the proposed windfarm. The landscape predominantly consists of substrate covered by low lying vegetation. The view is representative of the potential views of users of recreation in the landscape. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm will barely be visible for recreational users within the landscape. It would be just visible on the horizon.
<b>Type of Effect</b>	The development would form an apparent small element in the wider landscape that may be missed by the observer or receptor
<b>Magnitude of Change</b>	The development would result in a perceptible change in the existing view, and/or without affecting the overall quality and/or character of the view.
<b>Assessment</b>	Sensitivity – Medium Magnitude - Small
<b>Significance of Effect</b>	Moderate/Minor

**Viewpoint 8**



<b>VP8</b>	<b>Panoramic View (Distance 67km looking WNW)</b>
<b>Baseline Description</b>	The view is from Sarygamysh lake and surrounding Ustyurt Plateau. The topography is flat in this location gently gaining in elevation towards the proposed windfarm. The landscape predominantly consists of substrate covered by low lying vegetation. The view is representative of the potential views of users of recreation in the landscape. Due to the remote location of the site the number of users is expected to be minimal.
<b>Predicted Change</b>	The windfarm is imperceptible to recreational users within the landscape.
<b>Type of Effect</b>	Weak, not legible, near limit of acuity of human eye.
<b>Magnitude of Change</b>	Only a small part of the development would be discernible and/or it is at such a distance that no change to the existing view can be appreciated.
<b>Assessment</b>	Sensitivity – Medium Magnitude - Negligible
<b>Significance of Effect</b>	Negligible

**Summary of Visual Impacts and Significance for Operations Phase**

The table below provides a summary of the viewpoint analysis for the Operations Phase.

**Table 25: Viewpoint Analysis**

Viewpoint ID	Location	Receptor Type	Receptor Sensitivity	Magnitude of Change	Significance of Visual Effect
VP1	Landscape	Representative location for view in the natural landscape	Low	Small	Minor
		Users of recreation			
VP2	Proposed Road	Road Users	Low	Medium	Minor
VP3	Proposed Road	Road Users	Low	Small	Minor
VP4	Archaeological Site	Users of recreation	Low	Very Large	Moderate
VP5	Proposed Road	Road Users	Low	Medium	Minor
VP6	Proposed Road	Road Users	Low	Small	Minor
VP7	South Ustyurt National Park	Users of recreation	Medium	Small	Moderate/Minor
VP8	Sarykamysh lake and surrounding Ustyurt Plateau	Users of recreation	Medium	Negligible	Negligible

In accordance with the table above, the table below provides an overall impact assessment for the windfarm on landscape and visual receptors during the operation phase.

Operation Phase		
Type	Negative	N/A
Duration	Long-term	Throughout the operation phase
Magnitude	Medium	Given that visual impacts will be noticeable in general
Reversibility	Reversible	With decommissioning of WTGs
Sensitivity	Low	Given that there are no key sensitive receptors
Likelihood	Medium	Given nature of activities expected
<b>Significance</b>	<b>Minor</b>	

**Mitigation Measures**

The following identifies the mitigation measures to be applied by the Project Operator during the operation phase of the Project:

- Consider to the extent possible painting turbines with non-reflective, matt finishes that blend better with the natural surroundings;
- In the case grievances are received from South Ustyurt National Park operators in relation to turbine visibility (i.e. at a later stage once recreational areas are established within the Park) (as they are considered the only relevant receptor from which such impacts could be relevant however this is highly unlikely given that WTGs are barely visible as demonstrated throughout the assessment) consider planting native vegetation or trees around the wind farm to screen the view of the turbines from certain vantage points. Create buffer zones of natural or landscaped features to help blend the wind farm into the landscape; **OR**



*In line with the above, consider coordinating with South Ustyurt National Park operators (i.e. at a later stage once recreational areas are established within the Park) to create designated public viewing areas or platforms where people can appreciate the wind farm from a distance and learn about renewable energy;*

- Use minimal or no lighting on the turbines unless required for aviation safety. Lighting can increase visibility and, therefore, the visual impact. Limit signage to what is necessary for safety and regulatory compliance.

Following the implementation of the mitigation measures highlighted throughout this section, the residual significance can be reduced to not significant.

#### Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the Project Operator during the operational phase unless stated otherwise:

- Documentation of submitted grievances related to visibility (if applicable) as part of the SEP and measures undertaken to resolve such grievances; and
- Visual inspections to ensure mitigation measures are implemented as applicable.

## 9. LAND USE

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to land use. The section then presents an assessment of potential impacts during the various Project phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

### 9.1 Assessment of Baseline Conditions

#### 9.1.1 Methodology for Assessment

The baseline assessment of the Project site was based on stakeholder consultation and engagement, secondary data review and a field survey, each of which is discussed in further details below.

##### ▪ Stakeholder Consultation and Engagement

Stakeholder consultation and engagement activities were undertaken with key entities in relation to land use. This included the entities below. Refer to “Section 6.3.1” earlier for additional details.

- Department of Chamber of State Cadasters for the Republic of Uzbekistan;
- Kungrad District Khokimiyat;
- Kungrad State Forestry; and
- Committee for Development of Sericulture and Wool Industry.

In addition, as part of the FGD undertaken with the local communities, specific discussions were undertaken in relation to land uses within the Project area. Refer to “Section 6.3.2”.

##### ▪ Secondary Data Review

Prior to the undertaking of any site related surveys, a full and detailed review of up-to-date high-quality satellite images for the Project area was undertaken. Such satellite images were provided the Developer and were part of the topography study undertaken.

The objective was to identify any potential sites of interest within the entire Project footprint and boundary so that it can be inspected during the site survey.

##### ▪ Site Survey

A detailed site survey for the Project area was undertaken from 1 August 2023 until 20 August 2023. The methodology included the following:

The detailed survey for the Project components which included the following:

- Substation areas along with 2km buffer

- All WTG location along with a 700m buffer
- Access along with a 200m buffer on each side
- Internal road network along with 500m buffer on each side
- Internal OHTL network along with 500m buffer on each side

Remaining areas (i.e. areas outside of Project components but within the project footprint) were surveyed through a transect methodology (with transects every 1km) to try to cover as much ground as possible within the Project area.

The objective of the field survey was to ascertain the presence of any land use activities to include physical structures (e.g. houses, settlements, tents, etc.) or economic activities (e.g. agriculture, grazing, etc.). If any sites were noted the following was recorded:

- Sketch plans;
- Areas along with GPS coordinates;
- Photograph;
- Undertake an analysis to categorize the sites and archaeological features and assessing their significance;
- Identify whether the site can be relocated or removed and if so identify requirements that should be undertaken and considered; and
- If site cannot be relocated / removed identify the requirements to be considered for Project design (e.g. buffer distances, fencing, etc.).

### **9.1.2 Land Ownership**

The consultation with the Department of Chamber of State Cadasters for the Republic of Uzbekistan took place on the 18<sup>th</sup> of May of 2023, and the official land designation for the Project was provided. Based on the following consultation the land is considered under governmental ownership. The total area of the Project is 95,051.15 hectares, of that the total area is under governmental ownership, and allocated to the following entities (as noted in the figure below):

47,063.01 hectares registered under State Reserve Land of Kungrad District Khokimiyat by the decision of the Council of Ministers of the Republic of Karakalpakstan 551-13-0-Q/22 dated 09.12.2022. This area is classified as “other lands not used in agriculture”.

44,205.07 are registered under State Reserve Land of Khokimiyat of Kungrad District based on the decision of the Council of Ministers of the Republic No. 204-13-0-Q/21 of 16.12.2021. This area is classified as “agriculture reserve land” and sub-classified under this category as “type of other unused land.”

3,782.94 hectares that are registered under the Kungrad State Forestry based on the decision No. 65-b dated 29.07.2016. This area is classified as “not used for agriculture and belongs to the type of other lands”.

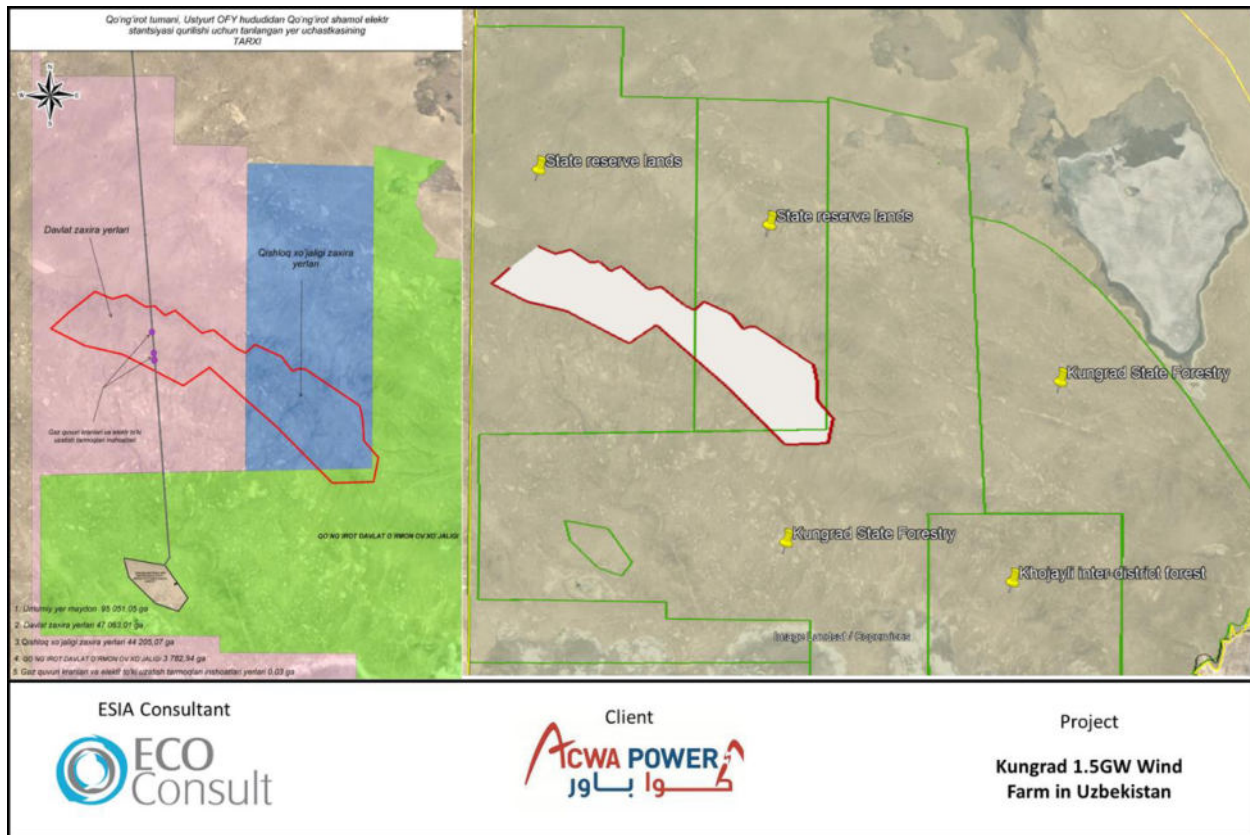


Figure 34: Land Ownership for the area

Additional consultations were undertaken with both the Kungrad District Khokimiyat and Kungrad State Forestry, which indicated that there are no current or planned activities within their designated areas in specific. Furthermore, indicating that they have no objection and no further issues of concern.

Process for the land allocation will entail the transfer of these lands to the district reserve fund, which will then update their classification (e.g., industrial or infrastructure project) after which they will be transferred to the ownership of the Ministry of Energy of the Republic of Karakalpakstan. The following transfer will take place via an internal governmental process that will entail a Presidential Decree. Therefore, a Land Lease Agreement (LLA) will then be signed between the Developer and the Ministry of Energy. This process will require around 3-4 months to complete from appointment of EPC Contractor (which is expected in Q1 2024).

### 9.1.3 Formal and Informal Land Use

Based on the land use survey undertaken, no physical or economical land use activities were recorded onsite nor any evidence which could indicate any such activities of informal activities. In particular, the following was noted:

- No physical structures were noted onsite (such as human settlements or structures);
- No key evidence of any economic activities to include in particular agriculture activities or recent grazing activities which are common practices undertaken by local communities. In particular, no ploughing marks were noted within the Project area (which would be indicative of agricultural activities) nor any animal feces (which would be indicative of grazing activities);

- No nomadic activity was noted within the Project site or evidence of such activities.

In addition, based on consultations undertaken, the following is noted:

- Consultation activities undertaken with the local communities indicated that there are no land uses undertaken by any groups within the site (to include but not limited to hunting, grazing, agriculture, etc.);
- Consultation activities undertaken with the Committee for Development of Sericulture and Wool Industry indicated that there are no grazing activities undertaken onsite; and
- The bird observer team have been asked for input on any key land uses potentially observed during the VP and transect surveys which have been undertaken from January 2023 to date (refer to “Section 11”). No key land uses were reported or noted in particular.

Finally, the history of the Project area has been traced through satellite maps (Google Earth) from 1985 to 2023. As indicated in the figure below, the maps do not show any visible and previous physical or economical activities within the project site.

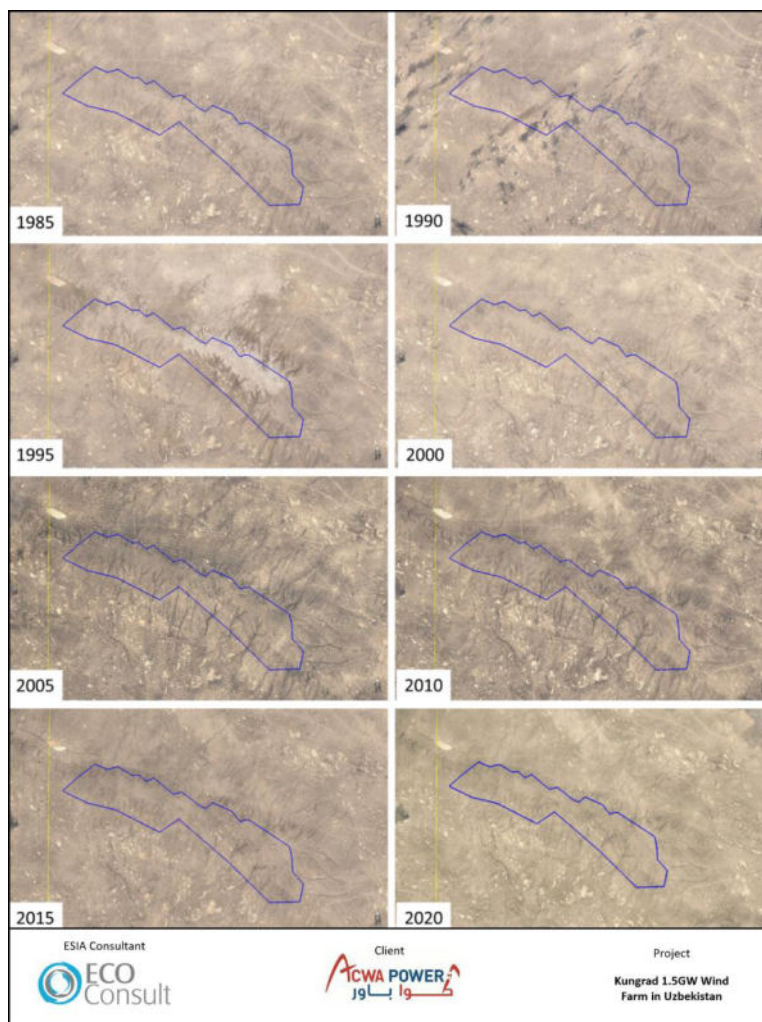


Figure 35: Historical Land Use of the Project site

**9.1.4 Other**

Based on the land use survey undertaken, there are additional land uses noted onsite which include the following:

Other unidentified objects were noted throughout the Project site (as note within the figure below) which include concrete foundations, metals scraps, and wells. All such structures were abandoned and deteriorated. It is believed that these were previously used as part of geological explorations throughout the soviet era or previous geological explorations by the Government of Uzbekistan.

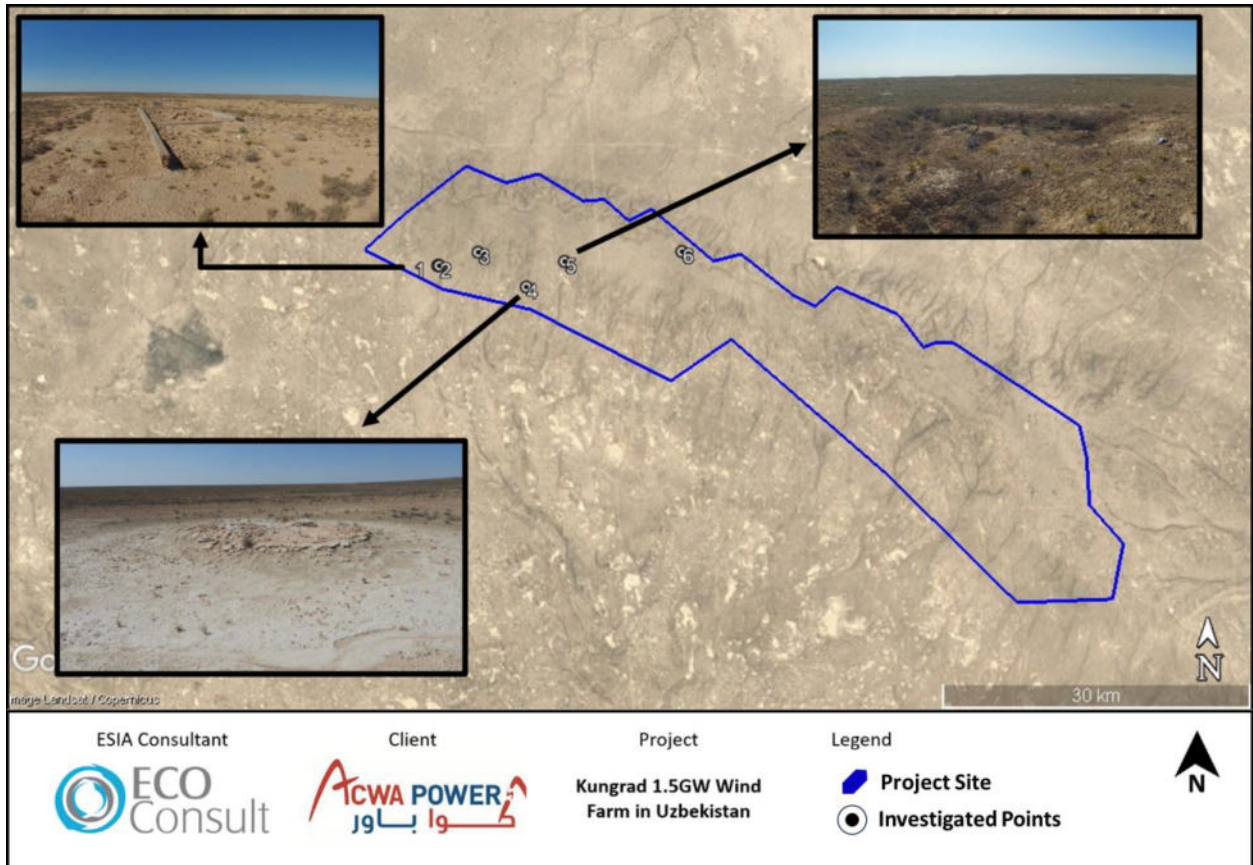


Figure 36: Some of Unidentified Objects Onsite

Based on the site visit infrastructure and utility elements were recorded which included the following: (i) pumping station, (ii) gas pipelines, and (iii) electricity towers and lines. Those are not considered relevant for land use and are discussed under the infrastructure and utilities Section. Refer to “Section 14” for additional details.

Based on site visit undertaken during the scoping phase (March 2023) it was noted that there were geological exploration activities. “Section 14” for additional details.

Based on consultations undertaken (refer to “Section 6.3.1”), it was indicated that there are release programs for the Houbara Bustards into the wild nature in Karakalpakstan. Houbara Bustard release programs undertaken mainly by International Fund for Houbara Conservation in Abu Dhabi (OAE) and brought to the framework of the partnership between Ministry of Ecology, Environmental Protection and Climate Change. In addition, Falcon Hunting Solutions (private sector company) is involved in organizing hunting expeditions in Karakalpakstan for the houbara in Uzbekistan by Arab state royalty whom use a private civil airport within the area.

Based on consultations it was indicated that no activities (release programs or hunting expeditions) are undertaken within the Project specific area. However, no further details were provided on specific inquiries stating that it is confidential information. This issue is also discussed further within “Section 11” related to biodiversity.

## 9.2 Assessment of Impacts

This section identifies the anticipated impacts on land use from the Project throughout its various phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

As discussed earlier, the Project is under governmental ownership and the land ownership will eventually be transferred to the Ministry of Energy. Therefore, there is no land expropriation or acquisition process to be undertaken for the Project and also no impacts anticipated in terms of land ownership.

In addition, there are no physical or economical activities undertaken at the Project site. Therefore, there are no anticipated impacts on land use in relation to physical and/or economical displacement.

Based on the above, this impact is scoped out and there are no further requirements to be considered for the ESIA study.

## 10. GEOLOGY, HYDROLOGY, AND HYDROGEOLOGY

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to geology, hydrology and hydrogeology. The section then presents an assessment of potential impacts during the various Project phases. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

### 10.1 Assessment of Baseline Conditions

Baseline assessment was based on secondary data as available from desktop review as well as a standalone assessment undertaken by the Developer (through technical consultant) to include a geotechnical and hydrology assessment.

The above entailed collecting information on the following:

- Geological conditions within the Project site to include formations, soil types, and geomorphology along with illustratively maps;
- Hydrology conditions of the Project site to include catchment within which the Project is located along with maps as appropriate. This includes drainage patterns, runoff volumes and surface water resources; and
- Hydrogeology conditions of the Project site along with maps as appropriate. This includes, groundwater resources, groundwater quality, etc.

#### 10.1.1 Geology

The geological evolution of the Kungrad District in the Republic of Karakalpakstan has been significantly impacted by the Cenozoic era, which encompasses the Neogene and Quaternary periods and spans a duration of approximately 66 million years to the present. During this extensive timeframe, marked by significant geological transformations, dynamic tectonic activity has been a key driver.

The convergence and collision of the Eurasian and Indian plates have resulted in the notable uplift of prominent features, including the Ustyurt Plateau. Concurrently, sedimentary deposition, erosion, and weathering processes have actively shaped the landscape, giving rise to sedimentary basins, erosional features, and expansive alluvial plains. Fluvial processes, influenced by the region's rivers and lakes, have meticulously carved river valleys and deposited a range of sediments.

At the same time, the terrain has been actively sculpted by sedimentary deposition, erosion, and weathering processes, resulting in the formation of sedimentary basins, erosional features, and vast alluvial plains. River valleys have been carefully sculpted by fluvial processes, which have been influenced by the Region's lakes and rivers and have deposited a variety of sediments. Furthermore, Kungrad District has been subject to tectonic faulting, as demonstrated by the existence of fault lines such as the Ustyurt and South Karakum faults, which are periodically associated with seismic activity.

As shown in the figure below, it is evident that the surface geology of the Project site is influenced by the Cenozoic era, more specifically, the Project site is mostly made up of deposits belonging to the Neogene period with a small portion in the northern part of the Project land is made up of deposits from the



Quaternary deposits. However, it is evident that the majority of the Project land has Neogene deposits that are mainly composed of the alternation of limestone and marl underlying sandstone unit.

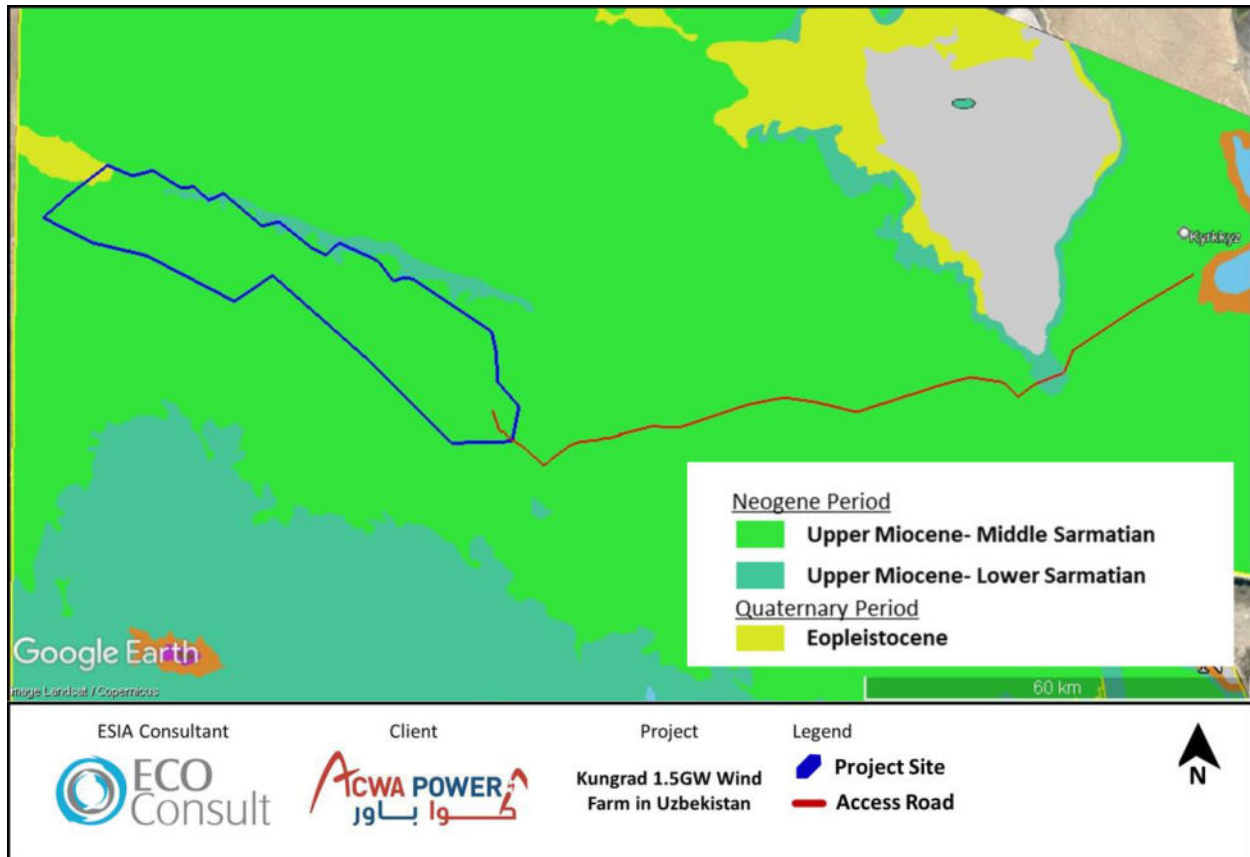


Figure 37: Geological Map and Ground Investigation Locations of the Project Site


The Project site exhibits a diverse geological composition. Predominantly, the Project site is characterized by the Upper Miocene to Middle Sarmatian geological formation, which plays a central role in its geological profile. This formation comprises sedimentary rocks and deposits that date back to the Upper Miocene and Middle Sarmatian epochs, spanning approximately 11.6 to 5.3 million years ago. These sedimentary rocks encompass sandstone, siltstone, claystone, and marl, often containing fossils and mineral deposits.

In the northern section of the Project site, an area of approximately 11.5km<sup>2</sup> encompasses Eopleistocene deposits. These deposits, originating from the early Pleistocene epoch, which spans from approximately 2.6 million to 11,700 years ago, consists of diverse sediment types, including gravel, sand, silt, and clay. Over time, these deposits have undergone weathering and erosion processes, warranting particular attention in the assessment of potential impacts.


Furthermore, within the Project site, there is an area of about 27km<sup>2</sup> that comprises Upper Miocene to Lower Sarmatian geological units. These units represent a temporal range from the Upper Miocene to the Lower Sarmatian, approximately 11.6 to 5.3 million years ago. Similar to the Upper Miocene-Middle Sarmatian deposits, these formations typically consist of sedimentary rocks, such as sandstone, siltstone, claystone, and marl, and may contain fossils and mineral deposits.

Age	Maximum Thickness	Description
Quaternary	5-60m	Deposited mainly by river systems in mountainous regions. Reddish sand dunes in desert region
Neogene - Miocene to early Pliocene	500-700m	Red shale, clays, marls, sandstone and conglomerate, with rare gypsum.
Middle – Late Palaeogene	600m	Sandstone, clay and limestone. Oil and gas deposits are concentrated in the lower part of this formation.
Early – Middle Paleogene	300-500m	Gypsum and carbonate
Cretaceous	200-1200	Shale, siltstone, grey sandstone and limestones. Many petroleum deposits.
Upper Jurassic	60-300m	Conglomerate and cross bedded sandstones
Middle Jurassic (Dogger)	150-300m	Coal bearing Finer than lower Jurassic
Lower Jurassic (Lias)	90-400m	Conglomerate, sandstone, shale and coal
Upper Triassic	20-80m thick	Sandstones, conglomerates and dark reddish shales Unconformity at base.
Lower Triassic	20-80m	Grey, yellow and reddish sandstone, shales and conglomerates.

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Client



Project

Kungrad 1.5GW Wind Farm in Uzbekistan

Figure 38: Regional Sedimentary Geology of Uzbekistan

### Soil Type and Characteristics

As shown in the figure below, the Project site soil composition is mostly Haplic Arenosols, which is commonly known as "Ustyurt soils" due to their prevalence in the Ustyurt Plateau region. These soils are widely distributed and notably found in arid and semi-arid regions. The expansive Ustyurt Plateau, spanning parts of Kazakhstan, Turkmenistan, and Uzbekistan, is a prime example of their occurrence.

Haplic Arenosols are characterized by their sandy or loamy sand textures, lacking discernible soil horizons. They primarily consist of sand-sized particles, imparting a gritty texture. The color of these soils can vary from pale yellow to reddish-brown, influenced by mineral content and the presence of organic matter.

A defining feature of Haplic Arenosols is their formation in arid to semi-arid climates. Here, limited precipitation and high evaporation rates lead to the accumulation of sandy materials. Prevailing strong winds in these regions further shape the soil's texture and composition.

Although Haplic Arenosols are generally unsuitable for agriculture due to their poor water-holding capacity, drainage, and nutrient retention, certain plant species adapted to arid conditions may thrive in these soils. Traditional land uses such as pastoralism and grazing are practiced in such areas.

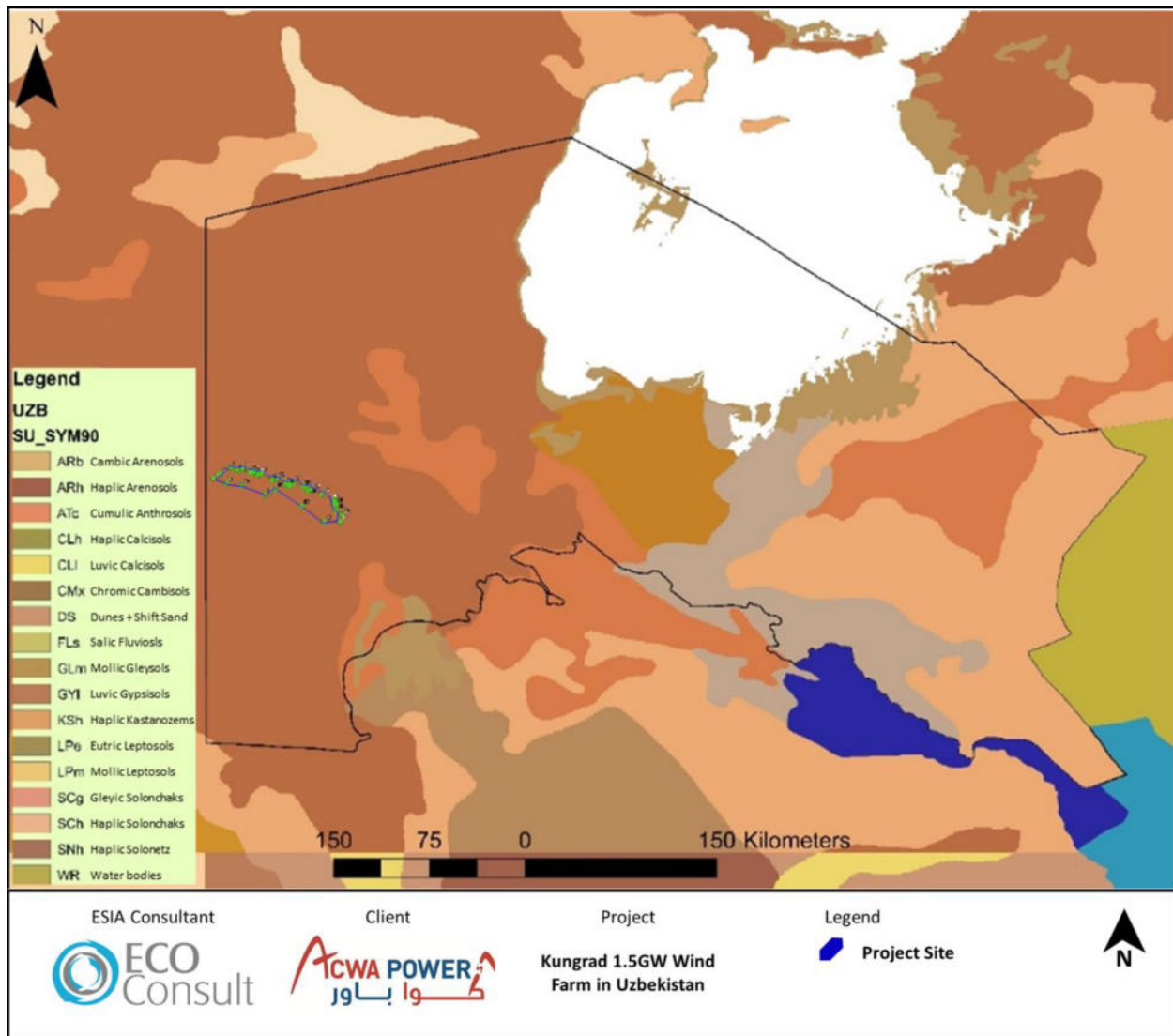


Figure 39: Soil Types and Formations in Karakalpakstan Region

According to Food and Agriculture Organization - Digital Soil Map of the World (FAO-DSMW), the soil composition in the Kungrad Region, including the Project site, comprises three fundamental components: sand, fines (potentially including silt and smaller particles), and clay. The analysis specifically targets the topsoil layer, spanning 0-30cm, a critical zone for plant roots and soil processes. As shown in the figure below, the Project site is located within the Percentage values (58.9%, 16.2%, and 21.6%) which signify the volumetric or weight-based distribution of sand, fines, and clay within this layer. Sand dominates at 58.9%, offering efficient drainage but limited water and nutrient retention. Fines at 16.2% enhance retention, while clay at 21.6% excels in water and nutrient retention but may impede drainage and compact easily. This data rigorously outlines the mechanical composition of the surface soil layer.

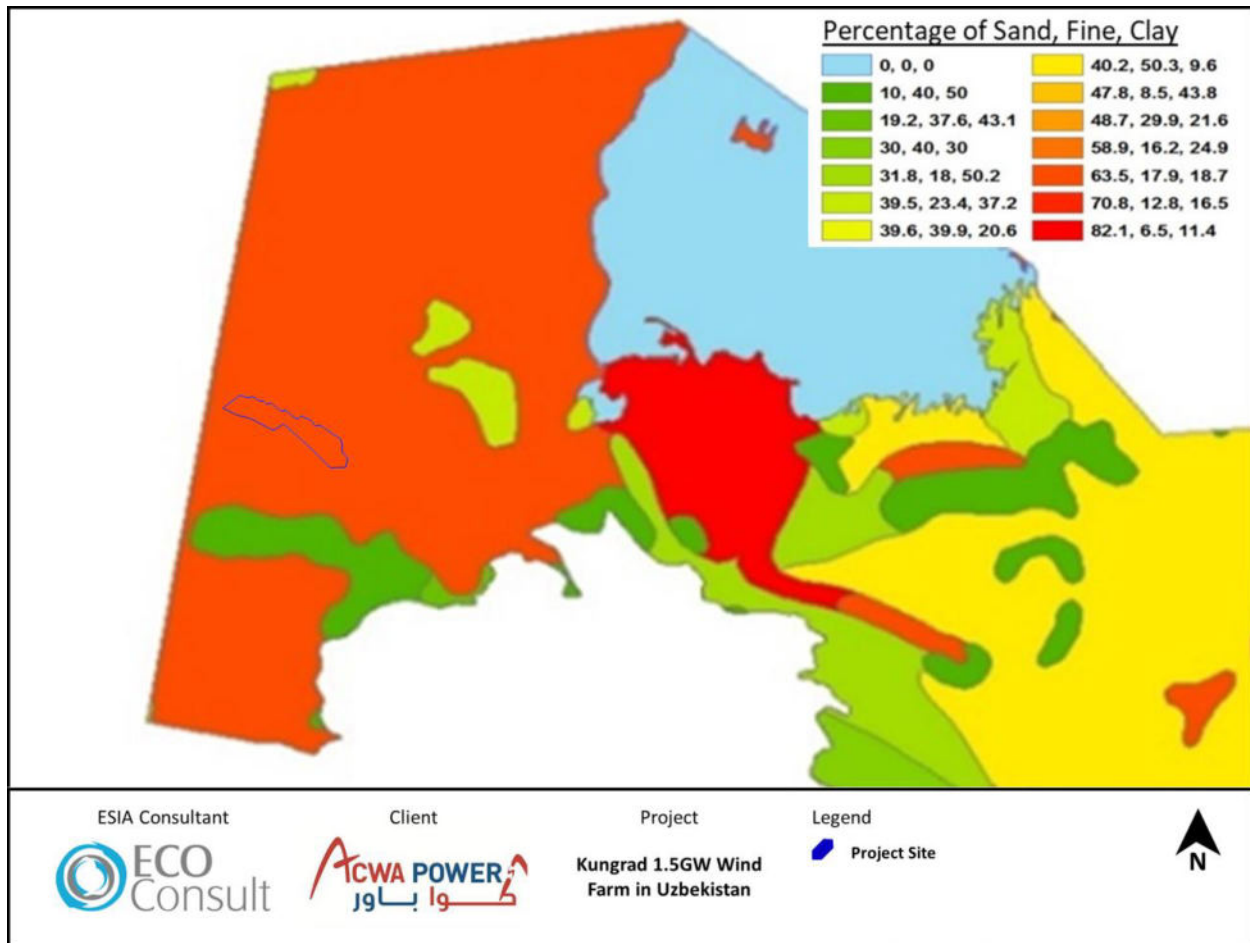


Figure 40: Mechanical Composition of Soils (FAO-DSMW)

Seismic Activity

The Project site, located in an area prone to seismic activity, is influenced by seismic zones like Sultanuizdag, Bukuntausk, Predkyzylkum, and Besapano – North – Nurtinsk. The Project site itself falls within the Sultanuizdag seismic zone, with a potential earthquake magnitude exceeding M>5.5. Notably, earthquakes with magnitudes greater than M>6 have occurred about 250 km southeast of the Project site in Kunya-Urgench. Other nearby zones, including Bukuntausk, Predkyzylkum, and Besapano – North – Nurtinsk, also pose seismic risks exceeding M>5.5. Thus, seismic activity with a magnitude exceeding M>6.0 should be considered. Historical data records over 500 strong earthquakes with M>5 in Uzbekistan, with 81 such earthquakes occurring between 1955 and 2000.

According to the figure below, the Project site falls within Zone 6, with a Peak Ground Acceleration (PGA) value of 100 cm/s<sup>2</sup> based on a return period of 475 years, indicating a high seismic risk. Notably, active fault lines run parallel to the Project site's northern and southern boundaries. These faults are classified into four confidence levels (A, B, C, D), which are indicative of the extent of their known activity and study. Furthermore, the rate of movements on these active faults is ranked into three grades: <1 mm/year, 1–5 mm/year, and >5 mm/year, denoted as grades 1, 2, and 3, respectively. In the vicinity of the project area, fault levels B, C, and D are identified, all assigned a rate of "3," suggesting some indications of fault activity, albeit with varying degrees of clarity and certainty. However, it's important to note that Level D faults lack clear evidence of Late Quaternary displacements.

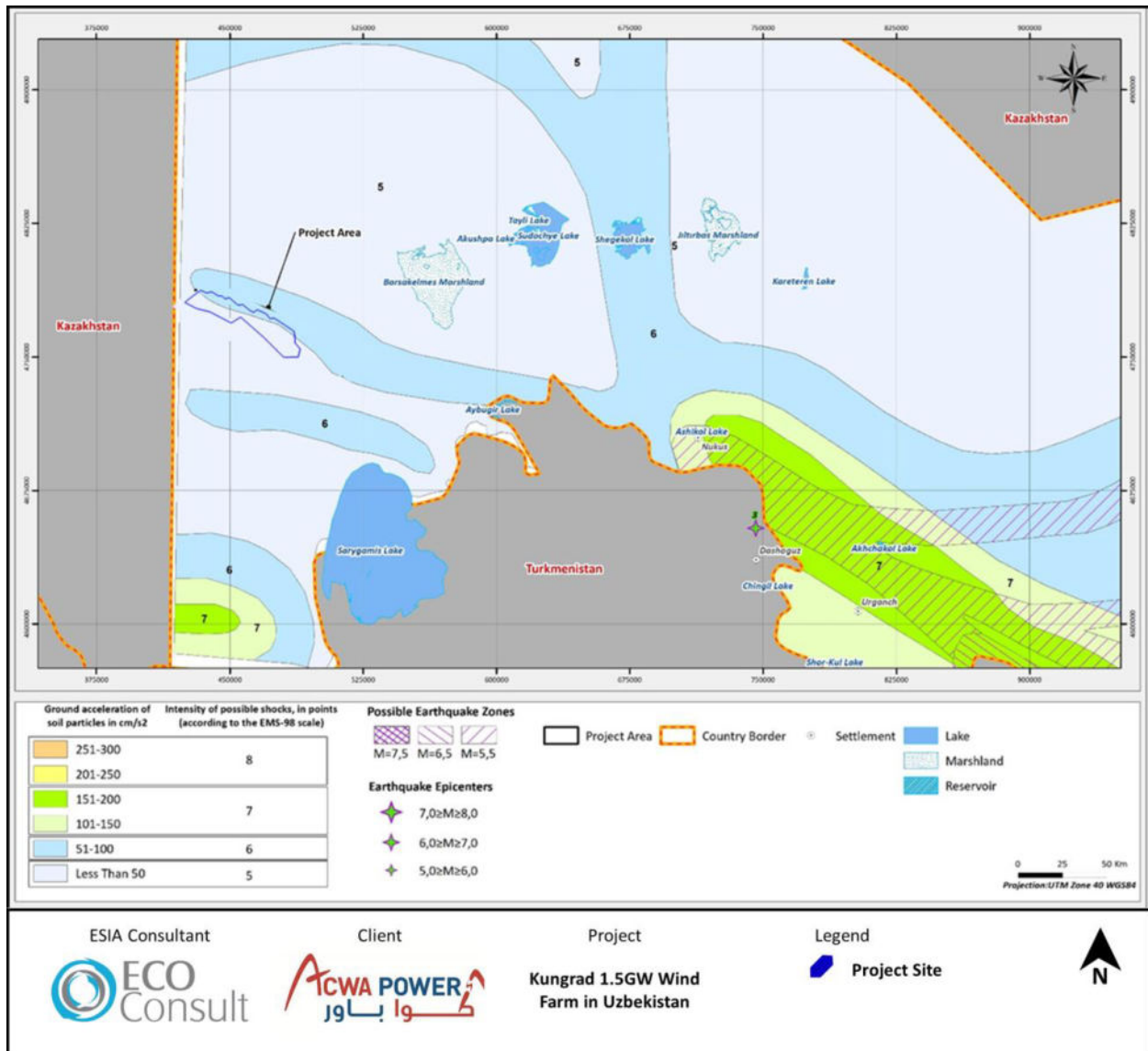


Figure 41: Project Site in Relation with Earthquake Zones and Past Adjacent Earthquakes with M>5

### 10.1.2 Hydrology

In general, the Republic of Uzbekistan, along with its neighboring countries, lies within the Aral Sea internal drainage basin. This geographical context necessitates the shared utilization of freshwater resources across borders, catering to both economic and environmental demands. These freshwater sources, including rivers, lakes, and reservoirs, serve multiple purposes, such as irrigation for agriculture, industrial processes, and meeting domestic and public utility needs. Unfortunately, the overuse of saline lands for agriculture, in-stream disposal of drainage waters, and inadequate wastewater treatment systems have collectively deteriorated the water quality in Uzbekistan and led to heightened salinity levels.

The key rivers in this region are the Amu Darya River, formed by the confluence of the Vakhsh and Pyandj Rivers, and the Syr Darya River, formed by the confluence of the Narin and Karadarya rivers, with the Chirchik River near Tashkent (the Capital of Uzbekistan) playing a significant role as well. Within Uzbekistan's borders, the Amu Darya River basin encompasses the Surkhandarya, Sherabad, Kashkadarya,

and Zarafshan rivers, although only the Kashkadarya and Sherabad Rivers are entirely confined to Uzbekistan's territory.

The Amu Darya River, the larger of the two rivers nourishing the Aral Sea, now divided into two or three separate water bodies, boasts a vast catchment area of 1,017,800 km<sup>2</sup>. However, it's important to note that the actual catchment area for the Amu Darya is approximately 250,000 km<sup>2</sup>, as some of the rivers within this basin do not reach the Amu Darya itself. Notably, the majority of the catchment area lies beyond Uzbekistan's borders, with approximately 82% of surface runoff originating in Turkmenistan, while the remaining 16% is generated within Uzbekistan.

The Amu Darya River's current flow is regulated through a network of reservoirs, including the Channel, Kaparas (comprising Kaparas, Sutansanjar, and Koshbulak reservoirs), created by four primary dams constructed between 1981 and 1983 near Tuyamuyun, around 300 km upstream of the former Aral Sea boundaries. These reservoirs span both Uzbekistan and Turkmenistan. The primary purpose of this complex is to manage the Amu Darya's flow, primarily for agricultural use (98%) and, to a lesser extent, for industrial and drinking water purposes (up to 2%). Collectively, these reservoirs offer a cumulative operational storage capacity of 5.4 billion m<sup>3</sup>, though their initial capacity at commissioning was 7.8 billion m<sup>3</sup>. Notably, siltation poses a significant challenge in managing these reservoirs, with a decrease in storage volume to 6.9 billion m<sup>3</sup> in 2001, attributable to the deposition of 0.9 billion m<sup>3</sup> of silt, occurring at a rate of 45 million m<sup>3</sup> per year.

The multi-annual average total runoff of the Amu Darya varies between 47 and 108 billion m<sup>3</sup> per year, averaging at 78.46 billion m<sup>3</sup> annually. The expansion of irrigation abstractions reached 120 billion m<sup>3</sup> in 2008, resulting in a rapid decline in the Aral Sea's water volume. Notably, from 1993 to 1999, no Amu Darya water reached the Aral Sea. Presently, the upstream Amu Darya flow only extends to Porlitau village, situated 40 km southeast of Muynak city, where it is redirected into a lagoon via impoundment, located south of the Shagilik-Porlitau road.

Furthermore, as depicted in the figure below, regional water usage patterns confirm that waters from the Amu Darya are redirected to the Aral Sea before reaching the Project area, reaffirming the Project's minimal influence on the broader water ecosystem.

It's important to note that the Project site does not intersect with any rivers or water bodies. The nearest surface water features, Sarygamysh Lake, Borsakelmas, and Sudochye Lake, are located around 67km to the south, 65km to the east and 140km to the east respectively, of the Project. Additionally, the Amu Darya River is located more than 180km away from the Project site to the east. A brief description of each of the water bodies is presented below:

- Sarygamysh Lake, located in Kungrad, Karakalpakstan, is a natural basin, serving as a significant water reservoir due to tectonic processes, with fluctuating size and water volume. It plays a crucial role in irrigation and local biodiversity.
- Borsakelmas, another key reservoir in Kungrad, is artificial and supplies water for irrigation, domestic, and industrial use, regulated by a dam infrastructure. It brings water security but poses land and environmental challenges.
- Sudochye Lake, also in Kungrad, is a natural lake with varying water levels, supporting diverse ecosystems and human activities. It's culturally, ecologically valuable but susceptible to human impacts.

These reservoirs collectively contribute to Kungrad's water resources, meeting various human and ecological needs, each with unique origins and roles.

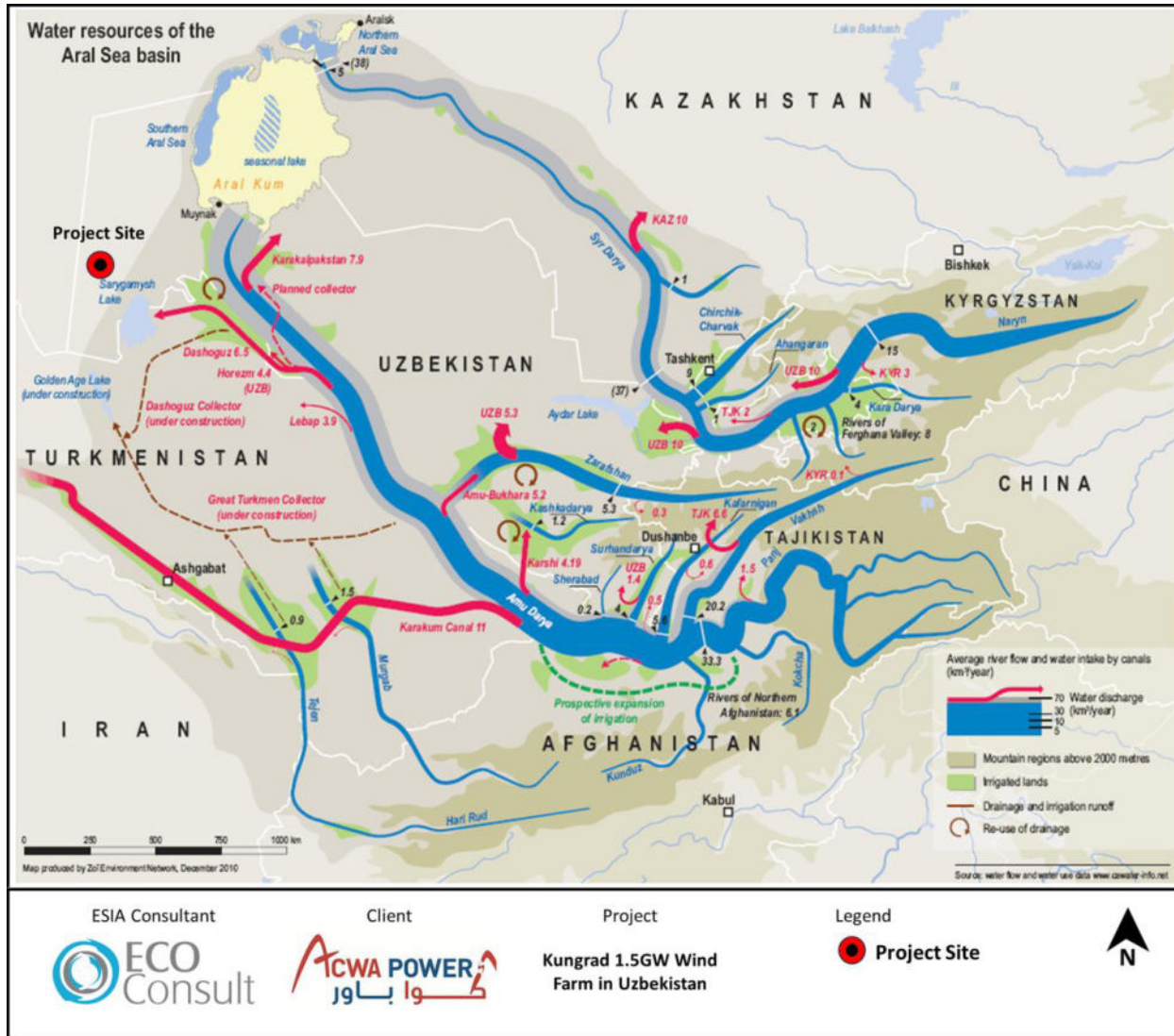


Figure 42: Water Resources of the Aral Sea Basin

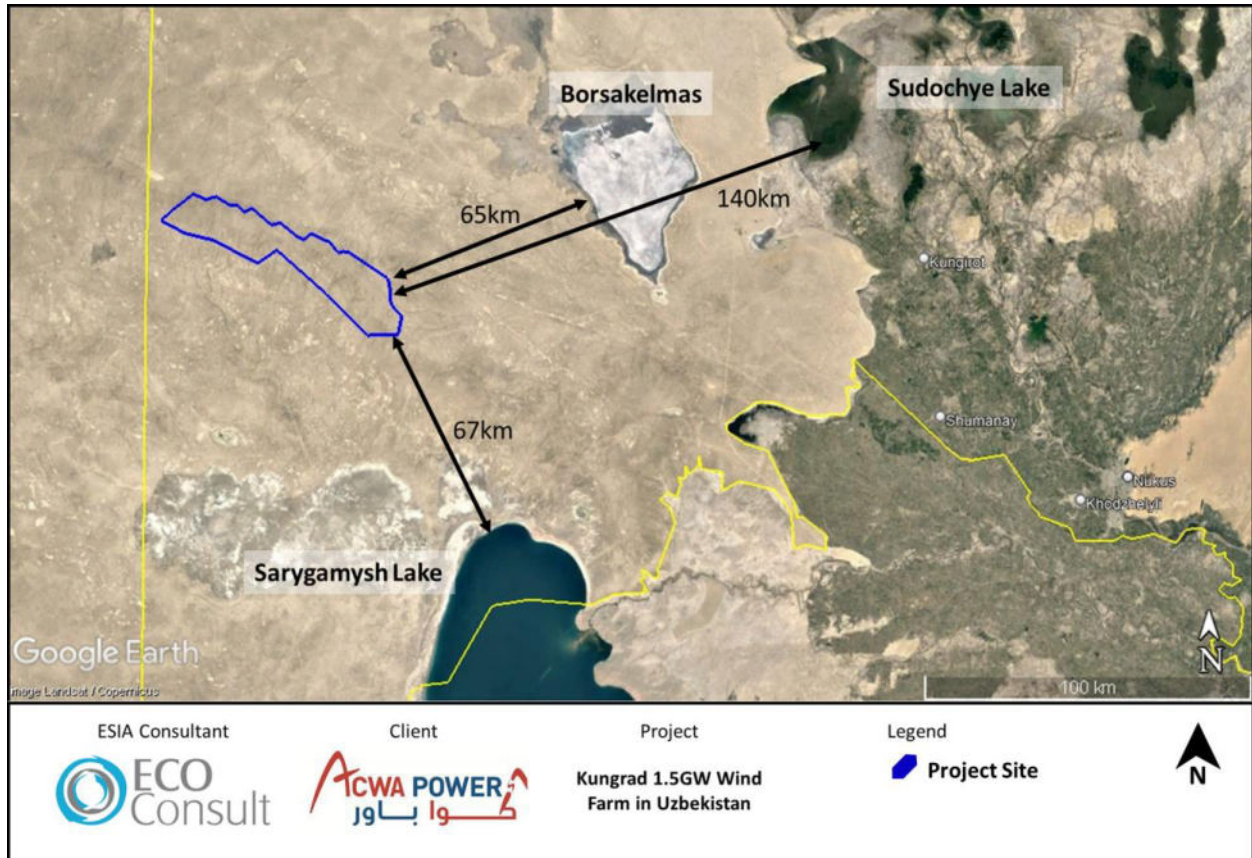


Figure 43: Project Site in Relation with the Closest Water Bodies

A stream order map has been prepared by the Developer’s standalone hydrology study that is based on Digital Elevation Model (DEM) having a 1m resolution and ArcGIS/hydrology tools with data on topographical features of a basin, such as a slope, flow direction, flow accumulation, stream order, and catchment area. Based on that, the given DEM shows no water streams or drainage lines in the Project site. The figure below shows the Project site’s study area in relation to the sub-basins and the river/channel network.



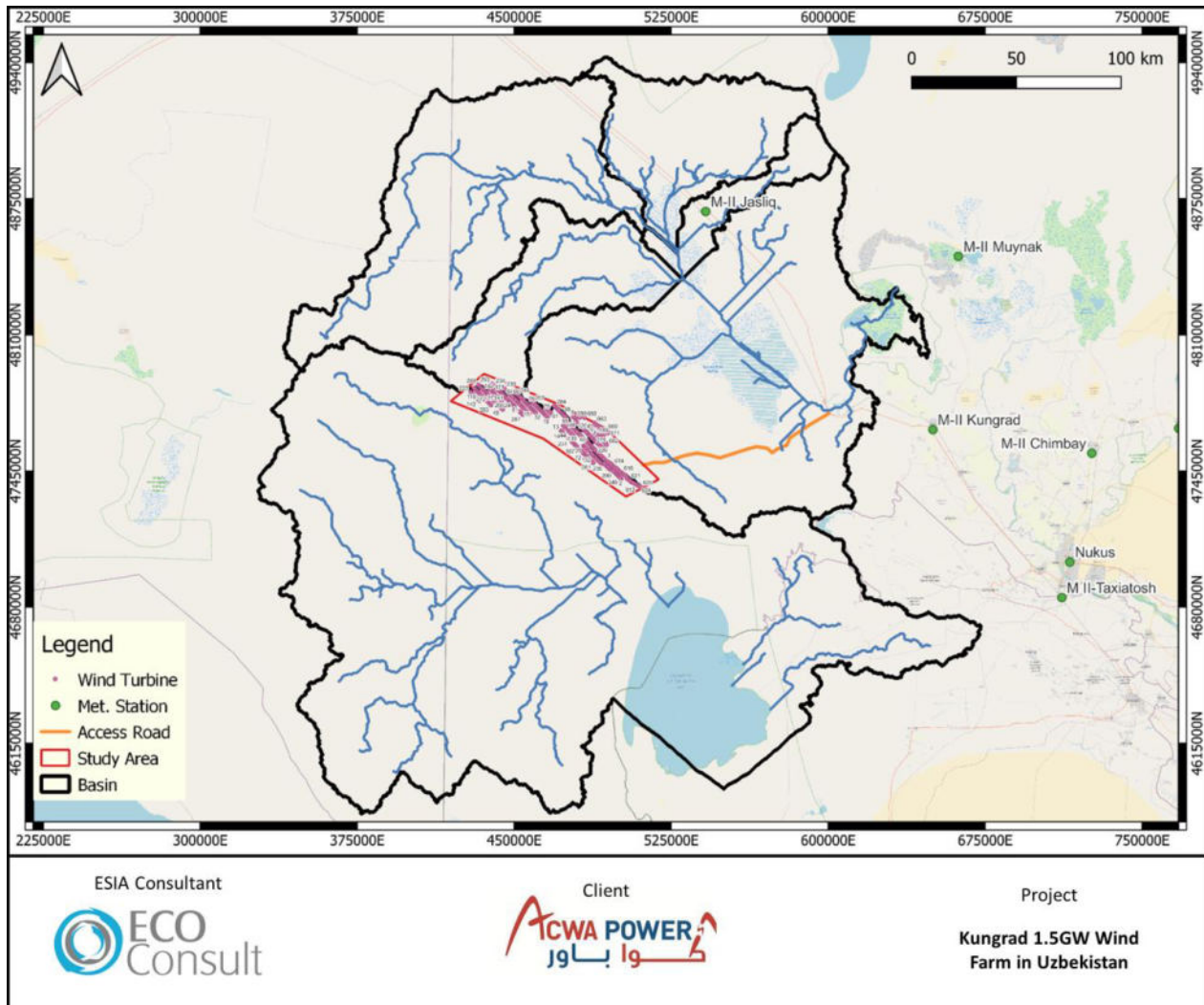


Figure 44: Project Site’s Study Area in Relation to The Sub-Basins and The River/Channel Network

### 10.1.3 Hydrogeology

One of the key hydrogeological features is the Amu-Bukhara Aquifer System, which is located in the Karakalpakstan region of Uzbekistan and extends into Turkmenistan. This aquifer system, which is primarily composed of sedimentary deposits such as sands, silt, and clay, is essential to the supply of groundwater. It plays vital roles in maintaining a number of vital activities, including irrigation, industrial uses, and municipal consumption, both in Karakalpakstan and in the neighboring areas.

The replenishment of the Amu-Bukhara Aquifer System is primarily dependent on the Amu Darya River, which flows through the area and seeps into the aquifer, providing an essential supply of groundwater. Because the region is dry, the groundwater that has accumulated plays a vital role in supporting farming activities and providing for the local population.

Despite these benefits, a number of significant obstacles remain, mostly related to the excessive and inefficient use of groundwater from the Amu-Bukhara Aquifer System. The most significant of these difficulties is the ongoing decline in groundwater levels, which has consequences like land subsidence that have an impact on the environment and the economy. There is also growing concern about the declining

quality of water resources, which are characterized by increasing salinity levels and contaminant intrusion that are observed in various locations.

Uzbekistan has implemented a number of carefully thought-out measures to effectively manage and preserve the Amu-Bukhara Aquifer System in order to address these difficult issues. These actions include strict control over groundwater extraction in an effort to prevent additional depletion as well as active promotion of the use of wise irrigation techniques. At the same time, proactive initiatives have been started in the field of alternative water sourcing. It is critical to emphasize that Karakalpakstan's aquifer status is inherently dynamic and subject to change in response to changing environmental, social, and economic demands.

The comprehensive knowledge of current aquifer conditions and their accompanying features takes center stage within the field of hydrogeology. The abstraction rates, which indicate the amount of groundwater that is taken out for a variety of uses—such as irrigation, industrial activities, and household needs—show variations depending on the location, time of year, and economic factors.

On the other hand, the recharge rates indicate the rate at which groundwater naturally regenerates. Natural processes like riverine seepage and rainfall percolation are primarily responsible for this phenomenon's development. The protection of aquifer integrity is greatly aided by the increase in recharge rates in arid regions such as Karakalpakstan. Surface water availability concurrently with land use patterns and meteorological dynamics are factors influencing recharge rates. Karakalpakstan contains various small groundwater lenses, which are characterized by their limited spatial and volumetric characteristics. These lenses primarily depend on the infiltration of water from irrigation canals to facilitate the process of recharge. Unfortunately, the availability of their exploitable reserves is limited due to a lack of replenishment and the intrusion of saline incursion. Discrete discharge wells are commonly utilized to provide water to remote communities that are strategically located outside the coverage area of existing water distribution networks.

The existing problems related to the aquifer conditions in Karakalpakstan—which include declining groundwater levels and land subsidence—are made worse by inadequate irrigation practices and infrastructure. Moreover, the threat of declining water quality, based on rising salinity levels and contaminant intrusion, intensifies the problems associated with the area.

One of the most common issues with data on water quality for groundwater in Karakalpakstan is the occurrence of salinization as shown in the figure below, which is mostly caused by the extremely saline substratum that is characteristic of the geological composition. Unfortunately, groundwater aquifers that possess sufficient reserves and meet the necessary water quality standards for consistent provisioning are extremely uncommon. Because of the Amu Darya River's natural recharge proclivities, the majority of these aquifers are concentrated along its precincts. Inversely, the real amount of groundwater extraction exceeds sustainable thresholds, which also results in a decrease in surface water flow.

Finally, based on consultations undertaken with the Ministry of Mining Industry and Geology (MMIG) it was indicated that there are no site-specific studies on groundwater depth for the Project site. However, in general based on studies undertaken within the wider area, groundwater depth depends on area height and for the Project site it is expected to be within between 70-300 m with salinity levels around 3-10 g/ml.

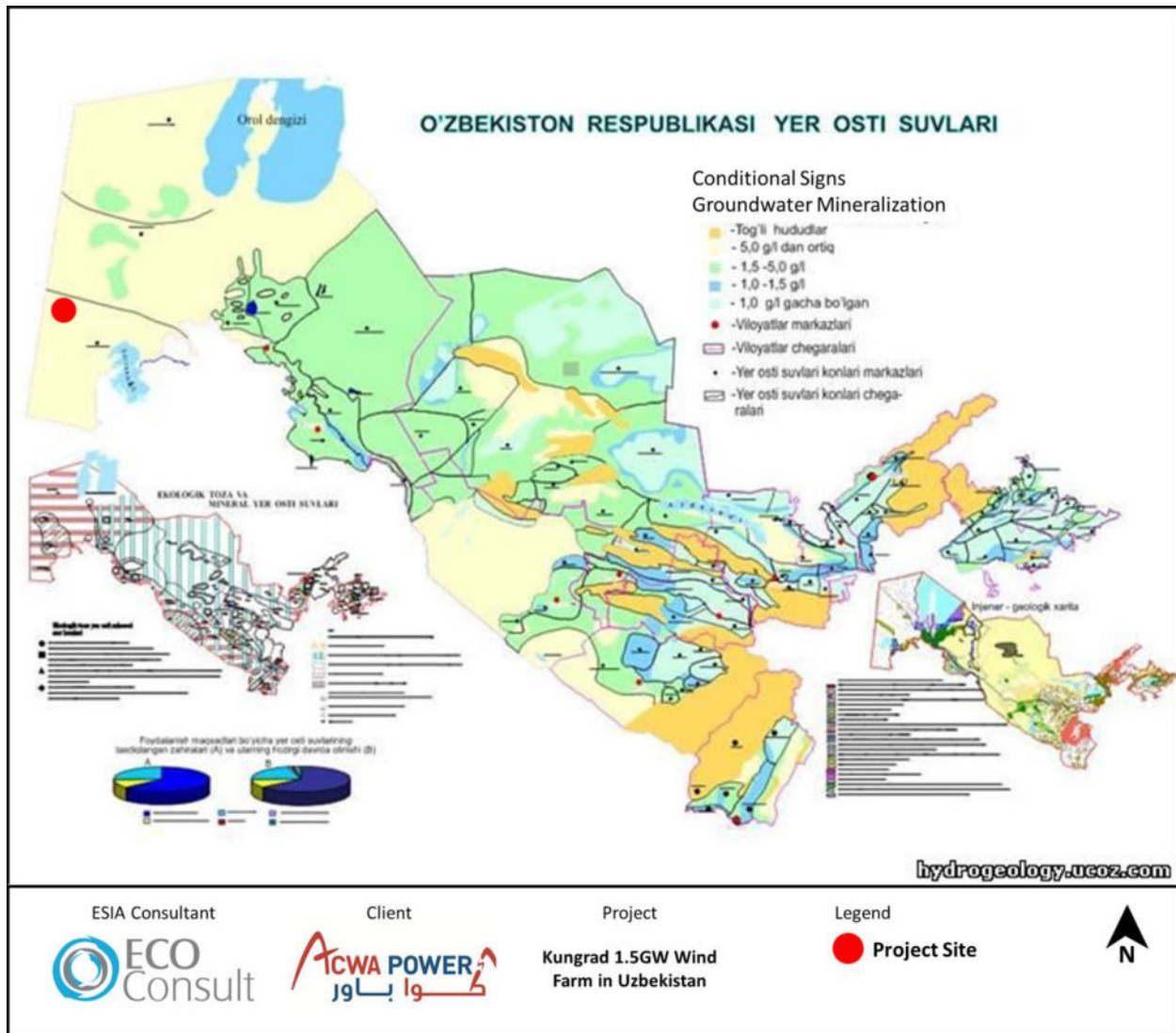


Figure 45: Mineralization of Groundwater

## 10.2 Assessment of Impacts

This section identifies and assesses the anticipated impacts from the Project activities on geology, hydrology and hydrogeology during the construction and operation phase. For each impact, a set of management measures (which could include mitigation measures, additional requirements, etc.) and monitoring measures have been identified to eliminate or reduce the impact to acceptable levels.

### 10.2.1 Potential Impacts from Flood Risks on the Project Site

It is important to investigate potential risks of local flood hazards from drainage systems as during the rainy season and especially during flash flood events, this could affect the Project components. As discussed earlier, the Project is located within an area with low or absent drainage lines (“Section 10.1.2” earlier).

As noted within “Section 10.1.2” earlier, according to topographic maps, Landsat images and the digital elevation models that were developed for the Project area using the Shuttle Radar Topography Mission

(SRTM) images (as also shown in Figure 44), the Project site is not located within any drainage system and more specifically it is located at the upstream of the catchment given that the Project site's topography is elevated when compared to its surrounding as shown in the figure below.

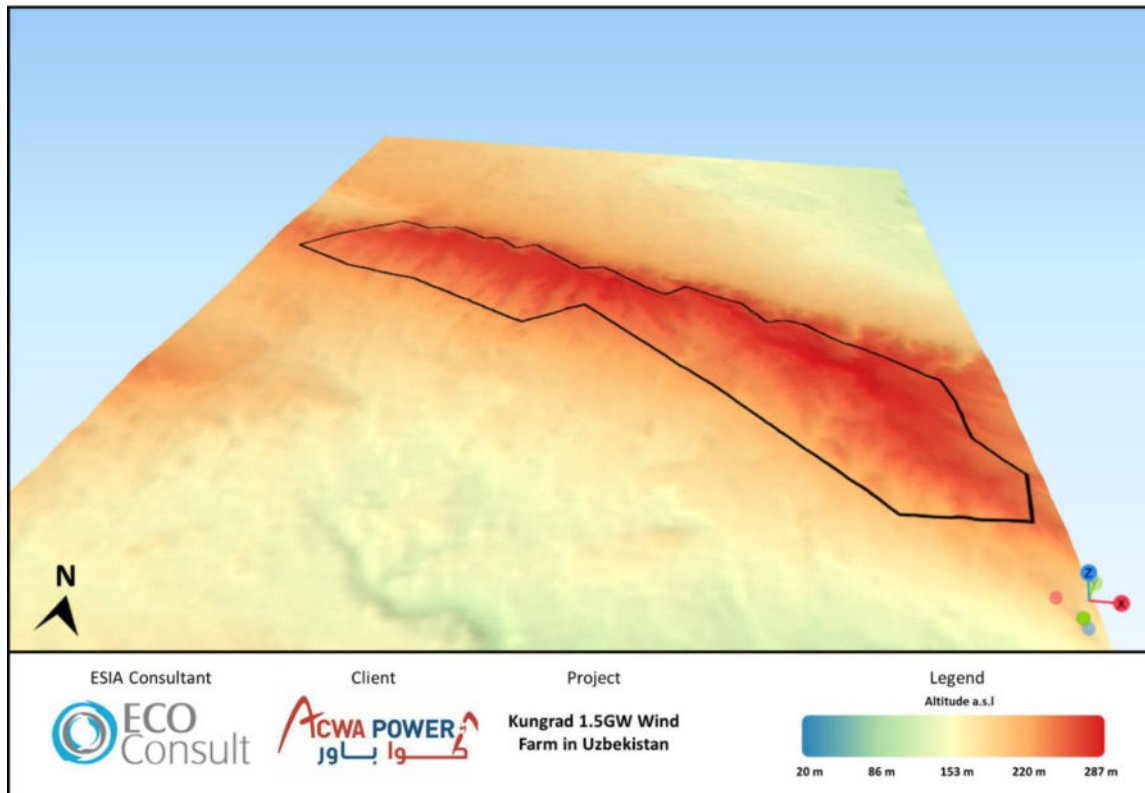


Figure 46: 3D DEM of the Project Site

However, such risks are considered critical and must be taken into consideration throughout the planning phase of the Project as they could inflict damage to the Project and its various components. A flash flood is defined as a rapid developed flood in just few minutes or hours of excessive rainfall without visible signs of rain, or an accident like a dam or levee break. A flash flood can be generated during or shortly following a rainfall event, especially when high-intensity rain falls on steep slopes with shallow, impermeable soils, exposed rocks and poor or sparse vegetation.

The Developer undertook a standalone hydrology assessment that included flood modeling using HEC-RAS 2D software, adhering to a comprehensive 2D modeling approach that considered topographical features and the hydrodynamic response of the Project site. The working terrain was generated from a provided DEM with a 1m spatial resolution. Variable Manning's roughness coefficients were employed, taking into account geological formations, surface characteristics, and land use, utilizing satellite imagery as a reference. The selection of roughness coefficients was based on existing literature. Variable mesh sizes, ranging from 1 to 3m, were strategically chosen to align with the topography, resulting in the utilization of over 3,000,000 mesh elements. At the downstream end, an outflow boundary condition conducive to a stable 2D model was implemented, considering normal depth.

For the creation of hazard maps, the FD2321/TR1 methodology (Defra and Agency, 2006) was followed, with the hazard rating (HR) calculated using the formula:

$$HR = d \times (v + n) + DF$$

where:

HR represents the flood hazard rating.

d signifies the depth of flooding (in meters).

v indicates the velocity of floodwaters (in m/s).

DF stands for the debris factor (0, 0.5, 1), contingent on the probability of debris causing a hazard.

n is a constant set at 0.5.

The debris factor (DF) is determined by the water depth values within the cells as follows:

DF = 0.5 if the water depth is less than or equal to 0.25.

DF = 1 if the water depth exceeds 0.25 or if the velocity surpasses 2 m/s.

In the flood modeling for the Project site, the Intensity-Duration-Frequency (IDF) data from the M-II Jasliq meteorological station was utilized. Specifically, the rainfall intensity with a 10-minute duration was employed to simulate flash flooding, while a 24-hour rainfall duration corresponding to a 100-year storm event was used to assess water accumulation downstream within the catchment area. Notably, the water depth observed at the Project site remained below 20 cm.

As a result, it was determined that all WTG were sited in locations characterized as having either no or low hazard potential. The figure below illustrates the water depths for the 100-year storm event at the Project site.

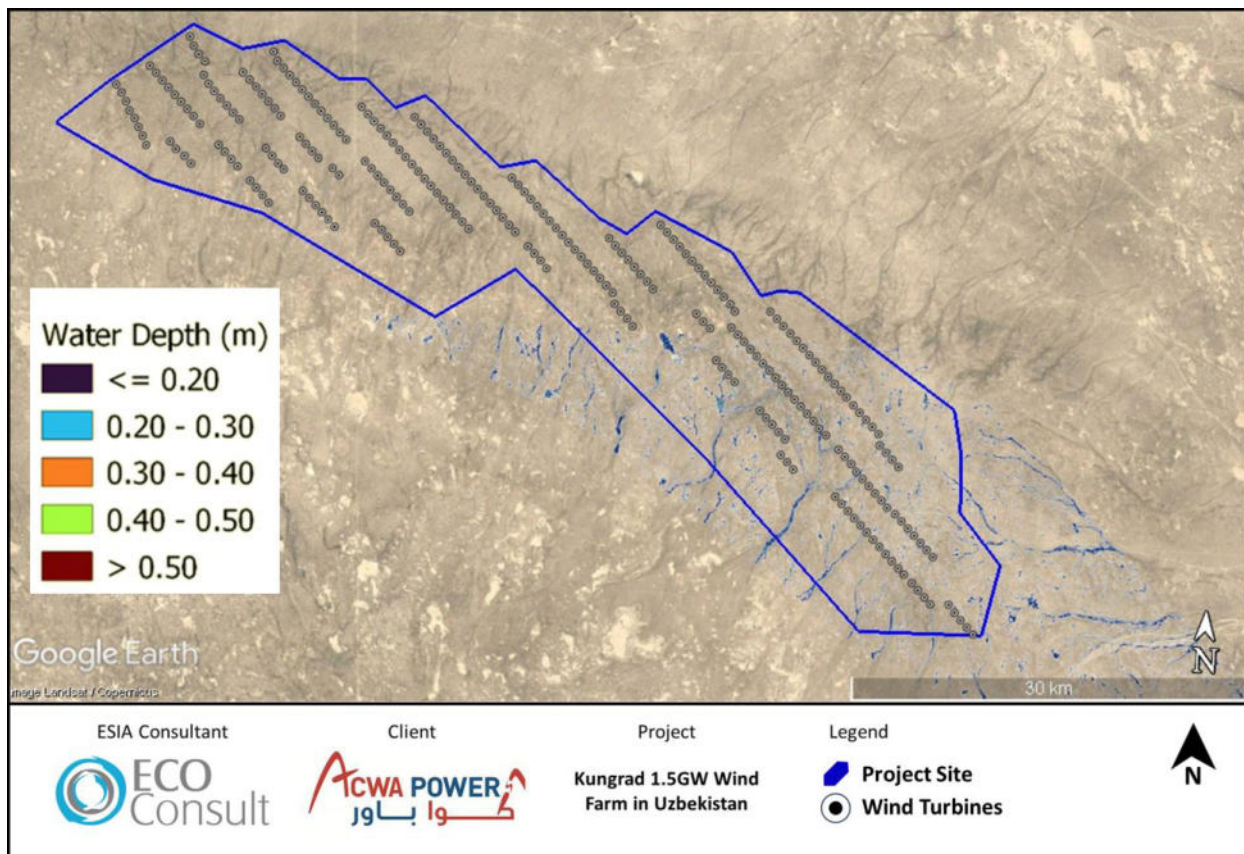


Figure 47: Water Depths within the Project Site Due to 100-Year Storm

Therefore, taking the above into account, the assessment concludes that there is no evidence to support risks of serious flooding in the Project area. Therefore, there are no anticipated impacts in relation to flood risks and there are no further mitigation or monitoring measures to be considered as part of the planning or design phase of the Project.

**10.2.2 Potential Impacts from Improper Management of Waste Streams during Construction and Operation**

Given the generic nature of the impacts on soil and groundwater for both phases of the Project (construction and operation) those have been identified collectively throughout this section. Generally, this includes potential impacts from improper housekeeping practices (e.g. improper management of waste streams, improper storage of construction material and of hazardous material, etc.).

Improper housekeeping practices during construction and operation (such as illegal disposal of waste to land) could contaminate and pollute soil which in turn could pollute groundwater resources. This could also indirectly affect flora/fauna and the general health and safety of workers (from being exposed to such waste streams). Generally, such impacts can be adequately controlled through the implementation of general best practice housekeeping measures as highlighted throughout this section, and which are expected to be implemented by the EPC Contractor throughout construction phase and Project Operator during the operation phase.

Construction Phase			Operation Phase		
Type	Negative	Such impacts are controlled through implementation of general best practice.	Type	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Short-term		Duration	Short-term	
Magnitude	Medium		Magnitude	Medium	
Reversibility	Reversible		Reversibility	Reversible	
Sensitivity	Medium		Sensitivity	Medium	
Likelihood	Medium		Likelihood	Medium	
<b>Significance</b>	<b>Moderate</b>		<b>Significance</b>	<b>Moderate</b>	

Following the implementation of the mitigation measures highlighted throughout this section, the residual significance can be reduced to not significant.

**(i) Solid Waste Generation**

Solid waste is expected to be generated from construction and operational activities. Solid waste generated will likely include construction waste (such as debris) and municipal solid waste (during construction and operation such as cardboard, plastic, food waste, etc.).

Municipal solid waste and construction waste generated will likely be collected and stored onsite and then disposed to the closest approved landfill or, if possible, reused in the construction activities.

**Note: expected waste quantities, the landfill that will be used for the Project and impacts on landfills is discussed separately under “Section 14.2.3”.**

**Mitigation Measures**

The following identifies the mitigation measures to be applied by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the municipal approved landfill or for recycling (as discussed in further details below);
- Prohibit fly-dumping of any solid waste to the land;
- Distribute appropriate number of properly contained litter bins and containers properly marked as "Municipal Waste";
- Adhere to waste hierarchy principles with associated mitigation measures to include prevent, minimize, reuse, recycle, recover and dispose.
- EPC Contractor only - during construction, distribute a sufficient number of properly contained containers clearly marked as "Construction Waste" for the dumping and disposal of construction waste.
- EPC Contractor only – during construction, it is recommended that recycling measures are implemented. It is recommended that recycling is undertaken in the following approach: (i) separation and disposal of recyclables in a separate container (cardboard, paper, glass, metal, etc.); and (ii) separation and disposal of non-recyclable materials in a separate container (e.g. food waste). Each container must be clearly marked. In addition, EPC Contractor must seek ways to reduce construction waste by reusing materials (for example through recycling of concrete for road base coarse);
- Implement proper housekeeping practices on the construction site at all times; and
- Maintain records and manifests that indicate volume of waste generated onsite, collected by contractor, and disposed of at the landfill. The numbers within the records are to be consistent to ensure no illegal dumping at the site or other areas.

#### Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Inspection of waste management practices onsite;
- Review of records and manifests for volume of waste generated to ensure consistency; and
- Regular environmental reporting on implementation of the waste management practices onsite.

#### ***(ii) Wastewater Generation***

Wastewater is mainly expected to include black water (sewage water from toilets and sanitation facilities), as well as grey water (from sinks, showers, etc.) generated from workers during the construction and operation phase. Wastewater quantities are expected to be minimal. It is expected that wastewater will be collected and stored in fully contained septic tanks and then collected and transported by transportation tankers to be disposed at the closest Wastewater Treatment Plant (WWTP).

***Note: expected wastewater quantities, the WWTP that will be used for the Project and impacts on WWTP is discussed separately under "Section 14.2.3".***

### Mitigation Measures

The following identifies the mitigation measures to be applied by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Coordinate with State Unitary Enterprise to hire a private contractor for the collection of wastewater from the site to the closest WWTP;
- Prohibit illegal disposal of wastewater to the land;
- Maintain records and manifests that indicate volume of wastewater generated onsite, collected by contractor, and disposed of at the WWTP. The numbers within the records are to be consistent to ensure no illegal discharge at the site or other areas;
- EPC Contractor only - ensure that constructed septic tanks during construction and those to be used during operation are well contained and impermeable to prevent leakage of wastewater into soil; and
- Ensure that septic tanks are emptied and collected by wastewater contractor at appropriate intervals to avoid overflowing.

### Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Inspection of wastewater management practices onsite;
- Review of records and manifests for volume of wastewater generated to ensure consistency; and
- Regular environmental reporting on implementation of the wastewater management practices discussed above.

### ***(iii) Hazardous Waste Generation***

Hazardous waste is expected to be generated throughout both the construction and operation phase and this could include consumed oil, chemicals, paint cans, etc. Hazardous waste generated will likely be collected and stored onsite and then disposed at the approved hazardous waste disposal facilities.

***Note: expected hazardous waste quantities, the hazardous waste landfill that will be used for the Project and impacts on the landfill is discussed separately under “Section 14.2.3”.***

### Mitigation Measures

The following identifies the mitigation measures to be applied by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Coordinate and hire a private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities;



- Ensure that hazardous waste is disposed in a dedicated area that is enclosed; roofed and of hard surface; with proper signage and suitable containers as per hazardous waste classifications and that they are labelled for each type of hazardous waste.
- Ensure hazardous waste storage area is equipped with spill kit, fire extinguisher and anti-spillage trays and a hazardous waste inventory is available.
- Prohibit illegal disposal of hazardous waste to the land;
- Possibly contaminated water (e.g. runoff from paved areas) must be drained into appropriate facilities (such as sumps and pits). Contaminated drainage must be orderly disposed of as hazardous waste;
- Ensure that containers are emptied and collected by the contractor at appropriate intervals to prevent overflowing; and
- Maintain records and manifests that indicate volume of hazardous waste generated onsite, collected by contractor, and disposed of at the hazardous waste disposal facilities. The numbers within the records are to be consistent to ensure no illegal discharge at the site or other areas.

#### Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Inspection of hazardous waste management practices onsite;
- Review of records and manifests for volume of hazardous waste generated to ensure consistency; and
- Regular environmental reporting on implementation of the hazardous waste management practices onsite.

#### **(iv) Hazardous Material**

The nature of construction and operational activities entail the use of various hazardous materials such as oil, chemicals, and fuel for the various equipment and machinery. Improper management of hazardous material entails a risk of leakage into the surrounding environment either from storage areas or throughout the use of equipment and machinery.

#### Mitigation Measures

The following identifies the mitigation measures to be applied by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Ensuring any new support equipment does not contain Polychlorinated Biphenyl (PCBs) or Ozone Depleting Substances (ODSs) to avoid having hazardous wastes. ***This includes in particular the BESS and substation components.***
- Ensure that hazardous materials are stored in proper areas and in a location where they cannot reach the land in case of accidental spillage. This includes storage facilities that are of hard impermeable

surface, with a hard roof, flame-proof, accessible to authorized personnel only, locked when not in use, and prevents incompatible materials from coming in contact with one another;

- Maintain a register of all hazardous materials used and accompanying Material Safety Data Sheet (MSDS) must present at all times. Spilled material should be tracked and accounted for;
- Incorporate dripping pans at machinery, equipment, and areas that are prone to contamination by leakage of hazardous materials (such as oil, fuel, etc.);
- Regular maintenance of all equipment and machinery used onsite. Maintenance activities and other activities that pose a risk for hazardous material spillage (such as refueling) must take place at a suitable location (hard surface) with appropriate measures for trapping spilled material;
- Ensure that a minimum of 1,000 liters of general-purpose spill absorbent is available at hazardous material storage facility. Appropriate absorbents include zeolite, clay, peat and other products manufactured for this purpose; and
- If spillage on soil occurs, spill must be immediately contained, cleaned-up, and contaminated soil disposed as hazardous waste.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by all involved entities to include the EPC Contractor during the construction phase and the Project Operator during the operational phase unless stated otherwise:

- Inspection for storage of hazardous materials to include inspections for potential spillages or leakages; and
- Report any spills and the measures taken to minimize the impact and prevent from occurring again.

**10.2.3 Potential Impacts from Erosion and Runoff during the Construction Phase**

Site preparation activities which are to take place onsite by the EPC Contractor for installation of the various Project components to include wind turbines, substation, cables, etc. are expected to include land clearing activities, excavation, grading, etc.

The nature of construction activities discussed above could disturb soil, exposing it to increased erosion during rainfall events. If onsite erosion and runoff are not controlled, they can result in siltation of surface water. Generally, such impacts can be adequately controlled through the implementation of general best practice housekeeping measures as highlighted throughout this section, and which are expected to be implemented throughout construction phase.

Construction Phase		
Nature	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Short-term	
Magnitude	Medium	
Reversibility	Reversible	
Sensitivity	Medium	
Likelihood	Medium	
<b>Significance</b>	<b>Moderate</b>	

Following the implementation of the mitigation measures highlighted throughout this section, the residual significance can be reduced to not significant.

### Mitigation Measures

The following identifies the mitigation measures to be applied by all involved entities to include the EPC Contractor during the construction phase:

- Existing natural flows will be maintained where possible as part of the drainage system design and any change to the natural/pre-development surface water conditions within the site to be minimized to the extent possible;
- Scheduling to avoid construction activities during heavy rainfall periods (i.e., during the wet season) to the extent practical. In addition, this will include modifying or suspending activities during extreme rainfall and high winds to the extent practical;
- Salvage and store topsoil and subsoil before areas are excavated, with topsoil stripped and stockpiled separately;
- Place clear markers indicating stockpiling area of excavated materials to restrict equipment and personnel movement, thus limiting the physical disturbance to land and soils in adjacent areas;
- Erect erosion control barriers around work sites during site preparation and construction to prevent silt runoff where applicable. This could include but not limited to silt fences, gravel bag berms, fiber rolls, or other similar applications;
- Return surfaces disturbed during construction to their original (or better) condition to the greatest extent possible;
- Specifically in terms of road design the following shall be considered:
  - All roads shall be graded and shaped appropriately;
  - Provision of limiting access road gradients to reduce runoff-induced erosion;
  - Provision of effective short-term measures for slope stabilization, sediment control and subsidence control;
  - On steep sections of access road, transverse drains ('grips') will be constructed where appropriate in the surface layer of the road to divert any runoff off the road into swales/road side drains; and
  - To reduce damage to soil and risks of soil erosion, the length and width of the on-site and off-site roads should be with the route optimized to reduce the need for cut-and-fill material. Run-off and erosion control features should be included in designs.

### Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by all involved entities to include the EPC Contractor during the construction phase:

- Inspection for erosion and runoff control to include inspections for implementation of mitigation measures.