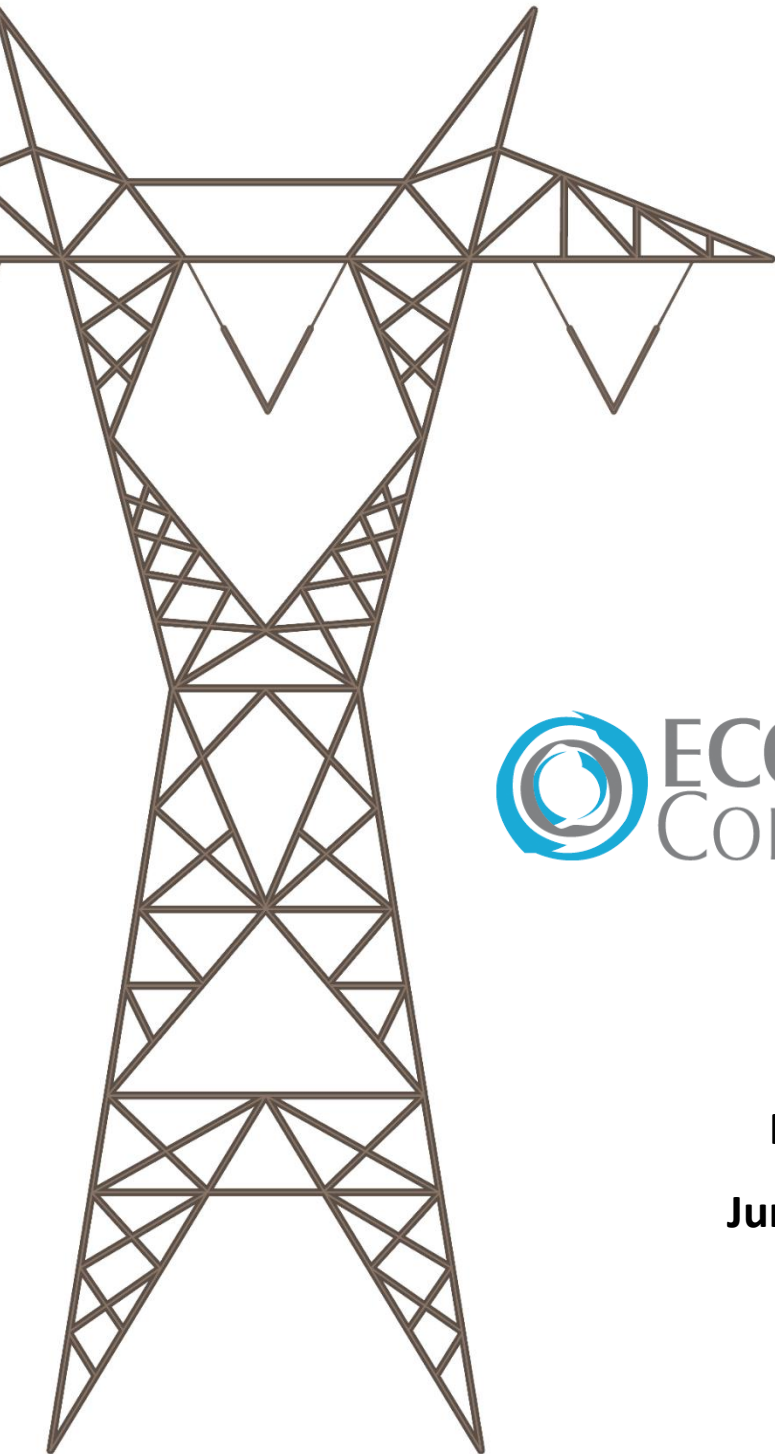


Environmental & Social Impact Assessment (ESIA)

Kungrad 843 KM OHTL in Uzbekistan



REV-8

June 2026

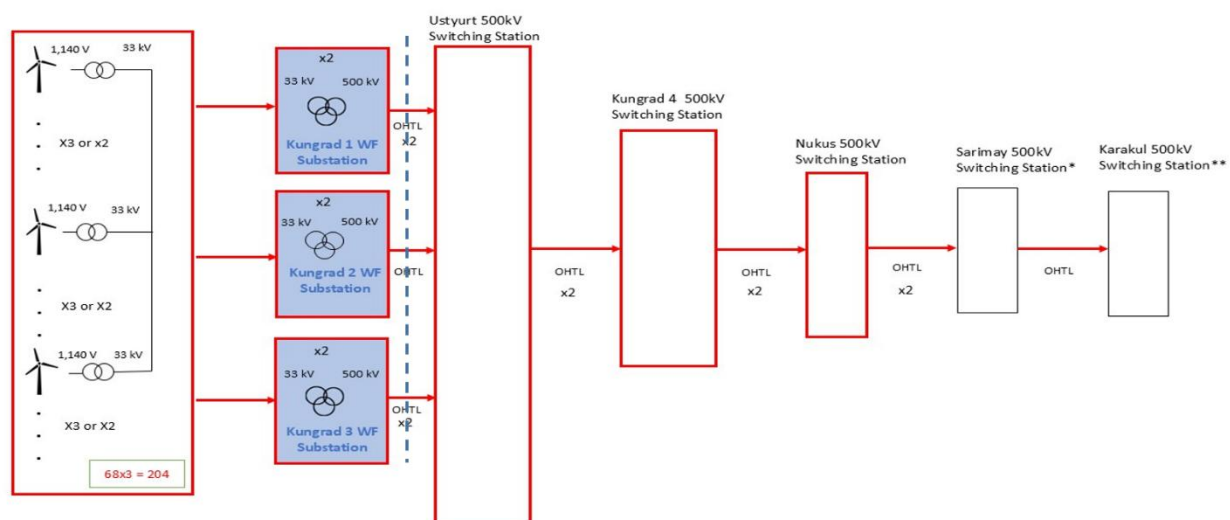
Addendum: Revised OHTL Configuration

Some refinement to the initially assessed overhead transmission line (“OHTL”) design has become necessary due to technical conversations with the offtaker. The Offtaker required revision of the internal Wind Farm transmission configuration between the Wind Farm Substations and the Ustyurt Substation. Under the revised design, transmission lines from Kungrad 1 to Ustyurt (24km) and from Kungrad 3 to Ustyurt (34km) will now be double circuit configurations to achieve full redundancy. Only the Kungrad 2 cluster will be evacuated to Ustyurt via a single circuit OHTL (a length of about 500m). This introduces approximately 58 km of additional double circuit OHTL. The linear distance of the OHTL assessed for the Project remains unchanged (approximately 844 km); however, the total length of OHTL has increased from 1384km to 1442km.

This results in a minor incremental increase in potential avian collision risk relative to the configuration assessed in the original biodiversity impact assessment. The Project commits to implement all mitigation measures identified in the ESIA, Biodiversity Management Plan (BMP) and Biodiversity Action Plan (BAP) for the revised total length of OHTL, including installation of Bird Flight Diverters and participation in the Project's post-construction fatality monitoring programme.

Lenders reviewed the implications of the revised configuration and concluded that, while the change would theoretically increase the biodiversity offset requirement, the increase is small relative to the overall uncertainty and conservatism inherent in the offset calculation methodology. Accordingly, no adjustment to the committed biodiversity offset scale has been required. Any future review of offset requirements informed by post-construction fatality monitoring results will take account of the revised OHTL configuration and associated increase in double line length when considering the effectiveness of mitigation measures and achievement of no net loss objectives.

Internal OHTL Section	Original Configuration	ESIA Linear distance (km)	Assessed OHTL length (km)	Revised Configuration	Revised linear distance (km)	Revised OHTL length (km)
Kungrad-1 WFSS – Ustyurt SS	Single Line	24.0	24.0	Double Line	24.0	48.0
Kungrad-2 WFSS – Ustyurt SS	Single Line	0.5	0.5	Single Line	0.5	0.5
Kungrad-3 WFSS – Ustyurt SS	Single Line	34.0	34.0	Double Line	34.0	68.0
Total Internal Wind Farm OHTL	58.5 km Single Line	58.5	58.5	58 km Double Line + 0.5 km Single Line	58.5	116.5



Issue and Revision Record:

Template Code		QF-PM-01-15	Template Revision No.	REV-8
Version	Date	Description	Prepared By	Approved by
REV 0	20 Dec 23	Draft ESIA Report (part of the wind farm ESIA)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
REV 1	6 Mar 23	Draft ESIA Report (addressing ADB comments)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
REV 2	6 Jun 24	Draft ESIA (Additional comments from ADB + disclosure comments)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
REV 3	23 Oct 24	Final ESIA (Additional comments from ADB + disclosure comments)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
REV 4	2 Sep 25	Final ESIA (Additional comments from ADB)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
REV 5	12 Dec 25	Final ESIA (Additional comments from SLR)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
REV 6	10 Feb 25	Final ESIA (Additional comments from ADB and SLR)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
REV 7	6 May 26	Final ESIA (Additional comments from ADB and SLR)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager
Rev 8	24 Jun 26	Final ESIA (Additional comments from ADB and SLR)	1. ECO Consult 2. Turnstone Ecology 3. Green Business Innovation	Ibrahim Masri / Project Manager

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TABLE OF CONTENT

Table of Content.....	ii
List of Figures.....	v
List of Tables	vii
Abbreviation and Acronyms	x
1. Introduction.....	1
1.1 Background	1
1.2 The Environmental and Social Impact Assessment (ESIA) Report	1
1.3 Project Setup and Responsibilities	2
1.4 Document Structure.....	3
2. Project Description.....	5
2.1 Administrative Setup and Project Location.....	5
2.2 Local Communities.....	10
2.3 OHTL Project Components	11
2.4 Servitude and Transmission Line.....	23
2.5 Overview of Project Activities	28
2.6 Workforce Requirements	30
3. ESIA Approach and Methodology	0
3.1 Analysis of Alternatives	0
3.2 Stakeholder Consultations and Engagement	0
3.3 Delineation of Study Boundaries and Scope Assessment.....	0
3.4 Impacts Assessment Methodology	2
3.5 Development of a Framework Environmental and Social Management Plan (ESMP).....	7
4. Analysis of Alternatives	1
4.1 Overview of Approach	1
4.2 Link to Existing OHTL Network	1
4.3 OHTL Routing Options.....	2
4.4 Underground Options	26
4.5 Conclusion.....	28
5. Regulatory and Policy Framework.....	29
5.1 Environmental Clearance Process in Uzbekistan	29
5.2 Uzbekistan E&S Regulatory Context.....	30
5.3 International Agreements	34
5.4 Requirements for Project Financing.....	35
6. Stakeholder Consultation and Engagement	47

6.1	Objectives.....	47
6.2	Stakeholder Identification and Analysis	47
6.3	Stakeholder Consultation and Engagement to Date	55
6.4	Future Stakeholder Engagement and Consultation	68
7.	Landscape and Visual	71
7.1	Assessment of Baseline Conditions.....	71
7.2	Assessment of Impacts.....	76
8.	Land Use.....	79
8.1	Baseline Conditions.....	79
8.2	Impacts.....	80
9.	Waste Management	88
9.1	Assessment of Impacts.....	88
10.	Biodiversity.....	94
10.1	Assessment of Baseline Conditions.....	94
10.2	Ecological Impact Assessment Methodology.....	104
10.3	Assessment of Impacts.....	179
11.	Archeology and Cultural Heritage	209
11.1	Assessment of Baseline Conditions.....	209
11.2	Assessment of Impacts.....	218
12.	Air Quality and Noise	222
12.1	Assessment of Potential Impacts	222
13.	Infrastructure and Utilities	225
13.1	Assessment of Baseline Conditions.....	225
13.2	Assessment of Potential Impacts	234
14.	Socioeconomics	250
14.1	Purpose	250
14.2	National Context and Project Location	250
14.3	Household Survey Findings	258
14.4	Assessment of Potential Impacts	274
15.	Subcontractor and Supplier Management	296
15.1	Assessment of Baseline Conditions.....	296
15.2	Assessment of Potential Impacts	296
16.	Summary Of Anticipated Impacts	299
17.	Assessment of Cumulative Impacts.....	301
17.1	Cumulative Impact Assessment	301
17.2	Rapid Cumulative Impact Assessment for Biodiversity.....	304

18. Environmental and Social Management Plan (ESMP).....	312
18.1 Institutional Framework and Procedure Arrangements	312
18.2 Environmental, Social, Health, and Safety Management System (ESHS-MS)	315
18.3 Other ESHS Requirements for Temporary Facilities	317
18.4 Compilation of the Framework Environmental and Social Management Plan (ESMP)	318
19. Project Categorization	348
19.1 Safeguard Requirements 1: Environment	348
19.2 Safeguard Requirements 2: Involuntary Resettlement	350
19.3 Safeguard Requirements 3: Indigenous Peoples.....	352

LIST OF FIGURES

Figure 1: Region Division of Uzbekistan.....	6
Figure 2: District Divisions in Karakalpakstan	7
Figure 3: District Divisions in Khorazm Region.....	9
Figure 4: District Divisions in Bukhara Region.....	9
Figure 5: Project Site and Closest Communities	11
Figure 6: Project OHTL	12
Figure 7: Parallel and Single OHTLs.....	13
Figure 8: Key Components of a Transmission Tower	14
Figure 9: Heights and Distance for Transmission Towers	15
Figure 10: Footprint for the PB4 Tower	15
Figure 11: Angle Towers and Change of Direction	16
Figure 12: Heights and Distance for Transmission Towers	18
Figure 13: Project Switching Stations.....	19
Figure 14: Typical Switching Station	20
Figure 15: Typical Mobile Batching Plant.....	22
Figure 16: Internal OHTLs within Wind Farm Site.....	22
Figure 17: Right of Way and Access Road for OHTL (IFC, 2007)	23
Figure 18: Sanitary Protection and Security Zones for Transmission Towers for 1 OHTL.....	24
Figure 19: Sanitary Protection and Security Zones for Angle Towers for 1 OHTL	24
Figure 20: Sanitary Protection and Security Zones for 2 OHTLs	25
Figure 21: Study Area.....	1
Figure 22: Kungrad OHTL and Existing 500kV Networks.....	2
Figure 23: Bustard Migratory Pathways and Alternative Routes assessed (2011)	4
Figure 24: KBAs and National Protected Areas Around the Project.....	5
Figure 25: Archeological Site Surrounding the 500kV SS Nukus - SS Sarymai Part of the Project	6
Figure 26: Archeological Site Surrounding the 500kV SS Sarymai - SS Karakul Part of the Project	6
Figure 27: Archeological Site Surrounding the 500kV SS Ustyurt WPP - SS Nukus Part of the Project.....	7
Figure 28: Closest Community Settlements.....	7
Figure 29: Alternative Route to Avoid Agricultural Lands with a Bypass in Karakalpakstan (1)	8
Figure 30: Alternative Route to Avoid Agricultural Lands with a Bypasses in the Ellikkala and Turtkul Districts....	9
Figure 31: Alternative Route to Avoid Agricultural Lands with a Bypass in Bukhara	10
Figure 32: Alternative to Align with Proposed 500kV Lines within MacQueen's Bustards Breeding Areas.....	13
Figure 33: Kungrad OHTL and Other High Voltage Networks	14
Figure 34: Alternative to Align with Existing High Voltage Power Lines.....	15
Figure 35: Kungrad OHTL and Existing Highways	16
Figure 36: Alternative Route to Align with Existing Highways	17
Figure 37: Map of Alternative Route to Align with Planned Access Road (1)	18
Figure 38: Map of Alternative Route to Align with Planned Access Road (2)	19
Figure 39: Kungrad OHTL and Railways	21
Figure 40: Kungrad OHTL and Existing Gas Pipelines.....	22
Figure 41: Alternative Route to Align with Existing Gas Pipelines	23
Figure 42: Project Site and Surrounding Airports	24
Figure 43: Project Site with Surrounding Water Bodies.....	25
Figure 44: Military Area Adjacent to the Project	25
Figure 45: Sample Photos from the Meeting.....	63
Figure 46: Selected Photos of the Workshop	65
Figure 47: Sample Photos from the Meeting.....	68
Figure 48: General Landscape and Visual within the Project.....	72
Figure 49: General Landscape across the OHTL.....	72
Figure 50: Key Points with Drastic Changes in Topography Along the Route.....	73
Figure 51: Critical Visual Receptors Across the OHTL	75

Figure 52: IBAT results protected areas within 50 km	106
Figure 53: IBAT results key biodiversity areas within 50 km	106
Figure 54: Sections for Biodiversity Assessments	114
Figure 55: Section 1 – Ustyurt Substation to the western edge of the Agriculture Area	115
Figure 56: Section 2 – Agriculture Area to Nukus Substation	115
Figure 57: Section 3 – Nukus Substation to Land to the north-east of Taza-Kel'teminar.....	116
Figure 58: Section 4 – Land to the north-east of Taza-Kel'teminar to Karakul Substation.....	117
Figure 59: Scheme of Uzbekistan's botanical and geographical regions.....	119
Figure 60: Locations of the three most representative transects along OHTL route – Section 1	126
Figure 61: Locations of the transects along OHTL route – Section 2	127
Figure 62: Locations of the transects along OHTL route – Section 3	127
Figure 63: Locations of the transects along OHTL route – Section 4	128
Figure 64: Locations of the transects along OHTL route – Section 1	137
Figure 65: Locations of the transects along OHTL route – Section 2	138
Figure 66: Locations of the transects along OHTL route – Section 3	138
Figure 67: Locations of the transects along OHTL route – Section 4 part 1.....	139
Figure 68: Locations of the transects along OHTL route – Section 4 part 2.....	139
Figure 69: Locations of the transects along OHTL route – Section 4 part 3.....	140
Figure 70: Location of OHTL Vantage Points (northern and central section).....	144
Figure 71: Location of OHTL Vantage Points (southern section).....	145
Figure 72: Location of Waterbodies in Section 1 and 3	146
Figure 73: Location of Lakes in Section 4	147
Figure 74: Location of International and Local Flyways in Relation to the Project Area	148
Figure 75: Possible Bird Migratory Paths	149
Figure 76: Total Flightlines of Target Species	151
Figure 77: Records of MacQueen's Bustard from GBIF. Approximate route of the OHTL shown as purple line	174
Figure 78: Project location in relation to AviStep sensitivity mapping	197
Figure 79: Breeding MacQueen's Bustard Area - Bukhara Region of the Kyzilkum Desert.....	199
Figure 80: Distribution Range of Asian Houbara Bustard	200
Figure 81: Migration of Asian Houbara Bustard from UAE through Central Asia	201
Figure 82: Migration tracking of Asian Houbara Bustard throughout range	202
Figure 83: Steppe Eagle migration 2018-2023	203
Figure 84: Archeological Site Surrounding the 500kV SS Nukus - SS Sarymay Part of the Project	212
Figure 85: Archeological Site Surrounding the 500kV SS Sarymay - SS Karakul Part of the Project.....	212
Figure 86: Archeological Site Surrounding the 500kV SS Ustyurt - SS Nukus Part of the Project	213
Figure 87: Archeological Sites Avoided by the Project.....	214
Figure 88: Archeology and Cultural Heritage Sites along the OHTL.....	217
Figure 89: Pictures of Sites Recorded	217
Figure 90: Project Site and Existing Railways	226
Figure 91: Project Site and Surrounding Airports	226
Figure 92: Project Site and Oil and Gas Infrastructure.....	227
Figure 93: Key Water Resources that Cross the Project.....	228
Figure 94: Water Canals within the Project Site and Example Figure	229
Figure 95: Observed Unknown Pipelines	230
Figure 96: Project Site in Relation to Highway A380.....	234
Figure 97: GDP Growth Rate of Uzbekistan (ADB, 2023)	254
Figure 98: Age Range of Household Members	259
Figure 99: Average Number of Household Members in Uzbekistan's Regions	261
Figure 100: Distribution of Employment by Economic Activity	264
Figure 101: Typical EMF Levels for Power Transmission Lines.....	279
Figure 102: Wind Farm and OHTL Developments for Cumulative Assessment	301
Figure 103: Wind Farm and OHTL Developments for Cumulative Assessment	305

LIST OF TABLES

Table 1: Overall ESIA Structure	3
Table 2: Region Divisions of Uzbekistan.....	5
Table 3: District Divisions of Karakalpakstan.....	7
Table 4: District Divisions of Bukhara and Khorazm Regions	8
Table 5: Local Communities within a 5km Buffer Area from the Project	10
Table 6: Number of Towers for the OHTL.....	14
Table 7: Number of Angle Towers for the OHTL.....	17
Table 8: Type of Towers, Height and Footprint	17
Table 9: Type of Tower, Base Quantities, Base Area and Total Area	18
Table 10: Permanent Land Acquisition Requirements	26
Table 11: Temporary Land Acquisition	26
Table 12: List of Permits Obtained to Date for OHTL Development	27
Table 13: Determination of Significance	6
Table 14: Results for Alternative Route to Avoid Agricultural Lands with a Bypass in Karakalpakstan (1)	9
Table 15: Alternative Route to Avoid Agricultural Lands with a Bypasses in the Ellikkala and Turtkul Districts ...	10
Table 16: Results for Alternative Route to Avoid Agricultural Lands with a Bypass in Bukhara	11
Table 17: Alternative to Align with Proposed 500kV Lines within MacQueen's Bustards Breeding Areas	13
Table 18: Results for Alternative to Align with Existing High Voltage Power Lines	15
Table 19: Results for Alternative route to align with existing highways.....	17
Table 20: Results for Alternative route to align with planned access road (1)	19
Table 21: Results for Alternative route to align with planned access road (1)	20
Table 22: Results for Alternative route to align with Existing Gas Pipelines	23
Table 23: National Legislation and Guidelines Governing the E&S Compliance for the Project	30
Table 24: Relevant International Conventions and Agreements.....	34
Table 25: IFC Performance Standard Requirements	36
Table 26: Summary of Equator Principles	38
Table 27: Overview of Key Points of EBRD Performance Requirements of Relevance to the Project.....	40
Table 28: ADB SPS Requirements.....	43
Table 29: Other International E&S Requirements and Standards.....	45
Table 30: Identified Groups of Stakeholders	48
Table 31: Consultations and Approvals Undertaken by Technical Consultant	56
Table 32: Overall Summary of Targeted Consultations	57
Table 33: Critical Visual Receptors	73
Table 34: Critical Visual Receptors Across the OHTL.....	73
Table 35: Annexes to the EU Birds Directive	95
Table 36: Criteria and Conditions for Identifying Critical Habitats and Priority Biodiversity Features*	97
Table 37: Criteria for Determining the Sensitivity of Valued Ecological Receptors	104
Table 38: Populations of IBA Trigger Species	108
Table 39: Populations of IBA Trigger Species	109
Table 40: Populations of IBA Trigger Species	110
Table 41: Populations of IBA Trigger Species	111
Table 42: Species of Global Conservation Concern.....	111
Table 43: Description of Sections.....	114
Table 44: List of Plant Species Recorded along OHTL Corridor Quadrats (2x2) During June Survey 2023	124

Table 45: List of Potential and confirmed Reptile and Amphibian Species.	129
Table 46: List of Potential and confirmed Mammal Species. X = presence confirmed per survey section	141
Table 47: VP Results.....	149
Table 48: Transect Survey Results	151
Table 49: Waterbird Counts - Sodochye Lake.....	153
Table 50: Waterbird Counts – Nukus Lakes North	156
Table 51: Waterbird Counts – Nukus Lakes South	158
Table 52: Waterbird Counts - Nukus Water Treatment Plant.....	160
Table 53: Waterbird Counts – Sarymoy	163
Table 54: Waterbird Counts – Karakyr	165
Table 55: Waterbird Counts – Karakul.....	168
Table 56: Data for Wind Project.....	172
Table 57: Species of conservation concern considered to be of higher risk	196
Table 58: List of Archeological Sites of Importance from the Department of Archeology	213
Table 59: Outcomes of Archeology and Cultural Heritage Survey	215
Table 60: Project's Points of Intersection with Oil and Gas Infrastructure	230
Table 61: Closest Landfill to the Project Site	231
Table 62: Closest WWTPs to the Project Site	232
Table 63: Disposal Methods for Hazardous Wastes	232
Table 64: Total Water Requirements Summary	239
Table 65: Type and Quantities of Waste Estimated for Construction Phase	243
Table 66: Project and Existing Traffic	246
Table 67: Ethnic Groups of the Khorazm Region.....	254
Table 68: Ethnic Groups of the Bukhara Region.....	255
Table 69: Ethnic Groups of Uzbekistan and Karakalpakstan	256
Table 70: Location of Interviewed Households.....	258
Table 71: Breakdown of Age by Count and Total Percent	259
Table 72: Age per District.....	260
Table 73: Surveyed Household Distribution per District.....	260
Table 74: Ethnicity, Language and Religion - Household Head	261
Table 75: Marital Status	262
Table 76: Disabilities and Chronic Illness	262
Table 77: Education Levels	262
Table 78: Education Levels by Gender	263
Table 79: Literacy Rates	263
Table 80: Primary Occupation by District.....	264
Table 81: Primary Occupation by Gender	264
Table 82: Unemployment Rates per District	265
Table 83: Employable Skills by District.....	265
Table 84: Employable Skills by Gender	266
Table 85: Livestock per District	266
Table 86: Income Source per District	266
Table 87: Primary Occupations by Gender	267
Table 88: Concerns and Expectations in the Region	267
Table 89: List of Vulnerable Groups and Their Relevance.....	268
Table 90: Vulnerable People Identification	269

Table 91: Vulnerable Household Identification	269
Table 92: Vulnerable Individuals	270
Table 93: ICNIRP Exposure Limits for General Public Exposure to Electric and Magnetic Fields	278
Table 94: Typical 60 Hz electric and magnetic field levels from overhead power lines	278
Table 95: Magnetic Field values for different OHTLs	279
Table 96: Summary of Anticipated Impacts during the Planning Phase	299
Table 97: Summary of Anticipated impacts during the Construction Phase.....	299
Table 98: Summary of Anticipated Impacts during the Operations Phase	300
Table 99: Roles and Responsibilities of Entities Involved in ESMP	312
Table 100: Training Elements	314
Table 101: Inspection and Monitoring Elements	314
Table 102: Required Meetings	315
Table 103: Reports	315
Table 104: ESMP for the Planning Phase	319
Table 105: ESMP for the Construction Phase.....	321
Table 106: ESMP for the Operation Phase	344
Table 107: Definition of Project Categorization under International E&S Standards and Requirements	348
Table 108: Affected Lease holding by % of temporary land losses during the construction phase	351

ABBREVIATION AND ACRONYMS

ADB	Asian Development Bank
AoI	Area of Influence
ASSR	Autonomous Soviet Socialist Republic
BAP	Biodiversity Action Plan
BESS	Battery Energy Storage System
BFDs	Bird Flight Deflectors
BMP	Biodiversity Management Plan
CAREC	Central Asia Regional Economic Cooperation
CBOs	Community Based Organizations
CH	Critical Habitat
CHA	Critical Habitat Assessment
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLO	Community Liaison Officer
E&S	Environmental & Social
EBRD	European Bank for Reconstruction and Development
EHS	Environmental, Health & Safety
EHSS	Environmental, Health & Safety and Social
EIA	Environmental Impact Assessment
EP	Equator Principles
EPAP	Equator Principles Action Plan
EPC	Engineering, Procurement, and Construction
EPFIs	Equator Principle Financial Institutions
EPRP	Emergency Preparedness and Response Plan
ESHS	Environmental, Social, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EN	Endangered
EU	European Union
FFDC	Fabric Filter Dust Collector
FGD	Focus Group Discussion
GBI	Green Business Innovation
GBVH	Gender-Based Violence and Harassment
GDP	Gross Domestic Product
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GPS	Global Positioning System
GW	Gigawatt

H&S	Health & Safety
HH	Household
HR	Human Resources
IBA	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
IFC	International Finance Corporation
IFI	International Financial Institution
ILO	International Labor Organization
IOE	International Ecological Expert
KBA	Key Biodiversity Areas
KfW	Kreditanstalt für Wiederaufbau
KPI	Key Performance Indicator
LC	Least Concern
LESA	Lender Environmental and Social Advisor
LOTO	Lock Out/Tag Out
LRP	Livelihood Restoration Plan
LV	Low Voltage
LWCMP	Labor and Working Conditions Management Plan
MoM	Minutes of Meeting
MoU	Memorandum of Understanding
MV	Medium Voltage
NA	Not Applicable
NEGU	National Electric Grid of Uzbekistan
NGO	Non-Governmental Organizations
NNP	National Nature Park
O&M	Operation and Maintenance
ODSs	Ozone Depleting Substances
OHSP	Occupational Health and Safety Plan
OHTL	Overhead Transmission Line
OVOS	Otsenka Vliyaniya na Okruzhayushchuyu Sredu
PBF	Priority Biodiversity Features
PCFM	Post Construction Fatality Monitoring
PM	Particulate Matter
PPA	Power Purchase Agreement
PPE	Personal Protective Equipment
PR	Performance Requirement
PS	Performance Standard
PTW	Permit to Work

SDOD	Shutdown on Demand
SEBH	Sexual Exploitation, Abuse, and Harassment
SEP	Stakeholder Engagement Plan
SMP	Security Management Plan
SPS	Safeguard Policy Statement
SRA	Security Risk Assessment
TASH	National Herbarium of Uzbekistan
TBD	To Be Disclosed
TBT	Tool Box Talks
TSP	Total Suspended Particulate
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
UTM	Universal Transverse Mercator
UV	Ultra Violet
VP	Vantage Point
VU	Vulnerable
WAP	Worker Accommodation Plan
WF	Wind Farm
WTG	Wind Turbine Generators
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

1.1 Background

Uzbekistan is the region's third-largest gas producer, after Russia and Turkmenistan, due to its abundant natural gas reserves. Energy production and consumption contributes almost 20% of its Gross Domestic Product (GDP) and 15% of industrial output, and energy exports (primarily gas) were 17.3% of total commodity exports¹.

However, with that, in recent years, Uzbekistan has faced a severe energy crisis and is going through a power system collapse – particularly during winter. The problem has affected every part of society, from businesses and industry to residents' daily lives. In December 2022, extremely low temperatures created pressure drops in the gas pipelines, which in turn created a big national crisis given that 80% of Uzbekistan's electricity comes from thermal power facilities that run on gas. The crisis has resulted in severe power outages with nation-wide blackouts².

Acknowledging the severity of the situation, the Government of Uzbekistan has taken ambitious measures to alleviate the 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 accordance with the above, ACWA Power (hereafter referred to as the '**Developer**') signed a Memorandum of Understanding (MoU) with the Ministry of Energy and the Ministry of Investments and Foreign Trade of the Republic of Uzbekistan to develop a 1,500 Mega Watt (MW) wind power project to be located in the Republic of Karakalpakstan within Uzbekistan. Following this, three (3) Power Purchase Agreements (PPAs) for 500 MW (for a total of 1,500MW) + 100 MW Battery Energy Storage Systems (BESS) have been signed (hereafter referred to as the '**Wind Project**').

The electricity produced from the Wind Project will supply key regions in Uzbekistan by connecting to the national grid through an 843 kilometer (km) high voltage Overhead Transmission Line (OHTL) (hereafter referred to as the '**Project**').

1.2 The Environmental and Social Impact Assessment (ESIA) Report

ACWA Power appointed ECO Consult to prepare the Environmental and Social Impact Assessment (ESIA) for the Project. ECO Consult in turn subcontracted the following entities: (i) Green Business Innovation

¹ [Uzbekistan energy profile – Analysis - IEA](#)

² [Executive summary – Uzbekistan 2022 – Analysis - IEA](#)

(GBI) (a locally registered Uzbekistani Environmental and Social (E&S) consulting company); and (ii) Turnstone Ecology (an international consulting company specializing in ecological assessments and studies). ECO Consult, GBI and Turnstone are hereafter referred to as the ‘**E&S Team**’.

The Ministry of Ecology, Environmental Protection, and Climate Change serves as the primary environmental regulator in Uzbekistan, under which the Ministry is mandated in issuing environmental permits for development projects. In accordance with the "Resolution №541 of the Cabinet of Ministers on Procedure of EIA Mechanism (07 September 2020)", the Ministry requires for a project of this scale and nature to undertake an Environmental Impact Assessment³ (EIA) study in order to obtain an environmental permit. Within the local context, the EIA process is referred to as Otsenka Vliyaniya na Okruzhayushchuyu Sredu (OVOS).

In addition, the Project will be seeking financing from International Financing Institutions (IFIs). Therefore, the Developer wishes to design and manage the Project in accordance with international Environmental and Social (E&S) standards and requirements. For the purpose of the ESIA, this will be based on the following requirements:

- Equator Principles 4 (EP 4);
- European Bank for Reconstruction and Development (EBRD's) requirements to include EBRD's 2019 E&S Policy and Performance Requirements (PRs);
- International Finance Corporation's (IFC's) requirements to include IFC Policy on E&S Sustainability (2012), IFC Performance Standards (2012), and relevant IFC EHS Guidelines; and
- Asian Development Bank (ADB) requirements to include ADB's Safeguard Policy Statement (SPS) (2009), Social Protection Strategy (2001), Gender and Development Policy (1998) and Access to Information Policy (2018).

Therefore, the ESIA has been prepared to ensure that local OVOS requirements are met as well as international E&S standards and requirements.

1.3 Project Setup and Responsibilities

Different entities are involved in the planning and implementation of the Project. Responsibilities of each entity are listed in the text below along with a general description of their roles.

- ACWA Power: The developer of the Project (hereafter referred to as ‘the Developer’);
- Ministry of Ecology, Environmental Protection, and Climate Change⁴: the official governmental entity responsible for protection of the environment in Uzbekistan. The Ministry is responsible for approval of the ESIA and making sure it complies with the local environmental legislations and granting the environmental clearance for the Project;

³ within the local context, the requirement is to undertake an EIA, however as noted throughout the document an ESIA is being undertaken for the Project to meet international E&S standards and requirements. Therefore, throughout the document the term ESIA will be used.

⁴ A recent restructuring within governmental units in Uzbekistan occurred in June 2023 under which it was named as the Ministry of Ecology, Environmental Protection and Climate Change. In December 2022 it was called the Ministry of Natural Resources and prior to that it was known as the State Committee of the Republic of Uzbekistan for Ecology and Environment Protection.

- International Financing Institutions (IFIs): entities that will provide financing to the Developer for the development of the Project. Such IFIs will ensure that the Project is developed in accordance with international E&S standards and requirements. At this stage, the IFIs will include Equator Principle Financing Institutions lead by Standard Chartered (SC) and Asian Development Bank (ADB).
- Engineering, Procurement, and Construction (EPC) Contractor: will be responsible for preparing the detailed design and layout of the Project; supply of the material and equipment (e.g. towers); construction of the Project and its various components. The EPC Contractor for this Project has not been assigned yet however it will be the same EPC Contractor that will be responsible for the construction of the Wind Project;
- JSC National Electric Grid of Uzbekistan: will be the off taker of electricity and is the entity that signed the Power Purchase Agreement (PPA) with the Developer. In addition, upon completion of the construction of the OHTL, the Developer will hand over the Project to NEGU for operation and maintenance; and
- E&S Team (ECO Consult, Green Business Innovation and Turnstone Ecology): is the ESIA Practitioner and the consultant commissioned by ACWA Power to prepare the ESIA for the Project in accordance with local requirements as well as international E&S standards and requirements.

1.4 Document Structure

The following table provides an overview of the sections within this ESIA document. In addition, the ESIA includes a standalone Non-Technical Summary (NTS) and a Stakeholder Engagement Plan (SEP).

Table 1: Overall ESIA Structure

Chapter	Description of Content
Section 2 – Project Description	Provides a detailed description of the Project in relation to its location, the key project components and an overview of the proposed activities that are to take place during the various Project phases.
Section 3 – ESIA Approach and Methodology	Presents the methodology and approach that was adopted for the ESIA study.
Section 4 – Analysis of Alternatives	Investigates several alternatives to the Project development and the reasons for the preferred choice. This includes alternatives in relation to the Project site, Project design, and finally investigates the ‘no action alternative’ – which assumes that the Project development does not take place.
Section 5 – Regulatory & Policy Framework	Provides an overview of the environmental and social regulatory and policy framework applicable to the Project.
Section 6 – Stakeholder Consultation and Engagement	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 Chapter also discusses the future stakeholder engagement and consultation plans which are to take place at a later stage.
Section 7 – Section 15	These sections first present the baseline conditions within the Project site and surroundings, and then assess the anticipated impacts from the Project throughout its various phases on such a receptor. Finally, for each identified impact a set of mitigation and monitoring requirements have been identified which aim to eliminate the impact and/or reduce it to acceptable levels. This includes the following: Landscape and Visual (Section 7), Land Use (Section 8), Waste Management (Section 9), Biodiversity (Section 10), Archeology and Cultural Heritage (Section 11), Air Quality and Noise (Section 12), Infrastructure and Utilities

	(Section 13), Socioeconomics (to include employment and procurement, worker welfare/health/ safety and community health/safety/security) (Section 14), Subcontractor and Supplier Management (Section 15).
Section 16 – Summary of Anticipated Impacts	Based on the outcomes of the above, this section provides an overall summary of the anticipated impacts from the development of the Project.
Section 17 – Assessment of Cumulative Impacts	Provides an assessment of cumulative E&S impacts with other known and planned developments within the area.
Section 18 – Environmental and Social Management Plan (ESMP)	Presents the Environmental and Social Management Plan (ESMP) for the Project; which mainly summaries the impacts identified as well as the mitigation measures and monitoring requirements to be implemented throughout the various Project phases. In addition, this section describes the institutional framework and procedural arrangement for the ESMP implementation as well as the implementation of an Environment, Social, Health and Safety (ESHS) Management System.
Section 19 – Project Categorization	Presents a Project categorization based on ADB's 's Safeguard Policy Statement (SPS) (2009) for Environment, Involuntary Resettlement and Indigenous Peoples.

2. PROJECT DESCRIPTION

This section provides a detailed description of the Project in relation to its location, the key project components, and an overview of the proposed activities that are to take place during the construction, operation, and decommissioning phase.

2.1 Administrative Setup and Project Location

It is important to understand the administrative setup of Uzbekistan as several terminologies will be referenced throughout this section. Administratively, Uzbekistan is divided into 12 Regions (also known as *viloyatlar*), 1 sovereign republic (known as the Sovereign Republic of Karakalpakstan), and 1 independent city (which includes Tashkent as the capital of Uzbekistan).

The Project runs within the following Regions as also presented in the table and figure that follows:

- Sovereign Republic of Karakalpakstan. The Republic occupies the whole northwestern part of Uzbekistan. The capital of the Republic is Nukus. Under Soviet rule, it was an autonomous area within the Russian Soviet Federative Socialist Republic before becoming part of Uzbekistan in 1936 as the Karakalpak ASSR. Since the independence of Uzbekistan in 1990, it is still considered a sovereign republic. Total length of OHTL within this region is around 500 km.
- Khorazm Region. The Region is located in the northwest of the country and borders with Turkmenistan, Karakalpakstan, and Bukhara Region. The capital is Urgench. Total length of OHTL within this region is around 50 km.
- Bukhara Region. The Region is located in the southwest of the country. It borders Turkmenistan, Navoiy Region, Qashqadaryo Region, a small part of Khorazm Region and the Karakalpakstan Republic. The capital is Bukhara city. Total length of OHTL within this region is around 240 km.

Table 2: Region Divisions of Uzbekistan

Division	Legend	Division	Legend	Division	Legend
Andijan Region	2	Qashqadaryo Region	8	Khorazm Region	13
Bukhara Region	3	Samarqand Region	9	Namangan Region	6
Fergana Region	4	Sirdaryo Region	10	Navoiy Region	7
Jizzakh Region	5	Surxondaryo Region	11	Tashkent Region	12
Karakalpakstan	14	Tashkent	1		

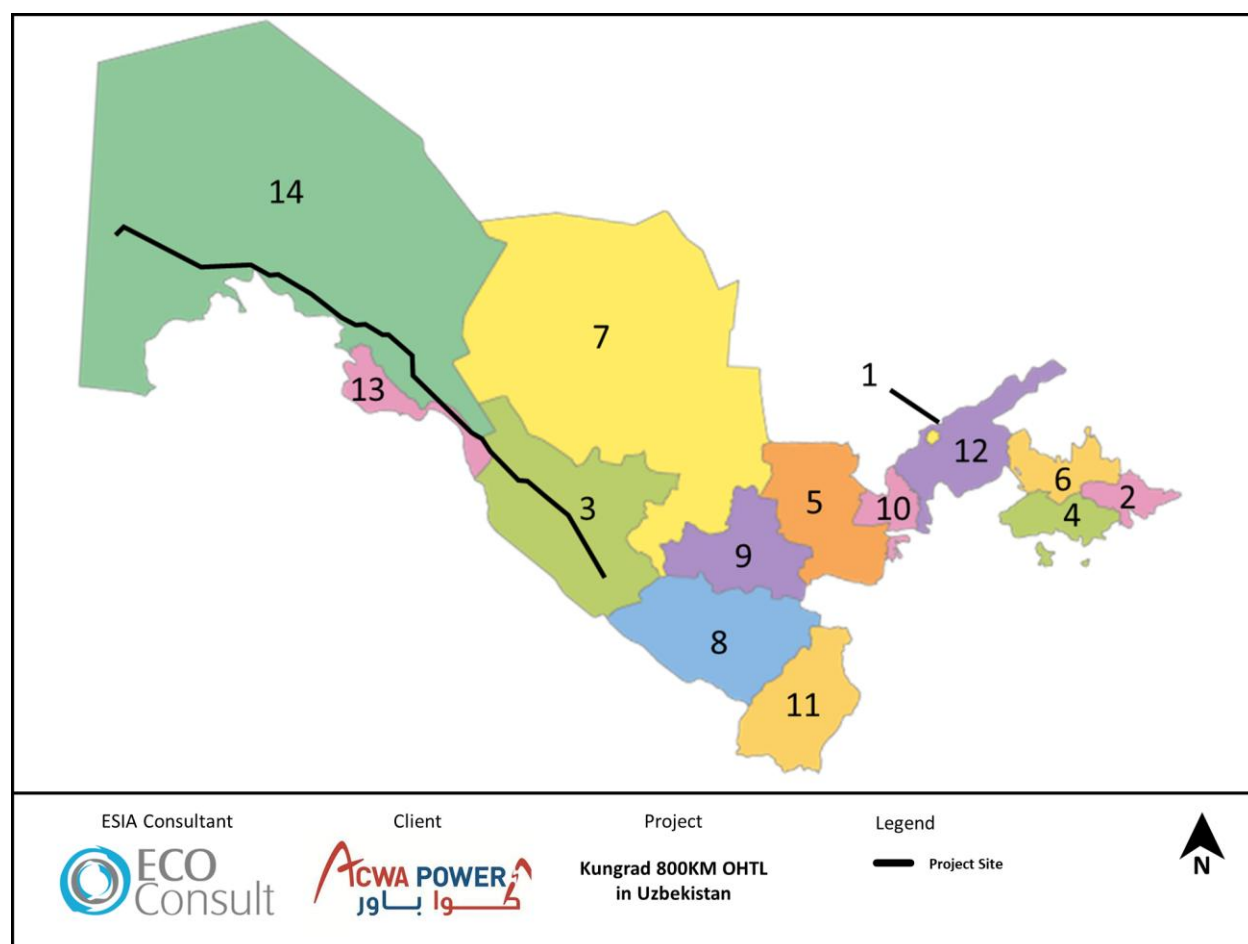


Figure 1: Region Division of Uzbekistan

Sovereign Republic of Karakalpakstan

The administrative setup of Karakalpakstan includes multiple levels of governance to ensure effective management and service provision within the region. At the highest level, Karakalpakstan is led by the **Supreme Council** (known as *Jokori Kenes*), which acts as the legislative body representing the interests of the population. The republic has its own constitution but follows all legislations as that of Government of Uzbekistan. However, it shares veto power with Uzbekistan over decisions concerning its affairs.

The Supreme Council Chairman is the head of the Government including the Council of Ministers. All ministries within Uzbekistan are also present in Karakalpakstan. For example, there is a Ministry of Ecology, Environmental Protection, and Climate Change in Tashkent, and a Ministry of Ecology, Environmental Protection, and Climate Change for the Republic of Karakalpakstan.

Administratively, Karakalpakstan is divided into 14 Districts, known as "*Rayons*." Each District has its own local administration (known as ***Khokimiyat***) led by the ***Hokim*** (equivalent to a Governor). The *Khokimiyat* is responsible for the local governance, development, and implementation of government programs and initiatives at the district level. They are also responsible for municipal services such as water supply, waste management and other.

The OHTL runs within a total of **eight (8) Districts** which are highlighted in grey and bold below and that include: Kungrad District, Shumanay District, Kanlikul District, Nukus District, Karauzyak District, Beruniy District, Ellikkala District, and Turtkul District.

Table 3: District Divisions of Karakalpakstan

Division	Capital	Legend	Division	Capital	Legend
Amudaryo District	Mang'it	2	Kanlikul District	Qanliko'l	5
Beruniy District	Beruniy	3	Kungrad District	Kungrad	8
Chimboy District	Chimboy	15	Karauzyak District	Qorao'zak	6
Ellikkala District	Bo'ston	17	Shumanay District	Shumanay	16
Kegeyli District	Kegeyli	7	Taxtako'pir District	Taxtako'pir	12
Mo'ynoq District	Mo'ynoq	9	Turtkul District	To'rtko'l	13
Nukus District	Oqmang'it	10	Xo'jayli District	Xo'jayli	14
Taxiatosh District	Taxiatosh	11	Bo'zatov District	Bo'zatov	4

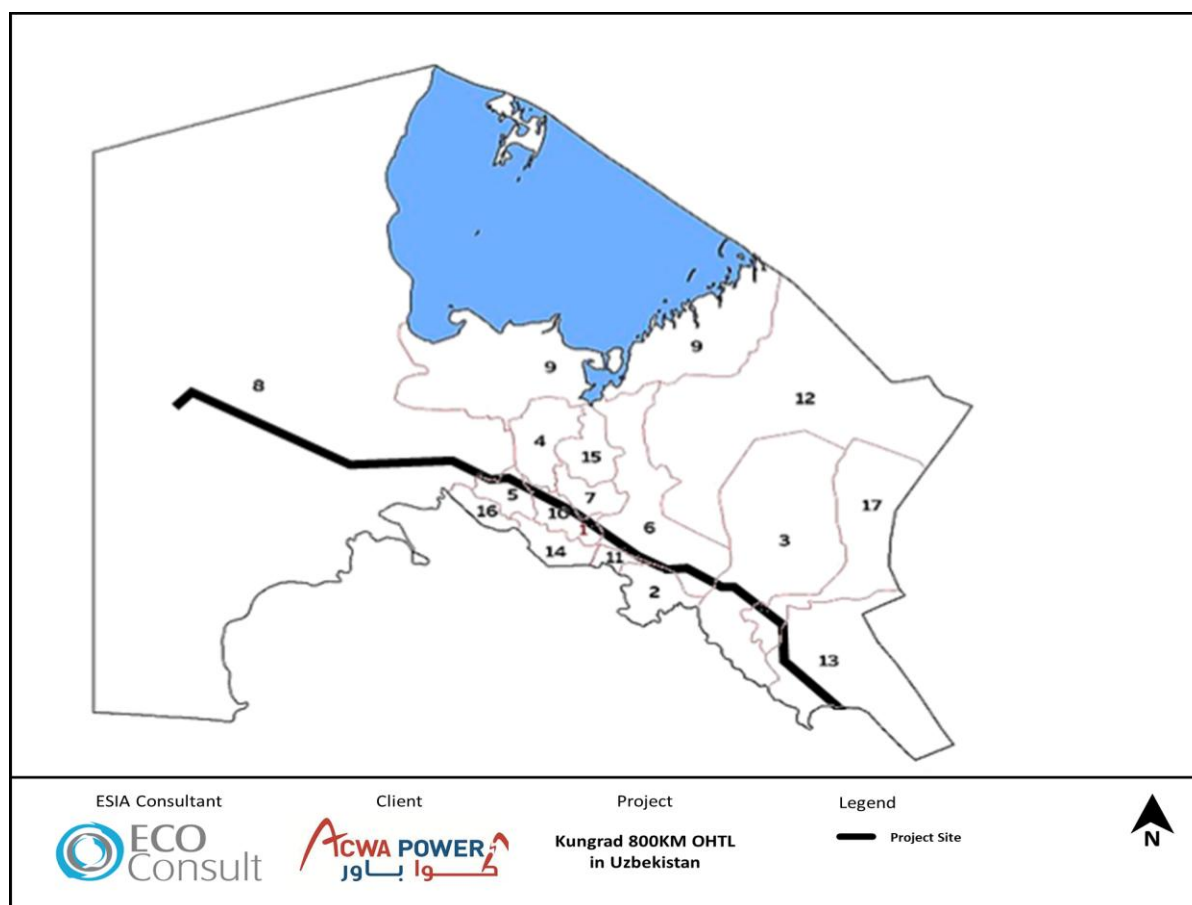


Figure 2: District Divisions in Karakalpakstan

The smallest administrative division in Uzbekistan as well as Karakalpakstan is known as the **Mahalla**. It could include one (1) or more cities, towns, neighborhoods, and villages. The Mahallas have the following roles and responsibilities: (i) act as the community unit and governance institutions within these cities, towns, neighborhoods and villages; (ii) help facilitate local governance and service delivery to the residents; (iii) act as a coordination point with community; (iv) focal point for information sharing; (v) implement government programs and other.

The Mahalla is headed by a Chair who is elected by local communities. In addition, each Mahalla includes a Mahalla Committee composed of 3-4 people that are appointed formally by the government (this always includes at least one (1) woman that would be responsible for women and youth affairs). In addition, informally, the Committee also includes the participation of elderly and community leaders.

Khorazm and Bukhara Region

The administrative setup of both Khorazm and Bukhara Regions includes multiple levels of governance to ensure effective management and service provision within the regions. At the highest level, each region is led by its own regional administration (known as **Hokimligi**) which are led by Governors (known as **Hokim – Governor** – equivalent to a governor). The Hokim – Governor is appointed by the President of the Republic of Uzbekistan and serves for 5 consecutive years.

Generally, the Hokim - Governor is responsible for regional administrative governance, economic growth, and infrastructure development. They supervise social services such as healthcare and education, ensure public safety, and contribute to regional planning. They coordinate with local authorities, implement policies, and contribute to the region's welfare and growth. In addition, the Hokim - Governor contributes to the provision of essential services to the region's residents.

Regional departments that are divisions of Ministries in Uzbekistan are present in Khorazm and Bukhara Regions. For example, there is a Ministry of Ecology, Environmental Protection, and Climate Change in Tashkent, and an Administration of Ecology and Environmental Protection of Bukhara, under the Ministry.

Administratively, Khorazm and Bukhara are each divided into 11 Districts (known as **Tumani**), with each district having its own local administrations (known as **Khokimiyat**) which are led by Mayors (known as **Hokim – Mayor** – equivalent to a mayor). The Khokimiyat supervises the administration as a whole, which includes the provision of social services such as education and healthcare. In addition, they play an important role in municipal services such as water distribution, waste management, and other essential public services.

The OHTL runs within a total of four (4) Districts in Bukhara Region and one (1) District in Khorazm Region which are highlighted in grey and bold below. This includes Jondor, Karakul, Peshkun, Romitan in Bukhara and Tuproqqala in Khorazm.

Table 4: District Divisions of Bukhara and Khorazm Regions

Bukhara Region			Khorazm Region		
Division	Capital	Legend	Division	Capital	Legend
Olot District	Olot	1	Bog'ot District	Bog'ot	1
Bukhara District	Galaosiyo	2	Gurlan District	Gurlan	2
G'ijduvon District	G'ijduvon	3	Xonqa District	Xonqa	3
Jondor District	Jondor	4	Khazoarasp District	Khazoarasp	4
Kogon District	Kogon	5	Khiva District	Khiva	5
Karakul District	Qorako'l	6	Qo'shko'pir District	Qo'shko'pir	6
Qorovulbozor District	Qorovulbozor	7	Shovot District	Shovot	7
Peshkun District	Yangibozor	8	Urganch District	Qorovul	8
Romitan District	Romitan	9	Yangiariq District	Yangiariq	9
Shofirkon District	Shofirkon	10	Yangibozor District	Yangibozor	10
Vobkent District	Vobkent	11	Tuproqqala District	Pitnak	11

Similar to Karakalpakstan, the smallest administrative division in Uzbekistan is known as the **Mahalla**. It could include one (1) or more cities, towns, neighborhoods, and villages. The Mahallas have the same roles and responsibilities and composition identified earlier under Karakalpakstan.

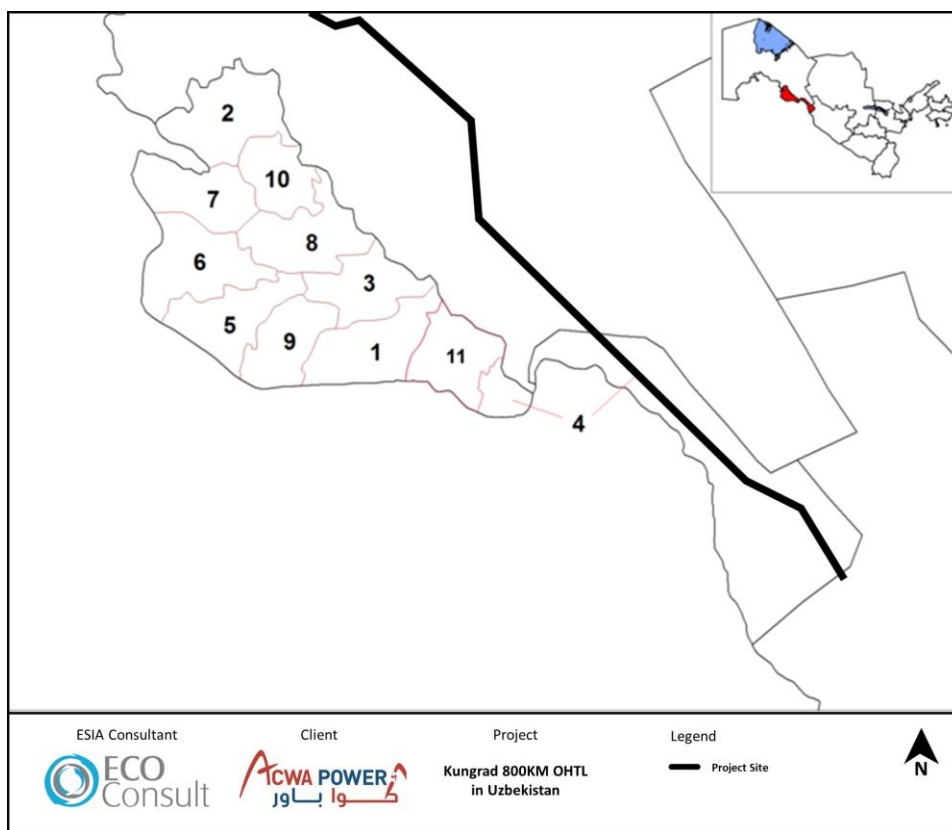


Figure 3: District Divisions in Khorazm Region

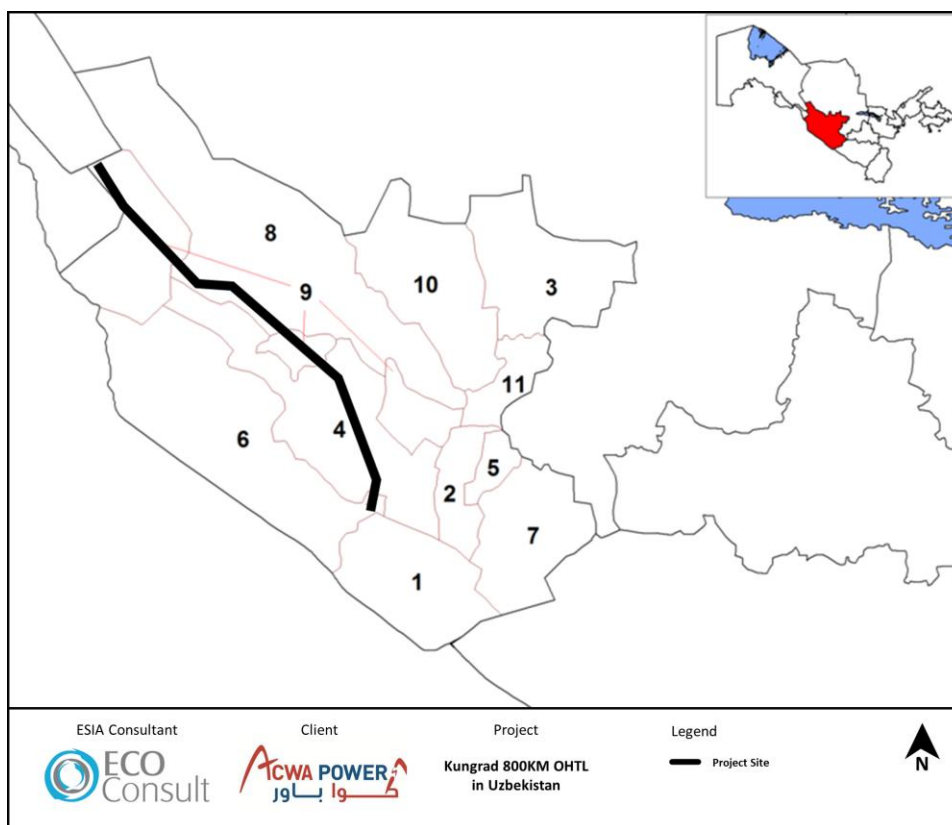


Figure 4: District Divisions in Bukhara Region

2.2 Local Communities

Throughout this section, the term local communities will be used. This will refer to the following settlements in particular all of which are located within a distance of less than 5km from the OHTL⁵.

It is important to note that the OHTL and its Servitude (or Right of Way) does not pass through any community settlements – as noted below the closest is around 1km.

Table 5: Local Communities within a 5km Buffer Area from the Project

Region	District	Town/Village	Distance from OHTL (Km)
Bukhara	Karakul	Karakul	3.2
Bukhara	Romitan	Gazli	3.55
Karakalpakstan	Ellikkala	Qiriqqizabad	4.32
Karakalpakstan	Ellikkala	Qirqjoy	4.75
Karakalpakstan	Ellikkala	Qiriqqiz	1.25
Karakalpakstan	Amudaryo	Beshtom	4.7
Karakalpakstan	Xo'jayli	Berdaq	4.14
Karakalpakstan	Kegeyli	Darbent	2.8
Karakalpakstan	Nukus	Toqimbet	3.96
Karakalpakstan	Nukus	Qumayqus awili	3.19
Karakalpakstan	Nukus	Mamiqshi	1.39
Karakalpakstan	Nukus	Jiydeli (Zheydeyli)	1.04
Karakalpakstan	Nukus	Shuyit	4.22
Karakalpakstan	Nukus	Telman	3.8
Karakalpakstan	Nukus	Madeniyat	3.53
Karakalpakstan	Nukus	Aqman'g'it	2.86
Karakalpakstan	Nukus	Baymaklyaul	4.65
Karakalpakstan	Nukus	Madeniyat	3.06
Karakalpakstan	Nukus	Qizilu'y	1.33
Karakalpakstan	Nukus	Tulegenau)	2.22
Karakalpakstan	Nukus	Jiydeli	1.07
Karakalpakstan	Shumanay	Taqirko'l	4.23
Karakalpakstan	Shumanay	Birqazanko'l	2.93
Karakalpakstan	Shumanay	Jon'ishqaliko'l	2.43
Karakalpakstan	Kungrad	Sag'ir awil	1.41
Karakalpakstan	Kungrad	Abilla	0.97
Karakalpakstan	Kungrad	Gu'njiliko'l	4.91
Karakalpakstan	Shumanay	Qipshaq	2.28
Karakalpakstan	Kanlikul	Nurimbet	4.62
Karakalpakstan	Nukus	Qran taw (Krantau)	1.66

⁵ The 5km distance has been selected as it is the greatest distance within which impacts are likely to occur as demonstrated throughout this section. These are related mainly to visual impacts from the tower footprint as well as potential for worker influx if applicable (as discussed in further details throughout the ESIA).

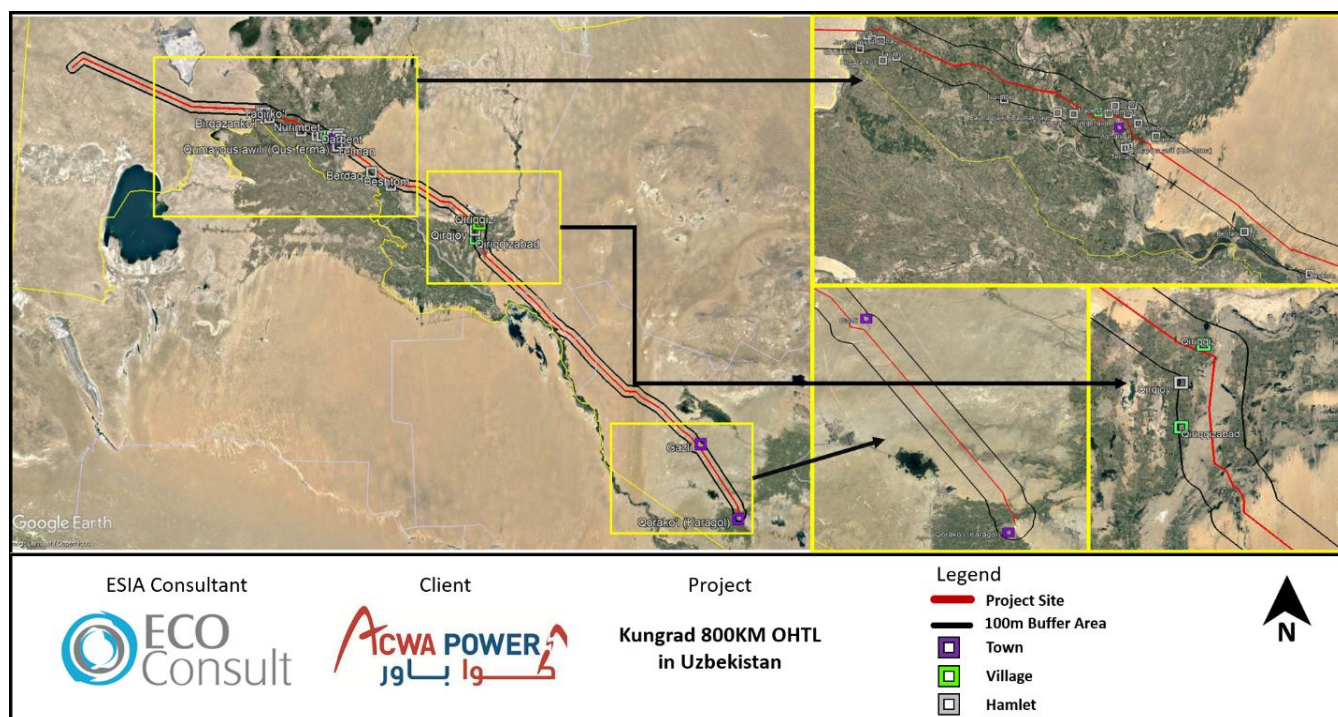


Figure 5: Project Site and Closest Communities

2.3 OHTL Project Components

The following describes the main Project components. This has been based on current available information provided by the Developer at this stage.

The Project can be divided into three (3) areas that will include the following with a total distance of 786 km:

- Wind Farm switching station⁶ (also known as **Ustyurt station**) to **Kungrad switching station** with a total distance of around 109 km. This will include two (2) OHTL lines running parallel to each other;
- Kungrad Switching Station to Nukus switching station with a total distance of around 167 km. This will include two (2) OHTL lines running parallel to each other;
- **Nukus switching station to Sarymai switching station** with a total distance of around 265 km. This will include two (2) OHTL lines running parallel to each other; and
- **Sarymai switching station to Karakul switching station** with a total distance of around 245 km that will include one (1) OHTL.

There is an additional 57 km of OHTL that will be located within the Wind Farm itself as discussed in further details in “Section 2.3.6” below. **Therefore, the total length of the OHTL is 843 KM.**

⁶ Additional information in switching stations is provided in “Section 0” below.

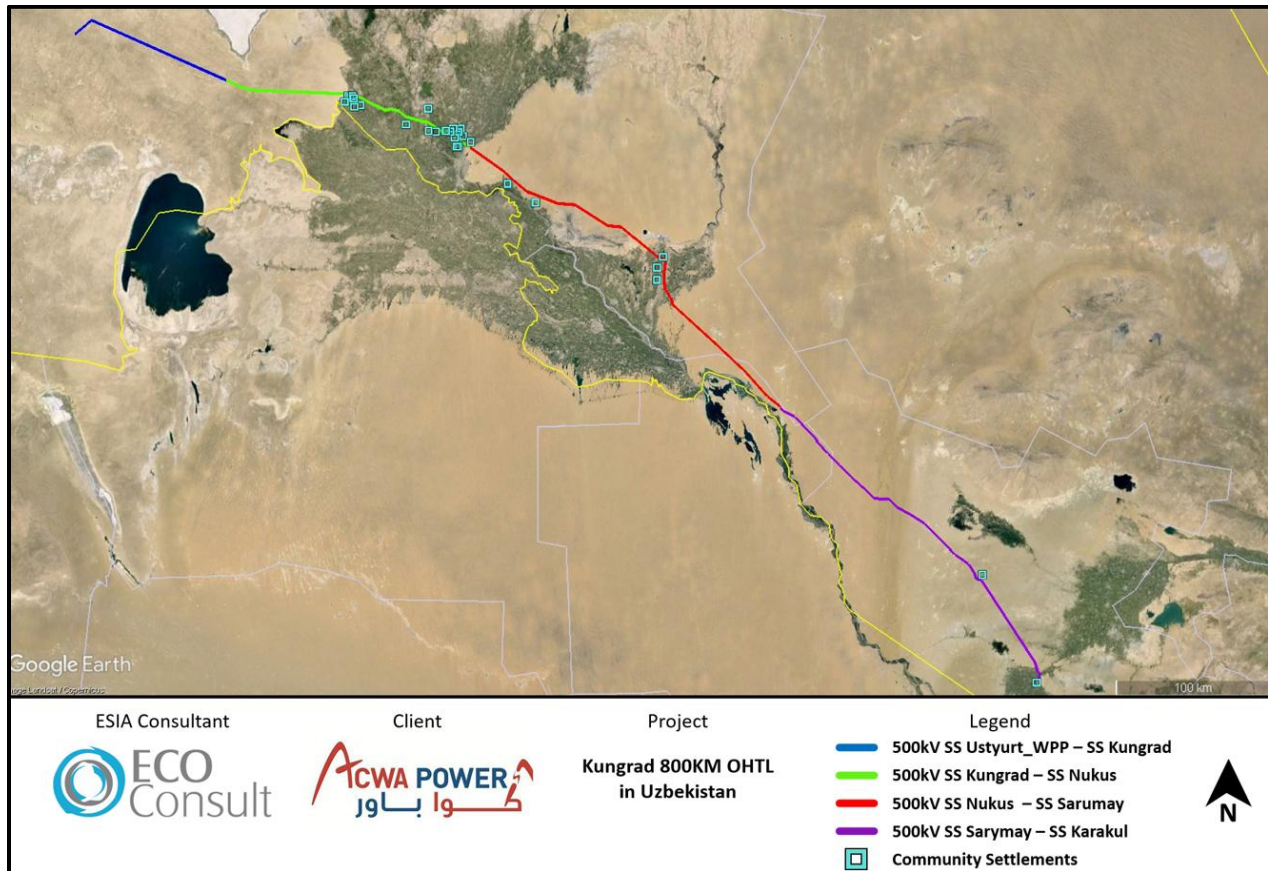


Figure 6: Project OHTL

The figure to the left below presents an illustration of the two (2) OHTL running parallel to each other (i.e. the line from Ustyurt to Kungrad and Nukus switching station and that from Nukus to Sarymai switching station), while the figure to the right presents an illustration of the 1 OHTL running from Sarymai to Karakul switching station.

Note:

The distance between the two (2) OHTL lines running parallel to each other ranges in the first section to around 100m and at the second section to around 300m. The minimum distance allowed by relevant technical legislations is 70m. However, due to technical / engineering limitations any further alignment is not possible. This includes considerations, such as topography, terrain profile drawing, tower spotting, physical infrastructure, etc. Worth noting that current alignment was done with full participation from NEGU and has also received NEGU approval. Therefore, current design is fully compliant with local regulation from a technical standpoint.

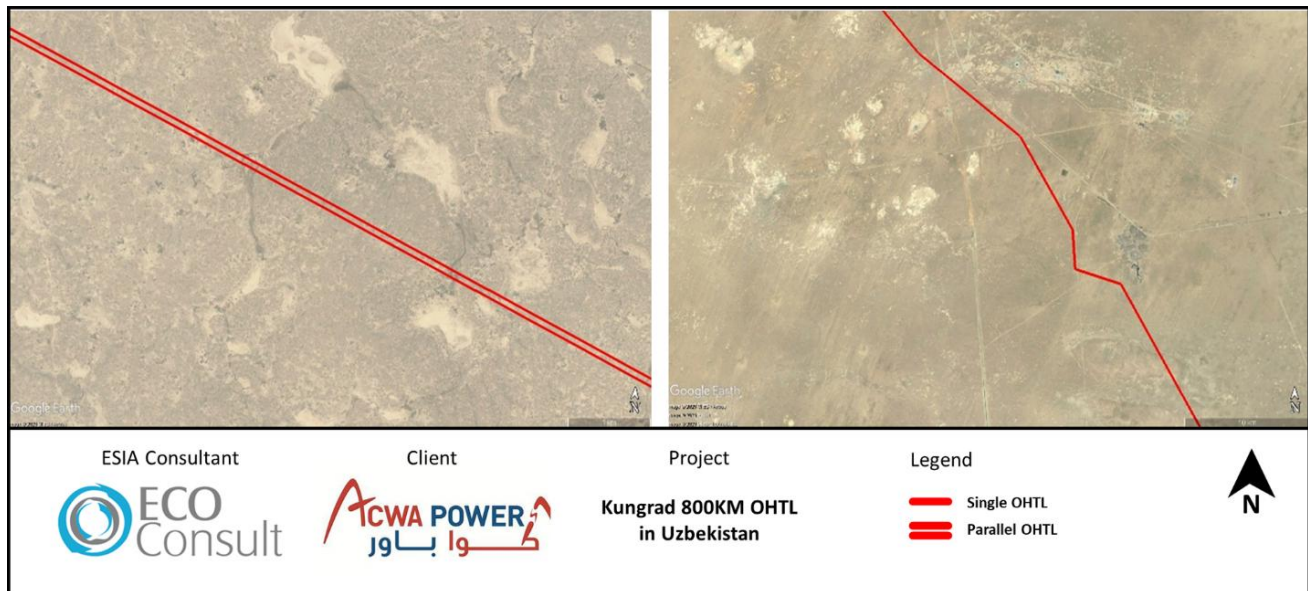


Figure 7: Parallel and Single OHTLs

2.3.1 Transmission Towers

The main component of the OHTL is the transmission tower. Each transmission tower will be a three (3) phase steel beam tower, which will transport the electricity from to the High Voltage National Grid. The typical structure of the tower is presented in the figure below.

Each transmission tower will consist of the following:

- **Foundations:** each tower will be fixed and bolted to the ground through reinforced concrete foundations. There will be four (4) foundations for each tower (check Figure 10 below later);
- **Steel structure:** the foundations will support the steel structure that will carry the conductors, cross-arms, insulators and shield wire;
- **Conductors:** the conductor is the line used to transmit electrical energy from one tower to the next until its connection with the High Voltage National Grid. There will be three (3) conductors that will connect through the cross-arms. The conductor will be a 500kV line. It is worth mentioning that the tower will include horizontally parallel conductors similar to the schematic provided below;
- **Cross-Arms:** each tower will have two (2) steel beam cross arms which connect the conductors (discussed below) with the towers. Each crossarm has a sideways length of 6.3m;
- **Shield Wire (also known as earth wire):** positioned above the phase conductors, the shield wire is grounded at each tower to facilitate the safe and rapid dissipation of voltage surges caused by technical issues or external factors (e.g. lightning); and
- **Insulators:** provide electrical isolation and support for the conductors, which are typically made of aluminum or aluminum alloy. Insulators isolate the towers from the live wires that carry the electricity.

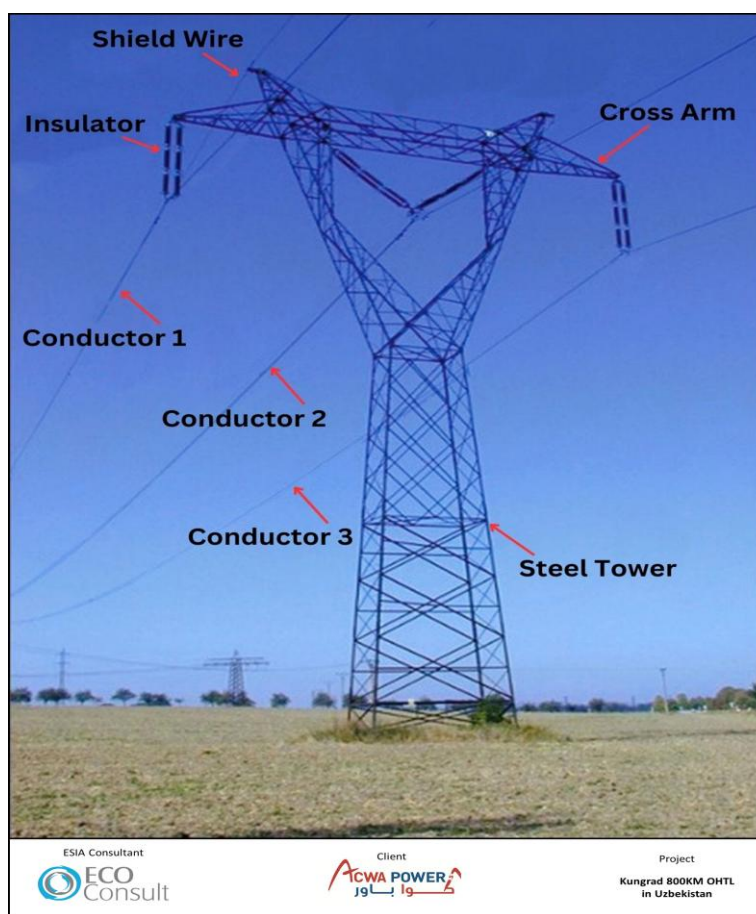


Figure 8: Key Components of a Transmission Tower

Based on information available at this stage, there will be one (1) tower installed on average every 276m. Inter-tower distance will vary and will be confirmed after final tower locations and types are confirmed. The table below presents the total number of transmission towers based on information available at this stage. Final tower locations will be determined as part of the detailed design to be undertaken by the EPC Contractor.

Table 6: Number of Towers for the OHTL

Route	Distance	Number of Towers
Wind Farm switching station to Kungrad and Nukus switching stations	276 km with two (2) OHTL lines running parallel to each other	2,039
Nukus switching station to Sarymai switching station	265 km with two (2) OHTL lines running parallel to each other	1,801
Sarymai switching station to Karakul switching station	245 km with one (1) OHTL	792
Total		4,632

The type of tower that will be used is known as PB4 which has a total height of 32.2m. The figure below presents a schematic of the PB4 tower showing the length of crossarms (6.3m) and height (32.2m).

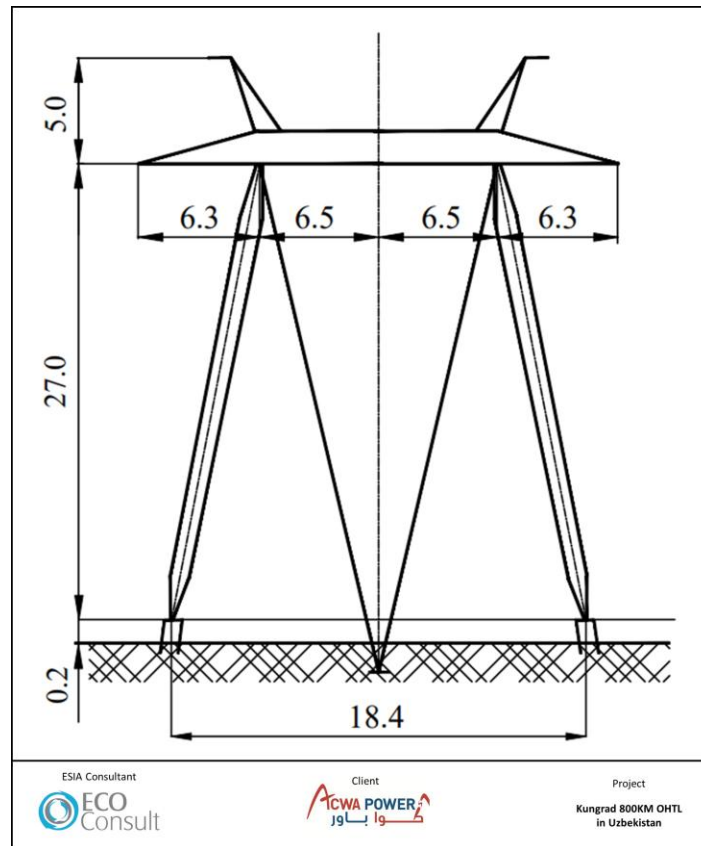


Figure 9: Heights and Distance for Transmission Towers

The tower has a total footprint of 305m² as noted in the figure below. The footprint includes the 4 foundation locations, the area in between, as well as a 1.5m strip to be taken from center of each foundation as required within the ““Electrical Installation Rules””.

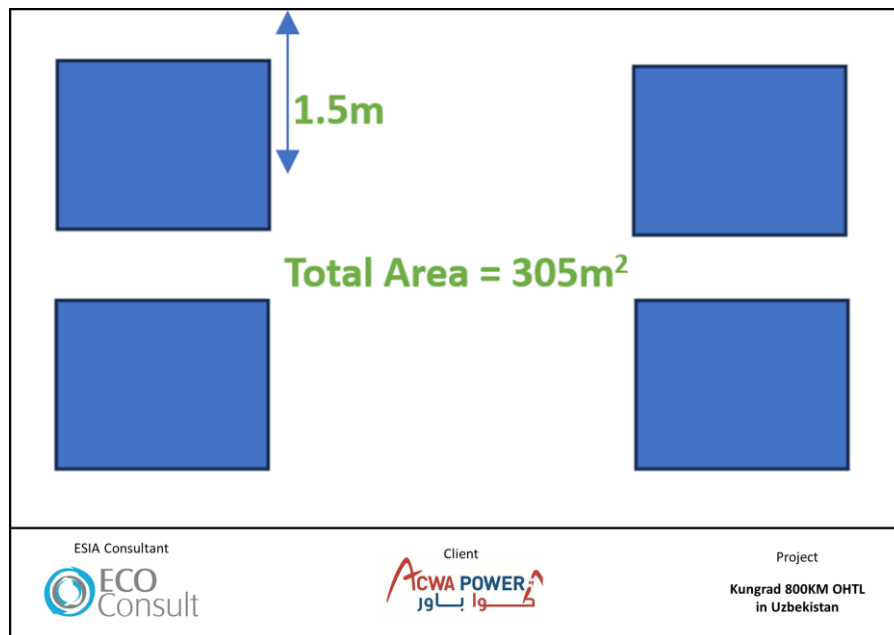


Figure 10: Footprint for the PB4 Tower

Route	Number of Towers	Footprint per Tower (m ²)	Total Footprint (km ²)
Wind Farm switching station to Kungrad and Nukus switching stations	2,039	305	0.62
Nukus switching station to Sarymai switching station	1,801	305	0.55
Sarymai switching station to Karakul switching station	792	305	0.24
Total			1.41

2.3.2 Angle Towers

Angle towers will be used: (i) first towers leaving any switching station (after which they connect with transmission towers) and last tower before entry into a switching station (switching stations are discussed below); and (ii) whenever the OHTL has a change in direction (as per figure below). The main component of the angle towers is similar to that of the transmission tower and which include:

- Foundations
- Conductors
- Cross-Arms
- Shield Wire (also known as earth wire)
- Insulators

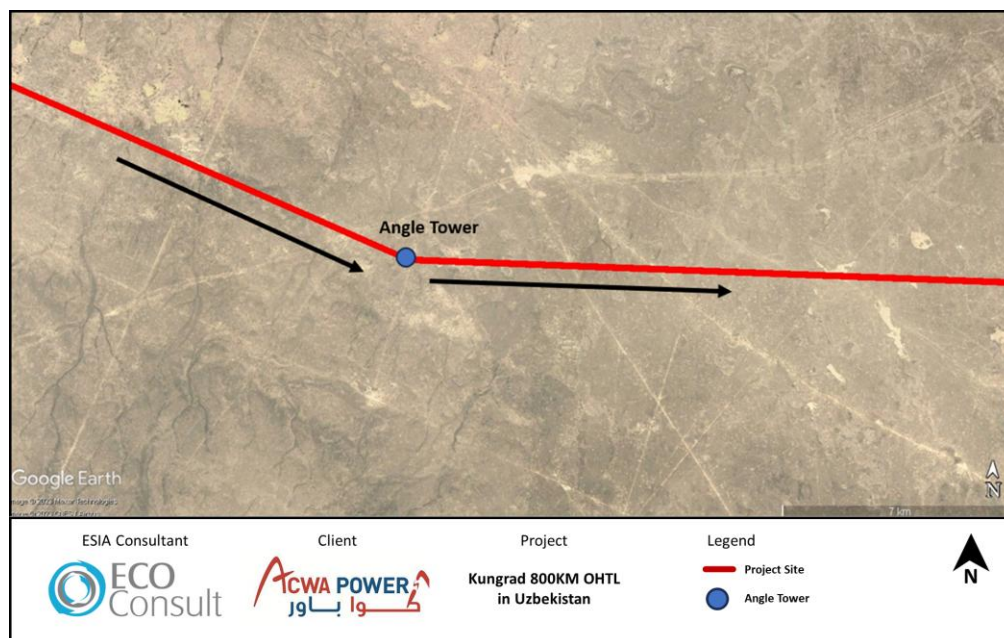


Figure 11: Angle Towers and Change of Direction

At each angle tower location there will be three (3) parallel towers separated by a distance of 14m from the center (one for each conductor line). Refer to figure below. The table below presents the total number of angle towers based on preliminary information available at this stage.

Table 7: Number of Angle Towers for the OHTL

Route	Distance	Number of Towers
Wind Farm switching station to Kungrad and Nukus switching stations	276 km with two (2) OHTL lines running parallel to each other	88
Nukus switching station to Sarymai switching station	265 km with two (2) OHTL lines running parallel to each other	88
Sarymai switching station to Karakul switching station	253 km with one (1) OHTL.	45
Total		221

There are currently five (5) types of towers that will be used as angle towers, however the exact tower type to be used at each location is not known or available at this stage and will be prepared as part of the detailed design by the EPC Contractor. The table below presents characteristics for each type of tower.

Table 8: Type of Towers, Height and Footprint

Tower Type	Total Height (m)	Total Footprint (m ²)
U2K	24.5	205
U2K +5	29.5	275
U2K + 12	36.5	360
U2K + 12M	36.5	360
U2KT+ 5	29.5	275

The figure below presents the length of crossarms (6.5m), height of the U2K+5 tower (29.5m) and the distance between the three (3) towers from center to center (14m).

Finally, the table that follows also presents the total footprint required for the angle towers. As previously discussed, the footprint area includes the 4 foundation locations, the area in between, as well as a 1.5m strip to be taken from center of each foundation as required within the ““Electrical Installation Rules”.

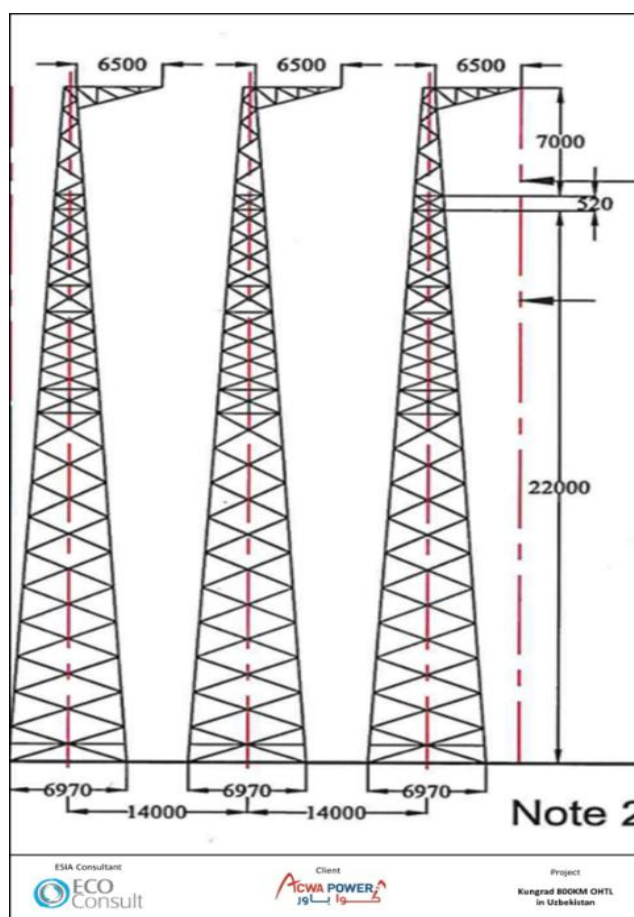


Figure 12: Heights and Distance for Transmission Towers

Table 9: Type of Tower, Base Quantities, Base Area and Total Area

Name	Type of tower	Estimate of tower base quantities (n)	Tower base area per unit (m2)	Total area (m2)	Total (ha)
U2k+12M	Angle tower	10	360	3 600	0.36
U2k+12	Angle tower	54	360	19 440	1.94
U2k+5	Angle tower	106	275	29 150	2.92
U2kT+5	Angle tower	18	275	4 950	0.50
U2k	Angle tower	33	205	6 765	0.68
Total		221		63,905	6.4

2.3.3 Switching Station

The switching station (or substation) is a high voltage transformer unit that converts the output from the OHTL to a lower voltage (from 500kV to 33kV) that is appropriate for connection with the distribution network. Through the distribution network, electricity will then be supplied to end users within the areas identified below. As explained earlier, the Project will connect with five (5) switching stations – three (3) that will be newly constructed and two (2) existing ones. This will include the following:

- Switching Station #1: Wind Farm station (located within the Wind Farm and also known as Ustyurt)
- Switching Station #2: Kungrad station
- Switching Station #3: Nukus station
- Switching Station #4: Sarymai station (existing station). Key upgrade work will involve a new switchgear but whether this will occur within existing boundaries will not be determined currently but rather during detailed design phase.
- Switching Station #5: Karakul station (existing station). All works will be within existing boundary of the station and no additional boundaries will be required. This will be verified during the detailed design phase.
- Note: if, during the construction phase of the Project, for any reason switching stations will need additional lands; this process will be assessed and covered by an addendum to the Livelihood Restoration Plan (LRP) currently being undertaken for the OHTL component, which also assessed temporary land impacts. Please refer to the OHTL LRP for additional details.

Each substation will have a footprint of around 0.3km².

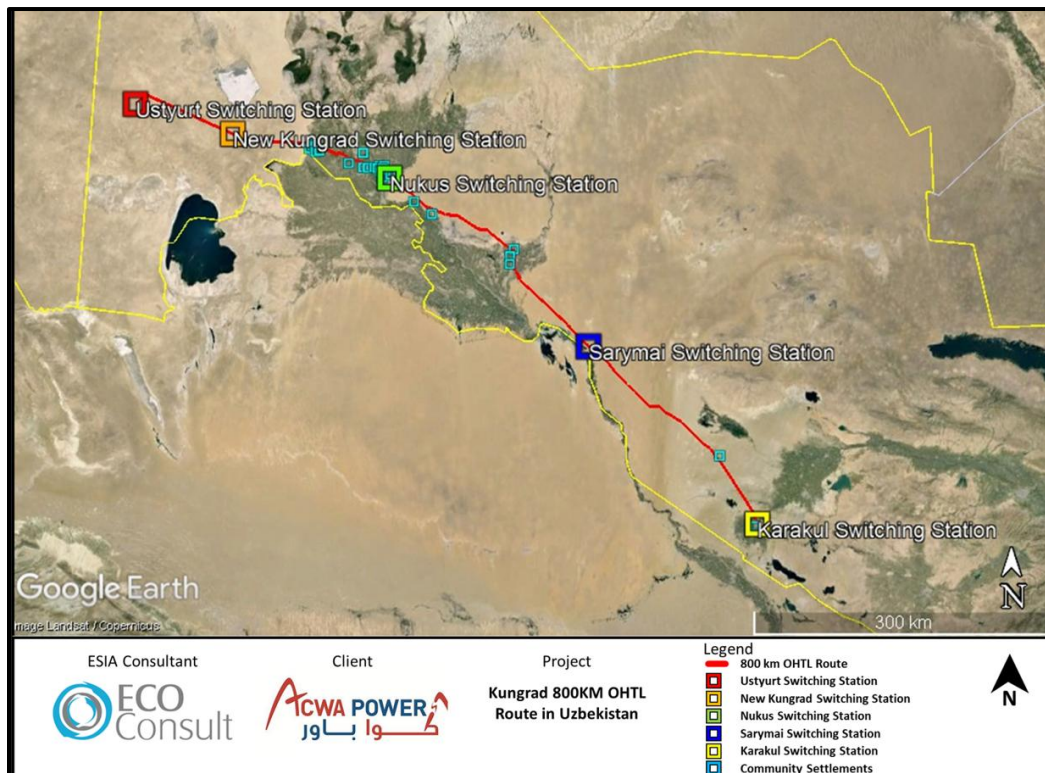


Figure 13: Project Switching Stations



Figure 14: Typical Switching Station

2.3.4 Access Road

There will be no permanent access roads established for the Project for construction or O&M activities. Access of vehicles and machinery during construction and for maintenance activities during operation will be only to tower locations. Access will be through existing tracks or dirt roads as applicable that lead directly to each exact footprint location. This will be confirmed and verified as part of the detailed design stage to be undertaken by the EPC Contractor.

At this stage the EPC Contractor has not been contracted and there is no detailed design available. Consequently, whether any additional roads will be required or whether existing access roads will require any expansion and enhancement with any additional land being required is unknown. Should this occur, it can be addressed through a supplement to the LRP

2.3.5 Other Temporary Components

There are additional Project components that will be required on a temporary basis throughout the construction phase of the Project in particular. Those are identified below. The location of such components, in particular, will not be available at this point, nor is it expected to be available during the ESIA preparation phase. Those will be identified once the EPC Contractor is appointed and a detailed design is completed. At this stage, EPC Contractor has not been selected yet. It is therefore not possible to estimate temporary land take for these temporary components. Once the final construction design drawings are available from the EPC, temporary land takes can be determined and calculated. A supplement to the LRP will be drafted to address this aspect.

- Laydown areas: this is a temporary storage area where tools, materials, equipment and vehicles are stored when not in use. Due to the length of the OHTL, it is likely that several laydown areas will be established along the route.

- Batching Plant: it is not yet clear whether a mobile concrete batching plant will be established or whether it will be procured from permanent existing batching plants available within each working area along the OHTL route (most likely scenario). Batching plant will be required for preparation of the concrete to be used for foundation installation. A typical batching plant is provided in the figure below.
- Worker Camp Area: it is not yet clear whether workers will be accommodated within designated worker camp areas or within some of the closest local communities along the working areas within the OHTL route. No details are available at this stage for accommodation facilities for the workers.
- Offices: offices will be required for the running the day-to-day activities of the Project. Generators are expected to be required for electricity supply.

As discussed in further details in “Section 18.2”, requirements for temporary components will be included within the Environmental and Social Management Plan (ESMP) and Environmental and Social Management System (ESMS) to be considered by the EPC Contractor when planning for such components.

2.3.6 Internal OHTL Network

There will be internal OHTL lines that will connect from the three (3) Wind Farm substations located within the Wind Project boundary (please refer to the Wind Project ESIA for additional details on the 3 wind farm substations) to the Switching Station #1 – Ustyurt Switching Station (discussed under “Section 0” earlier).

The figure below presents the layout of the internal OHTL lines. The total length of the internal OHTL lines is around 57 km.

The internal OHTL network will follow the same standards described in “Section 2.3.1” and “Section 2.3.2” earlier.



Figure 15: Typical Mobile Batching Plant

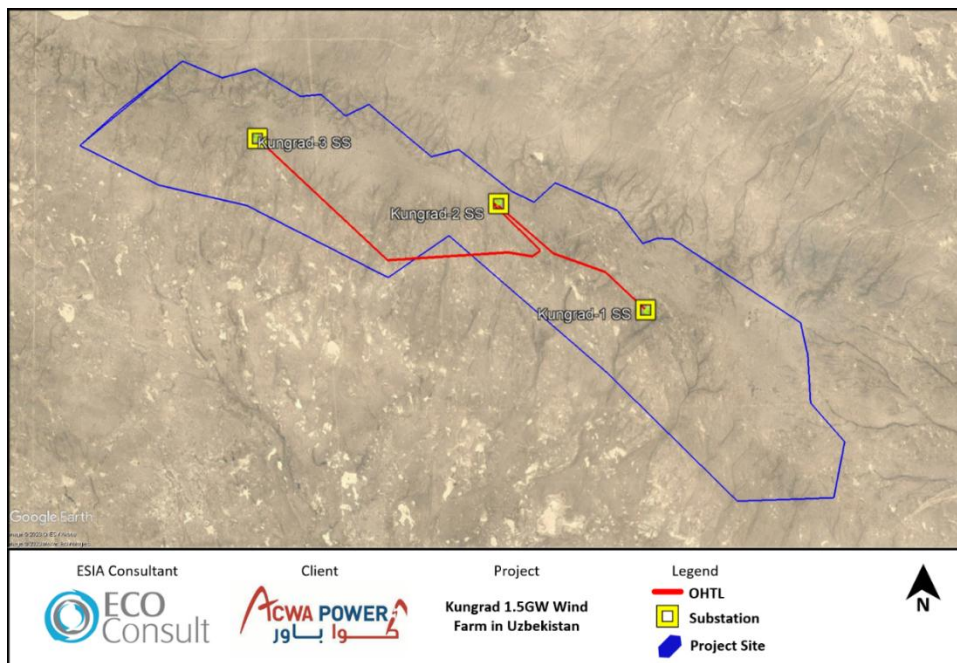


Figure 16: Internal OHTLs within Wind Farm Site

2.4 Servitude and Transmission Line

2.4.1 Servitude Requirements

Electricity transmission and distribution projects require servitudes (or Right of Way (RoW)) to protect the system from windfall, contact with trees, branches, utilities, buildings, and other potential hazards that may result in damage to the system, or power failures, as well as public health and safety concerns. Servitude is also utilized to access, service, and inspect transmission and distribution systems.

The IFC EHS Guidelines for Electric Power Transmission and Distribution (2007), states that the servitude width for transmission lines ranges from 15 to 100m depending on voltage and proximity to other servitudes, but typical range is between 15 and 30m.

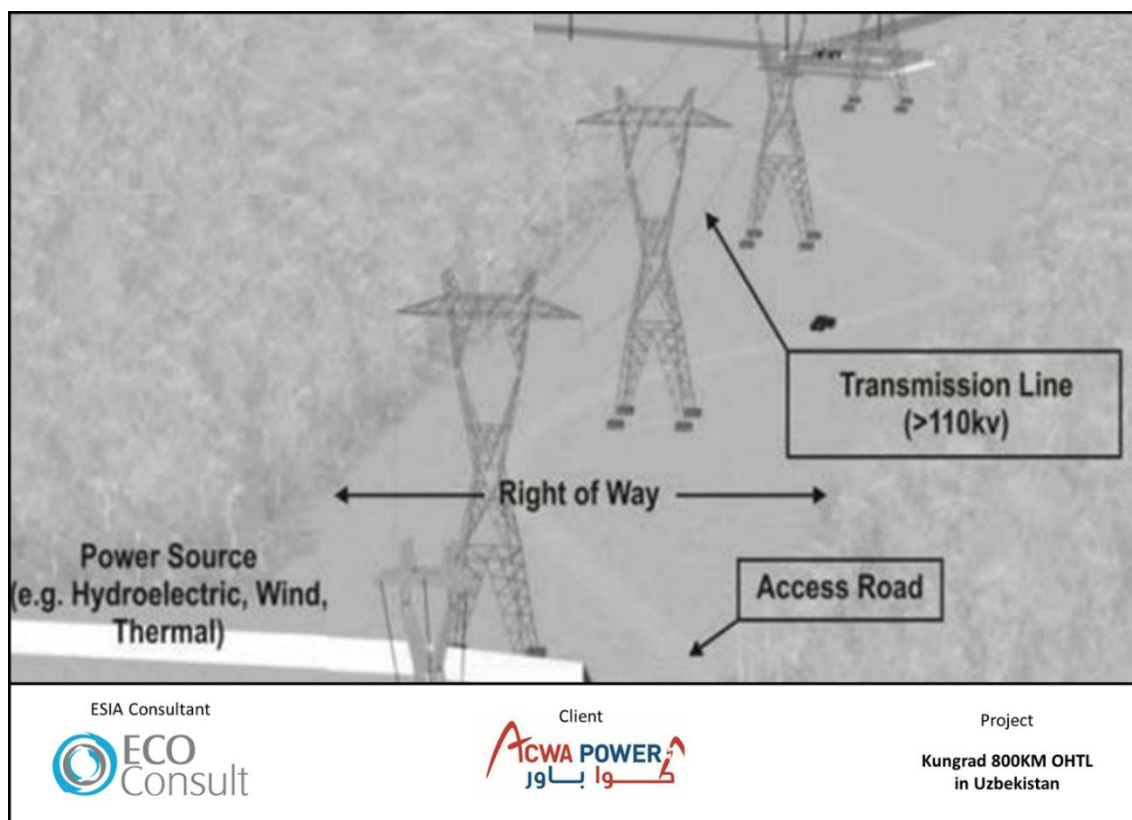


Figure 17: Right of Way and Access Road for OHTL (IFC, 2007)

Within the local requirements and context, there are two (2) key issues that define the servitude which include the following:

- **Sanitary Protection Zone:** Those are determined in accordance with “Sanitary Norms No. 0236-07: Sanitary Standards and Regulations to Ensure Safety for Populations Living near High Voltage Power Lines”. The sanitary protection zone for 500kV OHTL is 30m. No houses are allowed within; and
- **Security Zone:** Those are determined in accordance with “Electrical Installation Rules” where the calculated security zone for 500kV line is 30m from the crossarms. Within the established security zone, no permanent structures are allowed on land plots or air space (e.g. trees).

The figure below presents the sanitary protection zone and security zone in areas where there will be one (1) OHTL only (i.e. Sarymai switching station to Karakul switching station) for the following: (i) transmission towers; and (ii) angle towers.

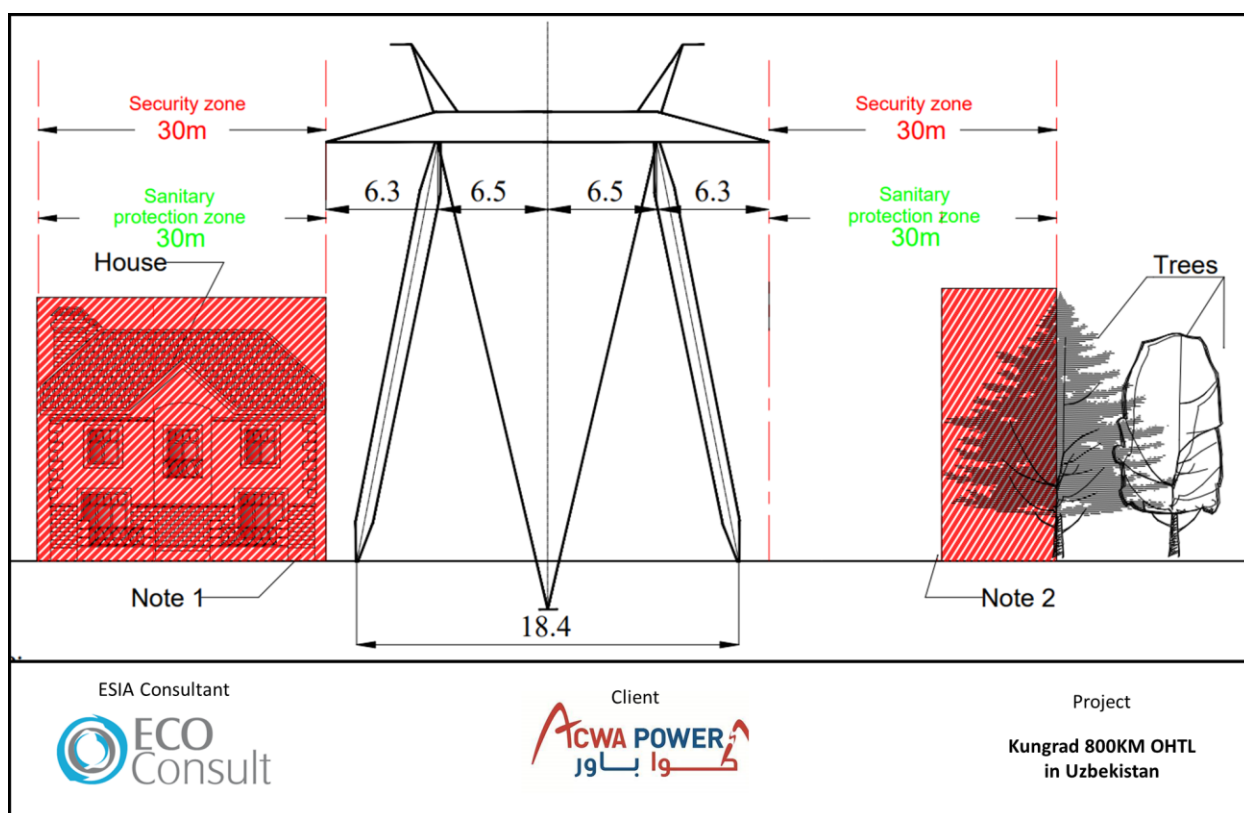


Figure 18: Sanitary Protection and Security Zones for Transmission Towers for 1 OHTL

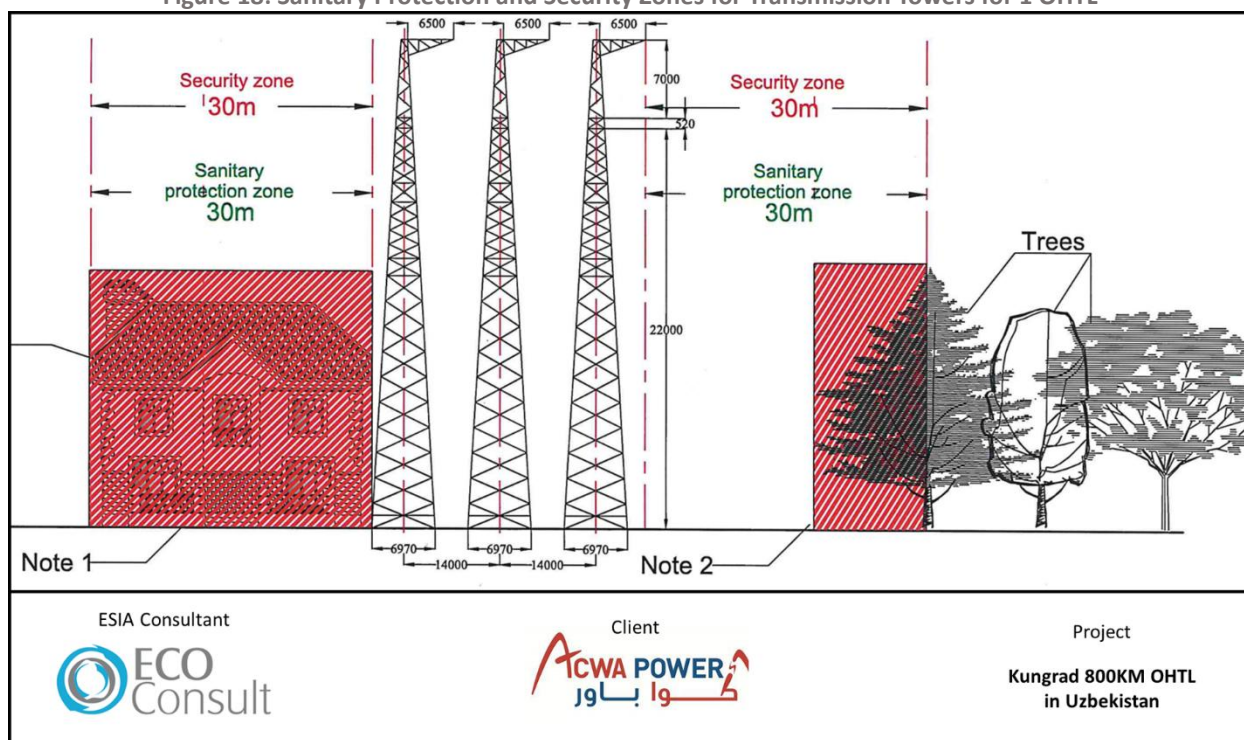


Figure 19: Sanitary Protection and Security Zones for Angle Towers for 1 OHTL

The figure below presents the sanitary protection zone and security zone applicable for areas where there will be two (2) OHTL line running parallel to each other (i.e. Ustyurt switching station to Kungrad and Nukus switching station and Nukus switching station to Sarymai switching station).

As noted in the figure below this includes the same distances as that of the single OHTL route in addition to 50m buffer distance which is required between two (2) 500KV high voltage OHTLs in accordance with the “Electrical Installation Code”. The same applies for the transmission towers as well.

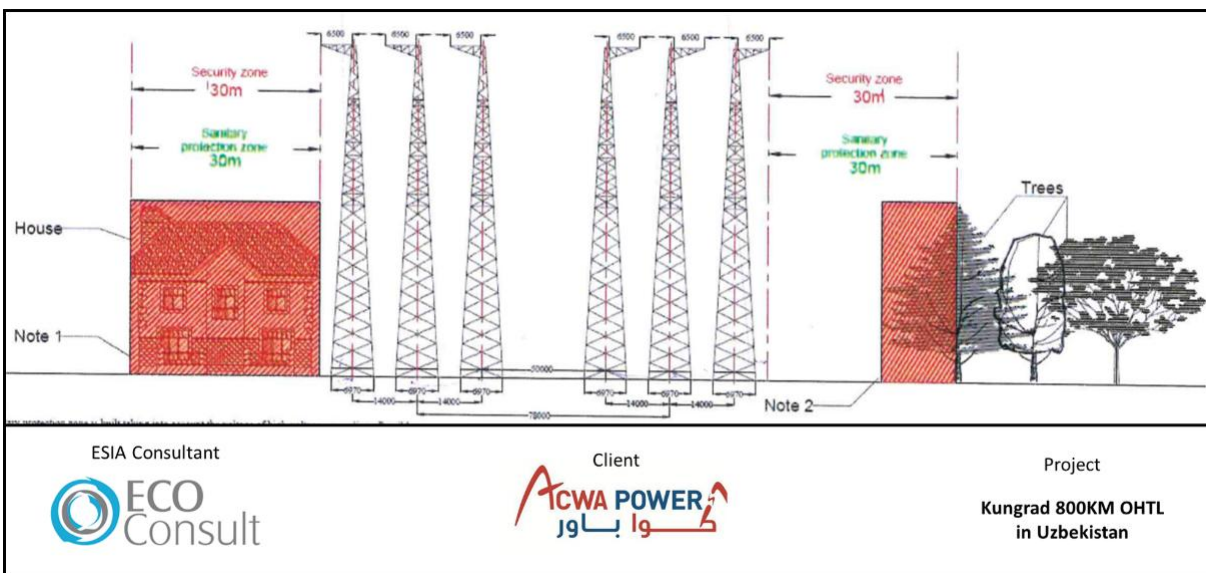


Figure 20: Sanitary Protection and Security Zones for 2 OHTLs

It is important to note that the servitudes (ROWs) where there are two (2) OHTL lines do not overlap; and in instances where there has been an overlap of servitudes in double line sections, these have been merged.

2.4.2 Permanent Land Acquisition

The table below presents the permanent land acquisition required for the Project. This will only include the footprint of the tower locations only. The conductor lines, security zone, sanitary protection zone, etc. are not subject to a permanent land acquisition process.

The table below does not include the full right of way (i.e. sanitary protection zone and security zone), which is defined as 30m from the outer extent of the tower arm in each direction. This is because the right of way does not constitute permanent acquisition but remains under the ownership of existing owner but with permanent restrictions in place. The right of way will have the following rules in place:

- No structures and no large trees will be permitted in the right of way. Any such assets will be surveyed and compensated for permanent loss incurred;
- Land ownership will remain with current owners in the areas outside the tower base. Land within tower base areas will be surveyed and compensated for permanent loss incurred; and
- Agriculture will be permitted in areas outside the tower bases after the construction phase. Crops will be surveyed and compensated for the construction phase only.

This issue is discussed in further detail in “Section 8”.

Table 10: Permanent Land Acquisition Requirements

Item	Footprint (km ²)
Transmission Towers	1.41
Angel Towers	0.064
Total (km²)	1.474

2.4.3 Temporary Land Requirements

There will be temporary land required during the construction phase for the temporary facilities as described earlier (e.g. laydown areas or access roads in case there are no existing tracks). The temporary land will not be subject to an acquisition process given that it is temporary short-term use for the period of construction. Those will be subject to an evaluation and compensation process (refer to “Section 8” for additional details).

In accordance with the “Electrical Installation Rules”, temporary land requirements are equivalent to the following:

- 7.5m from the centerline of the conductor (15m in total); and
- 2500m² for PB4 towers (transmission towers) and 2000m² for angle towers. This area is additional to the 15m temporary use area discussed above.
- 3x5m easement along the entire OHTL for stringing, as well as temporary laydown area

The table below presents the temporary land requirements. Note: in addition to this 7.5m and 15m buffer, should there be any additional areas disturbed during construction (e.g. laydown areas beyond the 15m buffer) then this will be subject to an evaluation and compensation process.

Table 11: Temporary Land Acquisition

No.	District	Land Acquisition km ²
		Temporary use
Route from Ustyurt Switching Station to Kungrad and Nukus Switching Station – Line 1		
Republic of Karakalpakstan		
1	Kungrad District	4.4134775
2	Shumanay District	0.509194
3	Kanlikul District	0.9262845
4	Nukus District	0.931055
Total for the Region:		6.780011
Route from Ustyurt Switching Station to Kungrad and Nukus Switching Station Substation – Line 2		
Republic of Karakalpakstan		
1	Kungrad District	4.4134775
2	Shumanay District	0.509194
3	Kanlikul region	0.9262845
4	Nukus District	0.931055
Total for the Region:		6.780011
Route from Nukus Switching Station to Sarymai – Line 1		
Republic of Karakalpakstan		
1	Nukus District	0.336334
2	Karauzyak District	1.8289465

3	Beruniy District	0.9628895
4	Ellikkala District	0.3004755
5	Turtkul District	2.0280265
Total for the Region:		5.456672
Khorazm Region		
1	Tuproqqala District	0.860119
Total for the Region:		0.860119
Route from Nukus Switching Station to Sarymai – Line 2		
Republic of Karakalpakstan		
1	Nukus District	0.336334
2	Karauzyak District	1.8289465
3	Beruniy District	0.9628895
4	Ellikkala District	0.3004755
5	Turtkul District	2.0280265
Total for the Region:		5.456672
Khorazm Region		
1	Tuproqqala District	0.8191
Total for the Region:		0.81
Route from Nukus Switching Station to Sarymai – Karakul		
Republic of Karakalpakstan		
1	Turtkul District	0.222972
Total for the Region:		0.222972
Khorazm Region		
1	Tuproqqala District	1.022604
Total for the Region:		1.022604
Bukhara Region		
1	Romitan District	0.9452095
2	Peshkun District	0.2500345
3	Jondor District	3.1200455
4	Karakul District	0.1780475
Total for the Region:		4.493337
Grand Total		31.659426

2.4.4 Permits

The Developer has already obtained permits for the development of the OHTL from various governmental entities. The table below presents an overall list of permits obtained to date.

Table 12: List of Permits Obtained to Date for OHTL Development

A	Ustyurt WPP-Nukus SS
Khokimiyat of Kungrad district	Construction Authority of Kanlikul district
State Cadaster of Kungrad district	Khokimiyat of Nukus district
Construction Authority of Kungrad district	State Cadaster of Nukus district
Khokimiyat of Shumanay district	Construction Authority of Nukus district
State Cadaster of Shumanay district	Agency of Culture of the Republic of Karakalpakstan
Construction Authority of Shumanay district	Ministry of Water Resources of Karakalpakstan
Khokimiyat of Kanlikul district	Karakalpakstan BEN (Backbone Electric Networks)
State Cadaster of Kanlikul district	Territorial Electricity Network Company of Karakalpakstan
National Electric Grid of Uzbekistan	

B		Nukus SS - Sarymai SS	
	Khokimiyat of Nukus district		Construction Authority of Ellikkala district
	Chamber of State Cadasters of Nukus district		Khokimiyat of Turtkul district
	Construction Authority of Nukus district		Chamber of State Cadasters of Turtkul district
	Khokimiyat of Karauzyak district		Construction Authority of Turtkul district
	Chamber of State Cadasters of Karauzyak district		Khokimiyat of Khazarasp district
	Construction Authority of Karauzyak district		Chamber of State Cadasters of Khazarasp district
	Khokimiyat of Beruniy district		Construction Authority of Khazarasp district
	Chamber of State Cadasters of Beruniy district		Agency of Culture of the Republic of Karakalpakstan
	Construction Authority of Beruniy district		Karakalpakstan BEN (Backbone Electric Networks)
	Khokimiyat of Ellikkala district		Territorial Electricity Network Company of Karakalpakstan
	Chamber of State Cadasters of Ellikkala district		Khorazm BEN (Backbone Electric Networks)
	Ministry of Defense of the Republic of Uzbekistan North-Western Military District		Territorial Electricity Network Company of Khorazm
	National Electric Grid of Uzbekistan		
C		Sarymay SS - Karakul SS	
	Khokimiyat of Khazarasp district		Chamber of State Cadasters of Zhondar district
	Chamber of State Cadasters of Khazarasp district		Construction Authority of Zhondar district
	Construction Authority of Khazarasp district		Khokimiyat of Karakul district
	Khokimiyat of Turtkul district		Chamber of State Cadasters of Karakul district
	Chamber of State Cadasters of Turtkul district		Construction Authority of Karakul district
	Construction Authority of Turtkul district		Agency of Culture of the Republic of Uzbekistan
	Khokimiyat of Romitan district		Karakalpakstan BEN (Backbone Electric Networks)
	Chamber of State Cadasters of Romitan district		Territorial Electricity Network Company of Karakalpakstan
	Construction Authority of Romitan district		Territorial Electricity Network Company of Khorazm
	Khokimiyat of Peshkun district		Territorial Electricity Network Company of Khorazm
	Chamber of State Cadasters of Peshkun district		Bukhara BEN (Backbone Electric Networks)
	Construction Authority of Peshkun district		Territorial Electricity Network Company of Bukhara
	Khokimiyat of Zhondar district		National Electric Grid of Uzbekistan

Note: EPC Contractor will be responsible for obtaining all permits for the OHTL including any updated permitting requirements for those identified above.

2.5 Overview of Project Activities

This section presents the likely activities to take place during the Project development and which will include three distinct phases: (i) planning and construction, (ii) operation, and (iii) decommissioning. Each of which is summarized below.

2.5.1 Planning and Design Phase

This phase will involve the following;

- Completion of all required studies for the Project development. This will include but not limited to topography study, geotechnical study, stakeholder engagement, resettlement planning, etc.;

- Obtaining and finalizing required financing from IFIs;
- Appointment of EPC Contractor;
- Obtaining and finalizing all required permits;
- Preparation of detailed design and layout requirements; and
- Finalize evaluations and compensations.

2.5.2 Construction Phase

The typical activities that will take place during the construction phase for OHTL by the EPC Contractor includes the following:

- Mobilization of Project team and equipment to the site and recruitment of workers;
- Undertake mobilization works for temporary facilities which will involve deployment of site offices, worker camp, worker facilities, laydown areas, etc.;
- Transportation of various Project components to the Project site to include the towers, conductors, etc. The components are expected to be transported by road to the Project area;
- Site preparation activities for the tower foundations. Such activities are limited to the individual footprint of the towers and therefore the actual area of disturbance is small. Nevertheless, such activities could include land clearing activities, excavations, and levelling;
- Installation of components such as the towers, cross-arms, insulators, etc.;
- Stringing to install the conductor wires and the ground wire which is typically undertaken through using sufficient pulling force on one end and tension capabilities on the other.
- Decommissioning of temporary facilities
- Handover to Project Operator (i.e. JSC National Electric Grid of Uzbekistan).

Note: It is expected to have 5 to 7 teams, each working in stretches of 8-10 kms. They will start with foundation first, followed by tower erection and stringing in the end.

The construction of the OHTL will be undertaken in phases over a 24-month period, starting in Q2 2025. In Year 1, it is expected that the first 100km OHTL stretch will be constructed starting from the Wind Farm Switching station towards Kungrad switching station. The remaining sections will be developed in Year 2.

2.5.3 Operation Phase

OHTL projects generally require extremely limited operational activities as this mainly includes the following:

- Routine maintenance and repair which would be based on a set schedule. This would include towers, conductors and accessories and would include activities such as insulators cleaning, joints tightening, checkup on foundations and its earthing, power conductor and earth wire conductor, etc.

- Non-routine maintenance which is undertaken in case of failure of any of the Project components and could include replacement of equipment such as broken insulators, worn-out cables, damaged cross-arms, etc.

As discussed earlier, all O&M activities will be undertaken by JSC National Electric Grid of Uzbekistan (NEGU).

2.5.4 Decommissioning Phase

Decommissioning details are not available at this stage and whether they will depend on the Wind Farm (which will remain operational for 25 years) or not. Typically, the lifespan of high voltage OHTLs is around 50 years.. In any case, decommissioning activities will include disassembly of the towers for final disposal along with the conductors. However, most of these materials are salvageable (i.e. recyclable).

2.5.5 Project Schedule

Discussed below is the preliminary and tentative schedule for the overall Project development that is available at this point, as provided by the Developer.

- Planning and Design phase: This phase is ongoing and is expected to be completed by Q1 2025;
- Construction phase: this will involve undertaking of all construction activities as identified earlier for the Project development. This is expected to require 24 months starting from Q2 2025. In Year 1, it is expected that the first 100km OHTL stretch will be constructed starting from the Wind Farm switching station towards Kungrad switching station. The remaining sections will be developed in Year 2; and
- Operation phase: is expected to start in Q4 2027 for the duration of the PPA which is as discussed earlier set for 25 years.

2.6 Workforce Requirements

According to information provided by the Developer, the Project will require the following workforce throughout the construction and operation phase:

- Around 2,200 job opportunities at peak during the construction phase for a duration of approximately 24 months. This will mainly include 480 skilled job opportunities (to include engineers, technicians, consultants, surveyors, etc.) and 1,700 semi-skilled and unskilled job opportunities (such as laborers, security personnel, housekeeping, etc.).
- As explained earlier, there is minimum O&M activities that are corrective in nature only and that will be undertaken by the internal staff within the National Electric Grid of Uzbekistan.

Taking the above into account, the Developer is aiming to hire local community members to the greatest extent possible throughout the construction and operation phase for skilled and unskilled jobs, where community members have the prerequisite skills and qualities for the job. Recruitment will be undertaken in accordance with Uzbekistan law, on fair assessment of skills and qualities for the job. All employees will be subject to normal human resource practices and will have to conduct themselves in accordance with the Developer's disciplinary code. No discrimination, on ethnic, gender, race or other such demographic

factor will be allowed during recruitment. The only preferential factor shall be the fact those that are directly affected, subject to meeting all the prerequisites for recruitment of the specific job.

3. ESIA APPROACH AND METHODOLOGY

This section presents the overall approach and methodology that was followed throughout the ESIA process for the Project.

3.1 Analysis of Alternatives

The "Resolution №541 of the Cabinet of Ministers on Procedure of EIA Mechanism (07 September 2020)" requires that the ESIA identify and analyze alternatives and present the main reason for the preferred choice. The examination of alternatives is also considered to be a key element of the ESIA process under all international E&S standards and requirements as well.

The analysis of alternatives is presented in "Section 0". The section discusses and compares several alternatives to the Project development in relation to: (i) the Project site, (ii) the Project design, and (iii) finally investigated the 'no action alternative' - which assumes that the Project development does not take place.

3.2 Stakeholder Consultations and Engagement

Stakeholder consultation and engagement is an essential part of the ESIA process and has been carried out in accordance with the regulatory requirements in Uzbekistan and the international E&S standards and requirements.

The Project to date has included extensive stakeholder consultation and engagement with various stakeholder groups across all regions within which the OHTL runs. This includes national governmental entities, regional and local governmental entities, Non-Governmental Organizations (NGOs), local communities, and other as appropriate. This has been undertaken through bi-lateral meetings, Focus Group Discussions (FGD), e-mail communication, phone communication, formal letters, and other.

The stakeholder consultation and engagement activities are discussed in detail within "Section 6".

3.3 Delineation of Study Boundaries and Scope Assessment

3.3.1 Definition of Spatial Study Area or Area of Influence (Aoi)

The overall study area (or Aoi) for the ESIA represents the potential Area of Influence (Aoi) of the Project. This is 'the area over which significant effects of the Project could reasonably occur, either on their own, or in combination with those of other developments and projects'.

In general terms, the study area for the Project ESIA includes the footprint of Project disturbance as demarcated in blue in the figure below. This includes the OHTL route with a total length of 843 km (this includes 57km within the Wind Project boundary and 786 km from Wind Project switching station until Karakul switching station) as well as 100m buffer on each side.

However, for certain E&S parameters (such as landscape and visual, socio-economics, etc.), the study area goes beyond the actual footprint of the Project site, and therefore an appropriate thematic study area is determined for each theme on a case-by-case basis. Such a thematic study area is clearly identified within the relevant section it relates to throughout this ESIA.

In identifying this thematic study area, the type and degree of the potential direct and indirect effects were taken into consideration. The core area where direct effects are likely to occur was determined, as well as the wider area of influence where indirect, combined and cumulative effects are likely to occur on the surrounding areas and communities.

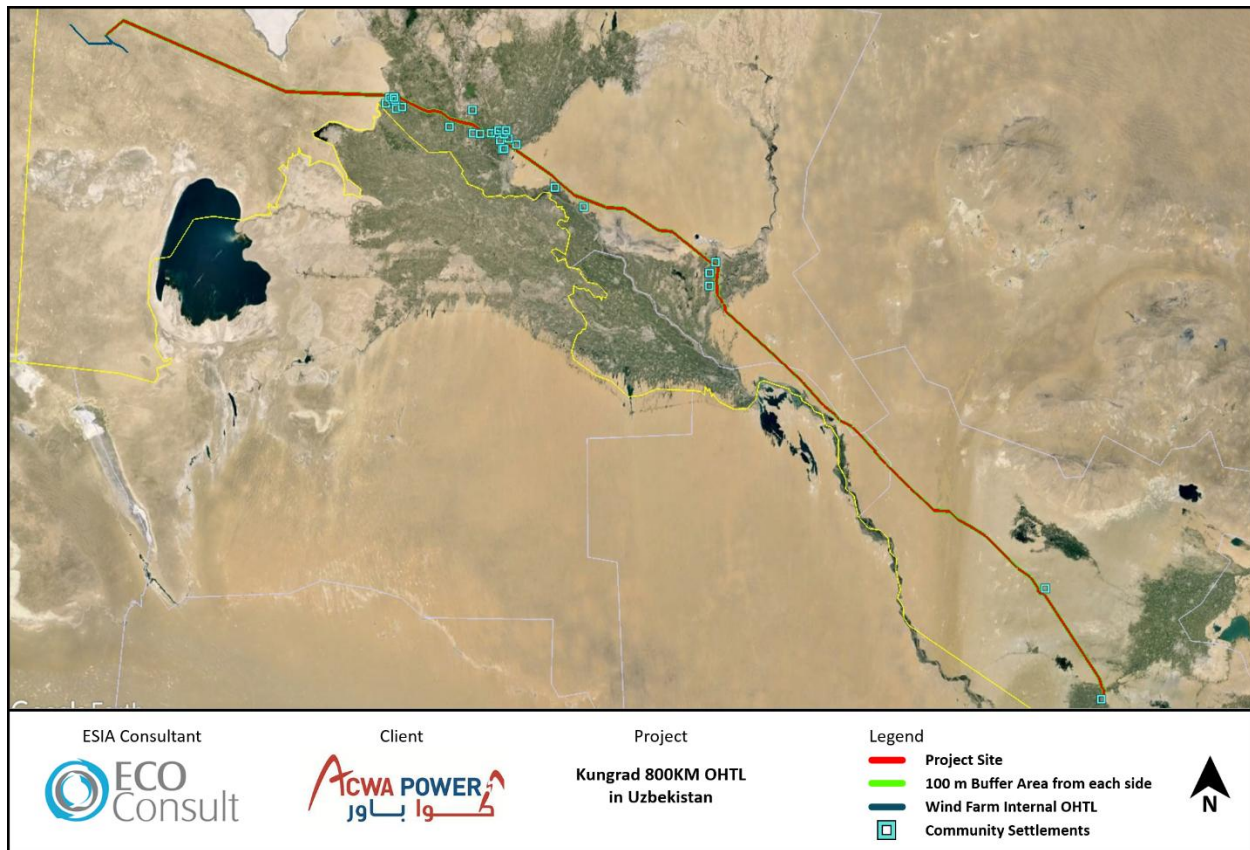


Figure 21: Study Area

3.3.2 Temporal Scope of the Assessment

The Project will be developed in a three-phase sequence as follows. The potential impacts are assessed throughout the various Project phases.

- Planning and Construction Phase;
- Operation Phase; and
- Decommissioning Phase.

(i) Planning and Construction Phase

This includes onsite construction activities which will be undertaken by the EPC Contractors under the guidance of the Developer. This mainly includes preparing the detailed design and layout of the OHTL, transportation of Project components onsite, construction of the switching stations, as well as onsite site preparation and construction activities for installation of towers .

(ii) Operation Phase

This includes the limited O&M activities to be undertaken by NEGU. Activities expected to take place mainly include routine and non-routine maintenance activities.

(iii) Decommissioning Phase

Generally, the anticipated impacts throughout the decommissioning phase are similar in nature to impacts assessed during the construction phase – and specifically in impacts related to soil and groundwater (from improper management of waste streams), air quality and noise, and occupational health and safety. Therefore, the assessment of impacts for those receptors and mitigation identified during the construction phase is assumed to apply to this phase in particular without the need to reiterate or emphasize this throughout subsequent chapters.

3.3.3 Environmental and Social Baseline Conditions

As part of the ESIA process, the baseline environmental and social conditions of the study area were established. Describing the baseline includes identifying and defining the importance and sensitivity of the various environmental and social resources and receptors likely to be impacted, i.e. within the study area. Understanding the value or sensitivity of the resources and receptors to impacts and changes is an important consideration when determining the significance of effects, and allows for better identification of the most appropriate measures that could be employed to avoid impacts, and to mitigate any adverse impacts.

The description of environmental and social baseline conditions has considered a wide range of data and information gathered from various sources, including:

- Desk-based studies and literature reviews;
- Data from statutory and non-statutory stakeholders; and
- Field surveys and site investigations.

These studies have covered all the environmental and social aspects related to the Project. The baseline conditions are treated as those conditions which would prevail in the absence of the Project.

Studies of the environment and social baseline are described in “Section 7” – “Section 14” to include the following: landscape and visual; land use; waste management; biodiversity; archaeology and cultural heritage; air quality and noise; infrastructure and utilities; and socio-economic conditions. Within each section, the methodology which was undertaken for assessment of the each of those baseline conditions is described in detail. This also included accounting for seasonal factors for biodiversity, avifauna, and bats – refer to each section for additional details on timing of surveys undertaken.

3.4 Impacts Assessment Methodology

Given the scale and type of the Wind Farm Project, this will result in positive environmental and economic impacts on the strategic and national level given the current challenges the energy sector in Uzbekistan faces. As the OHTL is considered as associated facility without which the Wind Farm Project cannot be developed, such strategic positive impacts are also considered relevant. Such positive strategic impacts include:

- The Wind Farm Project 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.
- The Wind Farm Project 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 Wind Farm Project will produce clean energy from renewable energy resources which 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 CO₂ annually.

This ESIA focuses on the Project related impacts and provides an assessment of such impacts on environmental and social parameters for each receptor under the relevant chapter, from “Section 7” — “Section 15”. The following section provides a description of the approach, methodology and process adopted for the impact assessment presented within this ESIA.

3.4.1 *Management Measures*

Based on the impact assessment undertaken a set of management measures are identified for each impact which aims to address it. Management measures include the following:

- *Additional Requirements*: those are generally regulatory requirements which have been identified and which must be taken into account at a later stage.
- *Additional Studies*: for certain E&S receptors additional studies must be undertaken at a later stage. Such studies and their scope, timing, etc. have been highlighted were relevant.
- *Mitigation Measures*: a vital step in the ESIA process is the identification of measures that can be taken to ensure that impacts are mitigated or reduced to acceptable levels. The ESIA will firstly consider the significance of any impacts caused by the Project and then assigned mitigation options through applying the following hierarchy:
 - Avoiding or ‘designing out’ impacts wherever possible;
 - Considering alternatives or modifications to the design to reduce the impacts wherever possible;
 - Applying measures to minimize and manage impacts on the receptor; then
 - As a last resort, identifying fair compensation, remediation and offsetting measures to address any potentially significant residual effects.

Some negative impacts can be easily mitigated, whilst others cannot or are too difficult and costly to mitigate. The various potential impacts are described in this ESIA, along with the provision of ‘feasible mitigation measures’ that can be implemented.

- *Recommendations*: for positive impacts it is not possible to identify mitigation measures, but rather recommendations have been identified which aim to enhance the positive impact.

3.4.2 Approach to Assessment of Impacts

The adverse and beneficial E&S impacts of the Project have been identified and assessed against the established baseline. A consistent approach to the assessment of impacts was followed to enable E&S impacts to be broadly compared across the ESIA. A set of generic criteria were used to determine significance (see below) which were applied across the various E&S parameters.

As far as possible, E&S impacts were quantified. Where it was not possible to quantify impacts, a qualitative assessment was conducted using professional experience, judgment and available knowledge, and including the consideration of stakeholder views. Where there were limitations to the data, and/or uncertainties, these have been recorded in the relevant chapters, along with any assumptions that were taken during the assessment.

In order to determine the significance of each impact, two overall factors are considered:

- The sensitivity of the E&S receiving parameter, as determined during the assessment of baseline conditions; and
- Magnitude and Nature of the impact.

3.4.3 Sensitivity of the Receiving Parameter

Receiving parameter sensitivity was determined using information taken from the baseline description on the importance, significance or value of the E&S component under examination. It is important to understand the sensitivity of the receiving parameter, as this is a measure of the adaptability and resilience of an E&S parameter to an identified impact. The following categories of sensitivity were applied to the assessment:

- High: The E&S parameter/receptor is fragile and an impact is likely to leave it in an altered state from which recovery would be difficult or impossible;
- Medium: The parameter/receptor has a degree of adaptability and resilience and is likely to cope with the changes caused by an impact, although there may be some residual modification as a result; and
- Low: The parameter/receptor is adaptable and is resilient to change.

3.4.4 Magnitude and Nature of the Impact

The magnitude of the impact is the scale of change which the impact may cause compared to the baseline and how this change relates to accepted thresholds and standards. The following categories were applied to the assessment:

- High: a large change compared to variations in baseline. Potentially a clear breach of accepted limits;
- Medium: change which may be noticeable and may breach accepted limits; and
- Low: when compared with the baseline, change which may only just be noticeable. Existing thresholds would not be exceeded.

Furthermore, in determining the magnitude of the impact it is important to take into account and consider several other factors which define the nature of the impact. This includes the following:

Type of Impact

- Positive: applies to impacts that have a beneficial E&S result, such as enhancement of conditions; and
- Negative: applies to impacts that have a harmful aspect associated with them such as loss or degradation of E&S resources.

Type of Effect

- Direct: applies to impacts which can be clearly and directly attributed to a particular E&S parameter (e.g. generation of dust directly impacts air quality); and
- Indirect: applies to impacts which may be associated with or are subsequent to a particular impact on a certain E&S parameter (e.g. high levels of dust could affect occupational health and safety).

Duration (how long the stressor or its effect last)

- Short Term: applies to impacts whose effects on the E&S attributes will disappear within a 1-year period;
- Medium Term: applies to impacts whose effects on E&S attributes will disappear within 5-years; and
- Long Term: applies to impacts whose effects on E&S attributes will disappear in more than 5 years.

Reversibility

- Reversible: applies to impacts whose significance will be reduced and disappeared over time (either naturally or artificially), once the impacting activity ceases; and
- Irreversible: applies to impacts whose significance will not be reduced nor disappeared over time (either naturally or artificially), once the impacting activity ceases.

Likelihood

- Low: applies to impacts that are unlikely to occur for several reasons either related to onsite conditions, nature of construction activities or other factors;
- Medium: applies to impacts that are likely to occur; and
- High: applies to impacts that are almost certain to occur.

Frequency

- Rare: applies to impacts that are expected to occur once throughout the duration or in very minimal occasions in a given month
- Periodic: applies to impacts that are expected to occur regulatory on a given month; and
- Frequent: applies to impacts that are expected to occur frequently on a given month.

Timing

This will be relevant for certain and specific impacts only that are expected to occur during a specific time period within the year or entail a seasonality aspect. For example, impacts on certain biodiversity species are expected during spring season only (e.g. March). If so, the timing of the impact will be clearly identified and for other impacts a “not relevant” statement will be added for the impact.

Extent

- Low: applies to impacts that will occur within the actual footprint of project component / impact area.
- Medium: applies to impacts that will occur up to 5km from the footprint of project component / impact area. For example, dust from construction activities can impact the exact footprint area where activities are undertaken and up to 2km radius within the surrounding area due to wind; and
- High: applies to impacts that will occur more than 10km from the footprint of project component / impact area. For example, installed turbines have a visual impact that could extend up to 15km

3.4.5 Assessing the Significance of the Impacts

The concept of 'significance' is central to the ESIA process and aids the identification and categorization of E&S effects. As noted, in order to determine impact significance, the sensitivity of each E&S parameter/receptor is considered in combination with the magnitude of the impact. The table below demonstrates how these parameters are considered in the assessment of significance.

Table 13: Determination of Significance

Sensitivity of Receiving Parameter/Receptor \ Magnitude of Impact	Magnitude of Impact		
	Low	Medium	High
Low	Not significant	Minor	Minor
Medium	Minor	Moderate	Moderate
High	Minor	Moderate	Major

While the above matrix provides a framework for the determination of significance, and enables comparison across E&S parameters, a degree of professional judgement must be used and some parameter-specific factors to be considered in making the determination of significance. Below provides additional guidance to the degrees of significance used in this ESIA. Note that positive impacts are defined but are not rated for significance.

- **Major significance:** Based on the above methodology such impacts result in high magnitude and affect receptors that are highly sensitive. Those are impacts that are considered to have potentially significant and adverse risks and will be a key factor in the overall decision-making process of the Project. In addition, they will also require detailed considerations for mitigation and monitoring measures.;
- **Moderate significance:** Based on the above methodology such impacts either (i) result in medium magnitude and affects receptors that are of medium or high sensitivity; or (ii) result in high magnitude and affect receptors that are of medium sensitivity. Those are impacts that are considered to have potentially limited adverse risks and are unlikely to have a significant effect on the overall decision-making process. In addition, mitigation and monitoring measures require some consideration.
- **Minor significance:** Based on the above methodology such impacts either: (i) result in low magnitude and affects receptors that are of medium or high sensitivity; or (ii) result in medium magnitude and affects receptors that are of low sensitivity; or (iii) result in high magnitude and affects receptors that are of low sensitivity. Those are impacts that are considered to have minimal risks and unlikely to be of importance for the overall decision-making process. In addition, mitigation and monitoring measures are readily available to address such risks..

- ***Not significant:*** Based on the above methodology such impacts result in low magnitude and affect receptors that are of low sensitivity. Such impacts are beneath the level of perception and do not require any mitigation or monitoring measures.

3.4.6 Assessment of Residual Significance

If there are mitigation measures it is then necessary to make an assessment of the ‘residual significance’ after mitigation has been taken into account. A re-assessment of Project impacts is then made, taking into account the effect of the proposed mitigation measures in order to determine the significance of the residual effects. Residual effects are discussed for each E&S theme in the ESIA chapters, and their significance determined and summarized in an Impact Assessment Table in “Section 16”.

3.5 Development of a Framework Environmental and Social Management Plan (ESMP)

Based on the results of the impact assessment, development of management measures, and development of monitoring plan, a framework ESMP was compiled into a single table that details all of the above. The framework ESMP will be a key document and will list the E&S requirements and detail the procedures necessary for managing the significant E&S issues connected to proposed Project activities. The framework ESMP will be developed specifically to provide flexibility in the nature and exact location of operations, while ensuring all potential impacts are identified and properly mitigated and monitored throughout the later stages of the Project. This framework ESMP can be used as a stand-alone document during the different phases of the Project by Developer, EPC Contractor, Ministry of Ecology, Environmental Protection, and Climate Change, and other responsible parties.

The framework ESMP aims to provide high level mitigations and requirements for managing the E&S risks anticipated from the Project. Throughout the Project’s construction and operation phase an Environmental, Social, Health, and Safety Management System (ESHS MS) must be implemented by all relevant parties (i.e. Developer, EPC Contractor and NEGU). The ESHS MS must be project and site specific and must build on and take into account the requirements of the framework ESMP presented throughout this document. The development and implementation of an ESHS MS is considered a key requirement under international E&S standards and requirements. The ESIA also identifies the overall framework, structure and key requirements for the ESHS MS for the key entities involved in the Project.

Note: all ‘operational phase’ mitigation actions identified within the ESMP for the operation phase (under “Section 17”) apply whenever any group of towers / OHTL section are commissioned, not just when all have been commissioned.

4. ANALYSIS OF ALTERNATIVES

This section presents the assessment of alternatives that were considered for the Project development to date. This includes site alternatives as well as design alternatives, both of which are discussed in further detail below.

4.1 Overview of Approach

Objective

The main objective is to assess potential alternatives to the proposed OHTL route and determine if any have lower impacts or lead to better outcomes for the Project, local communities, or surrounding natural spaces.

Options Considered

- Linking with the existing OHTL network
- OHTL routing options
- Underground options

An explanation of the approach taken to assess each of these 3 options is provided at the start of each section.

4.2 Link to Existing OHTL Network

General Alternatives

As a first step, the Developer investigated connecting electricity generated from the Wind Project through existing OHTLs – instead of developing a new OHTL. However, due to the factors below, it was decided that a new OHTL will be required.

- Existing OHTLs do not have the required capacities to support the transmission of electricity from the 1.5GW project under review; and
- There are no existing 500kV OHTLs at or within appropriate proximity to the connection points required for this Project (i.e. Kungrad, Nukus, Sarymai and Karakul switching stations).

The figure below presents the existing 500kV lines within the proposed Project route. As noted, there are no existing 500kV lines within or near any of the proposed Project's connection points. The only existing 500kV OHTL starts at the final connection point t (i.e. Karakul switching station) and runs beyond the required length – thus alignment with this OHTL is considered irrelevant.

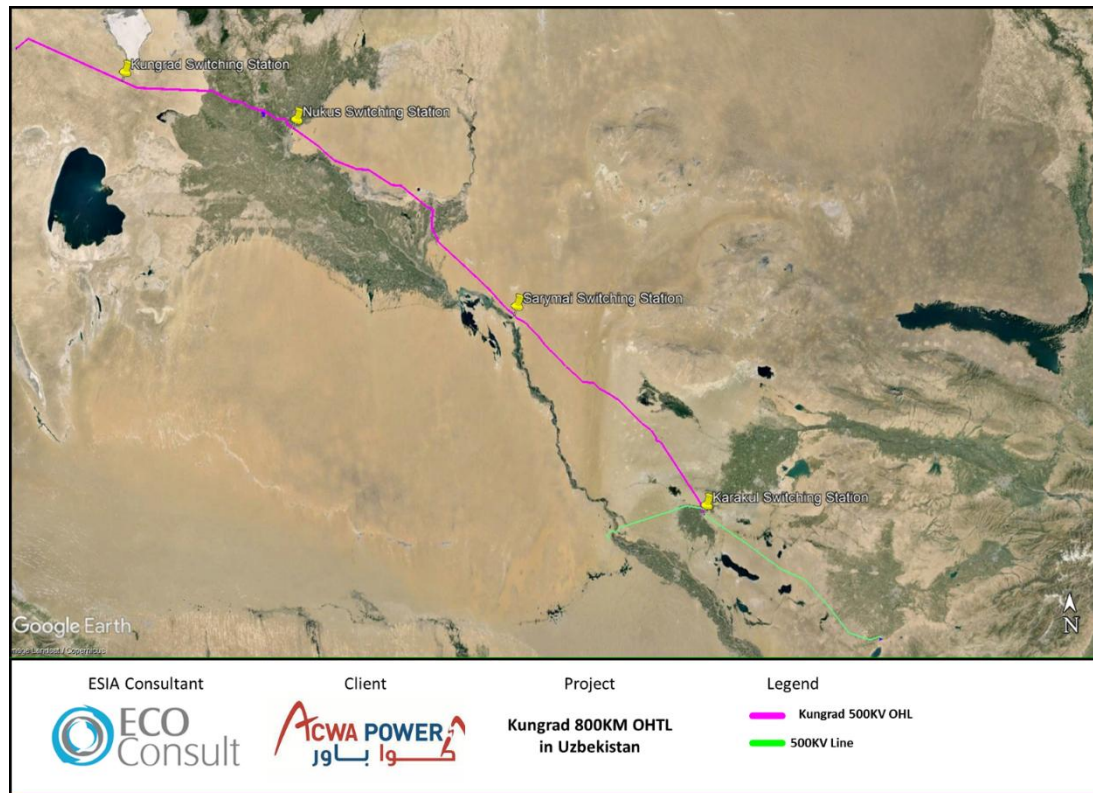


Figure 22: Kungrad OHTL and Existing 500kV Networks

4.3 OHTL Routing Options

OHTL Route Alternatives Considered by the Developer

The route selection process undertaken by the Developer was through a third party (UzAssystem). This section presents the route selection process based on the outcomes of the technical report provided by UzAssystem.

Several routes and options were considered and developed until the most feasible option was chosen as 'the final proposed route' (presented under "Section 2.3" earlier). The various routes and options were based on the following:

- Desktop review;
- Stakeholder consultation and engagement activities;
- Collection of secondary data available from various governmental and non-governmental entities;
- Site verifications and surveys;
- Current state and department standards and regulatory requirements; and
- Clearances and permits from authorities (identified earlier under "Section 2.4.4").

The selection process considered several technical factors as well as some key environmental and social factors as discussed in further detail below. The results for each alternative route are presented in summary appraisal tables so that the various costs/benefits can be compared.

Assessment Approach

Where appropriate, alternative options to the proposed OHTL route were assessed through evaluating the value of impacts, qualitatively, quantitatively and in monetary terms which are all summarized in an ‘appraisal summary table’. A range of financial, environmental and social issues were investigated to determine whether any of the options considered would lead to better outcomes relative to the ‘final’ proposed OHTL route. A short explanation of the methodology for each issue assessed is provided below.

- **Financial:** The financial impacts were assessed according to the cost estimates for the OHTL available at this stage. Estimates suggest that construction would be 250,000 USD per km, and operation and maintenance 1.5% of these each year. The costs are estimated for the 50-year lifespan, with a 5% discount rate applied to the lifetime annual operation and maintenance costs. Any increase/reduction in length of the line due to the assessed alternative routes assessed is assumed to increase/reduce project costs according to these estimates.
- **Visual:** Visual impacts of routing options were considered with regard to the expected decrease in property values within specific proximity of installed transmission lines. QGIS was used to delineate 100m, 200m, and 1km buffer zones of proposed and alternative routes. OpenStreetMap’s polygon dataset of Uzbekistan buildings was clipped by each buffer zone and the number of attributes was multiplied to factor in the layer’s stated accuracy (14%) and represent the number of buildings within 100m, 200m, and 1km buffer zones of each routing option. A literature review identified the average house footprint (75.4m²), average property price (US\$422.35/m²), and depreciation value within each buffer zone (12.5% within 100m, 5% within 200m, and 2.5% within 1km). These values were used alongside the number of buildings to calculate the cost of routing options from property depreciation.
- **Wilderness:** The assessment undertaken here used Copernicus land cover data to identify wilderness areas within 5km buffer zones of routing options. Wilderness was defined as any area further than 100 meters from cropland or built-up areas. The extent of wilderness areas within 5km of routing options was extracted using QGIS. The change of area between proposed and alternative routes was used to evaluate the impact of an alternative (negligible impact = less than 50km² change in wilderness, minor impact = 50-1000km² change, moderate impact = 1000-5000km² change, major impact = over 5000km² change).
- **Agricultural:** Land cover data from Copernicus was used to identify agricultural land in the study region. Copernicus data identified areas of cultivated and managed vegetation as cropland. The assessment here used this land cover class as a proxy for agricultural land. It is important to note that land used for livestock rearing may not have been incorporated into Copernicus’ cropland land cover class and so the full extent of a route’s impact on agriculture may be higher than what is costed in this assessment. Additionally, data used here is based on 2019 global land-use and thus may fail to capture any agricultural expansion since.

The length of routing options that run over cropland areas was extracted through QGIS. For the monetary evaluation, a cost of 19,529 USD per km was assumed based on findings in the ‘Cost Estimate’ of the Kungrad OHTL Livelihood Restoration Plan (LRP) report (page 122). The report states that the cost estimate of all impacts to agricultural land for the entire OHTL based on a 25% sample is 2,050,594 USD, and that 105km of the total length of 787km passes through agricultural land (page 17).

- **Bustards:** The impact on bustards was assessed by referring to the locations highlighted in the ESIA and in wider literature that are critical for their breeding and/or migratory pathways (see Figure 23).

Alternative route/design options were considered in relation to these locations to evaluate the potential change relative to the baseline of the OHTL.

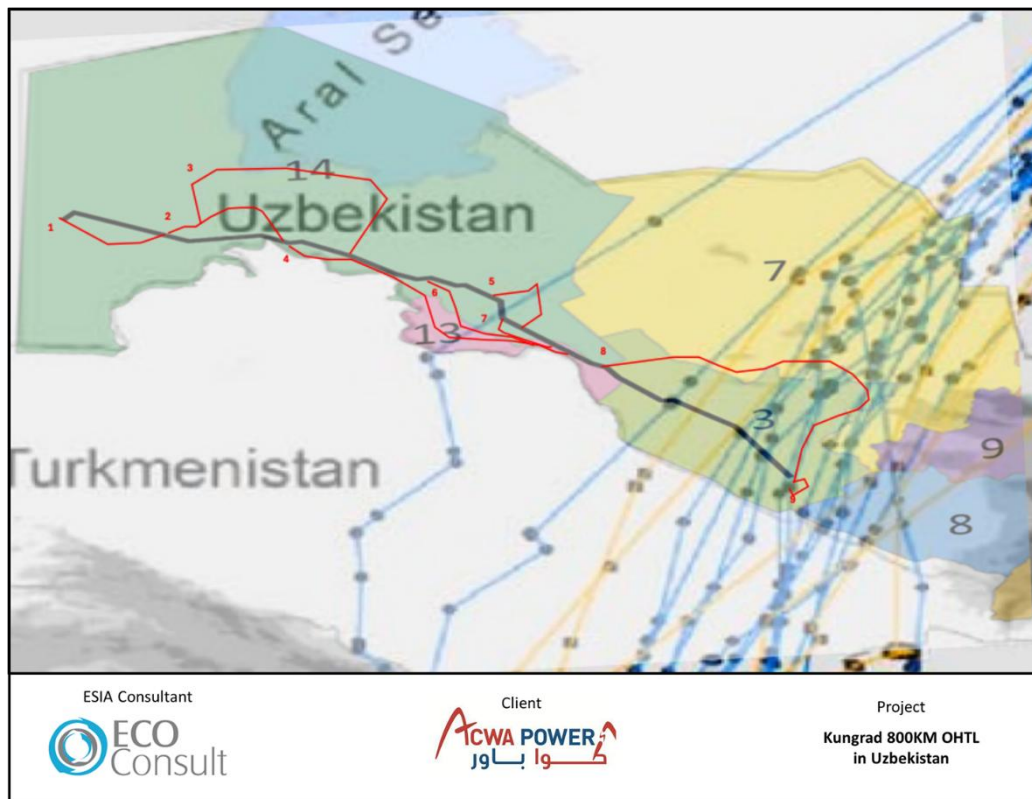


Figure 23: Bustard Migratory Pathways and Alternative Routes assessed. Migratory pathways from Combreau et al (2011)

4.3.1 Biodiversity and Avifauna

Information was collected on all Key Biodiversity Areas (KBAs) within Uzbekistan to ensure the proposed OHTL does not infringe on these ecologically sensitive areas. KBAs assessed include nature reserves, national parks, protected areas, Important Bird Areas (IBAs), and more.

All routes and options considered have taken the above into account, including the final route as presented in the figure below, which highlights how the proposed route avoids all KBAs.

Additional alternatives were considered from a biodiversity perspective as part of the ESIA process and those are discussed in further details in “Section 4.5” below.

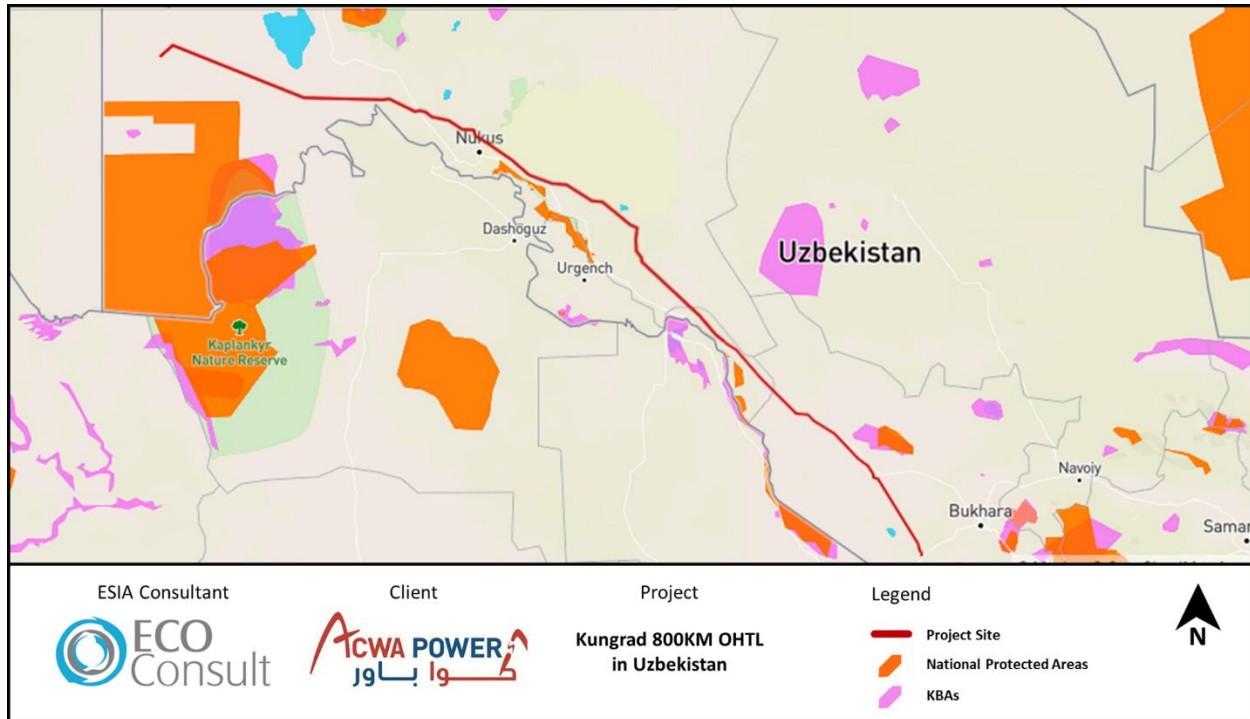


Figure 24: KBAs and National Protected Areas Around the Project

4.3.2 Archeology and Cultural Heritage

As discussed in further detail in “Section 11”, consultations were undertaken with the following entities who provided location of known sites of importance within the OHTL area in general based on available databases.

- Ministry of Cultural Heritage of the Republic of Karakalpakstan;
- Agency of Cultural for Khorazm Region; and
- Agency of Cultural Heritage of Bukhara Region.

The initial routes developed avoided all areas provided except for one site known as “Kyrantau Cultural Heritage Site.” Therefore, the Ministry provided detailed coordinates for this site and required that the OHTL avoid the entire site (80 hectares) – refer to figure below, in particular.

Based on the above, the final route has taken this into consideration as noted in the figure below.

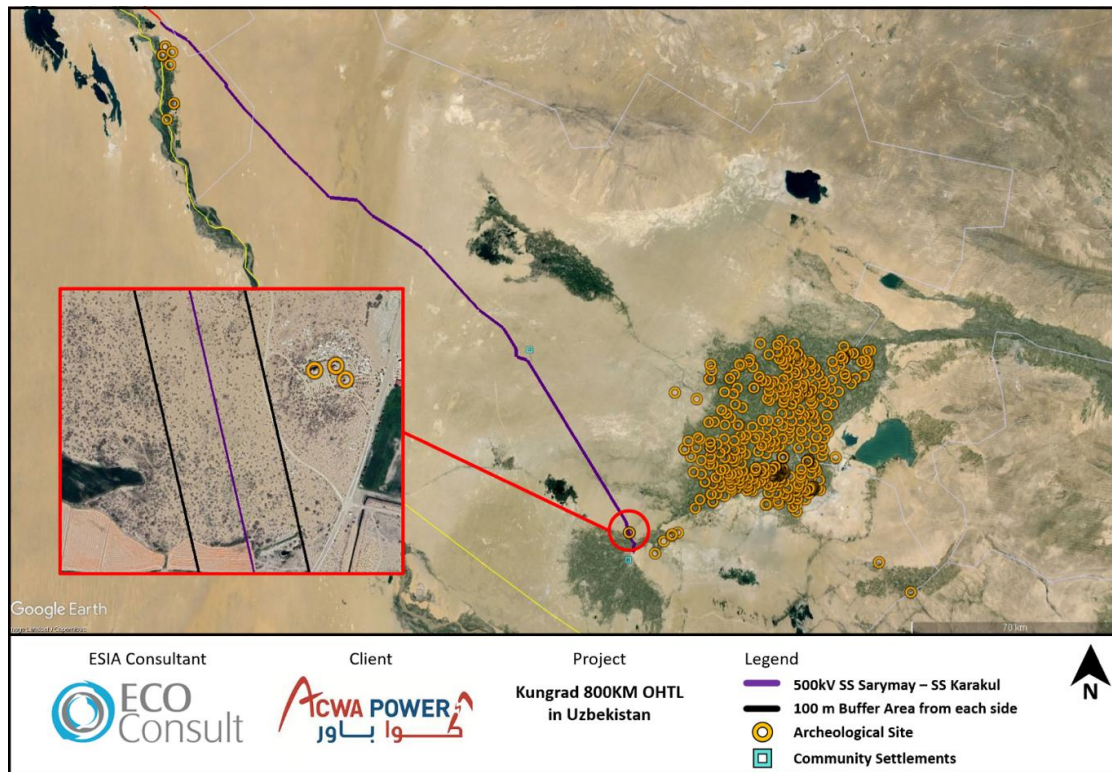


Figure 25: Archeological Site Surrounding the 500kV SS Sarymay – SS Karakul Part of the Project

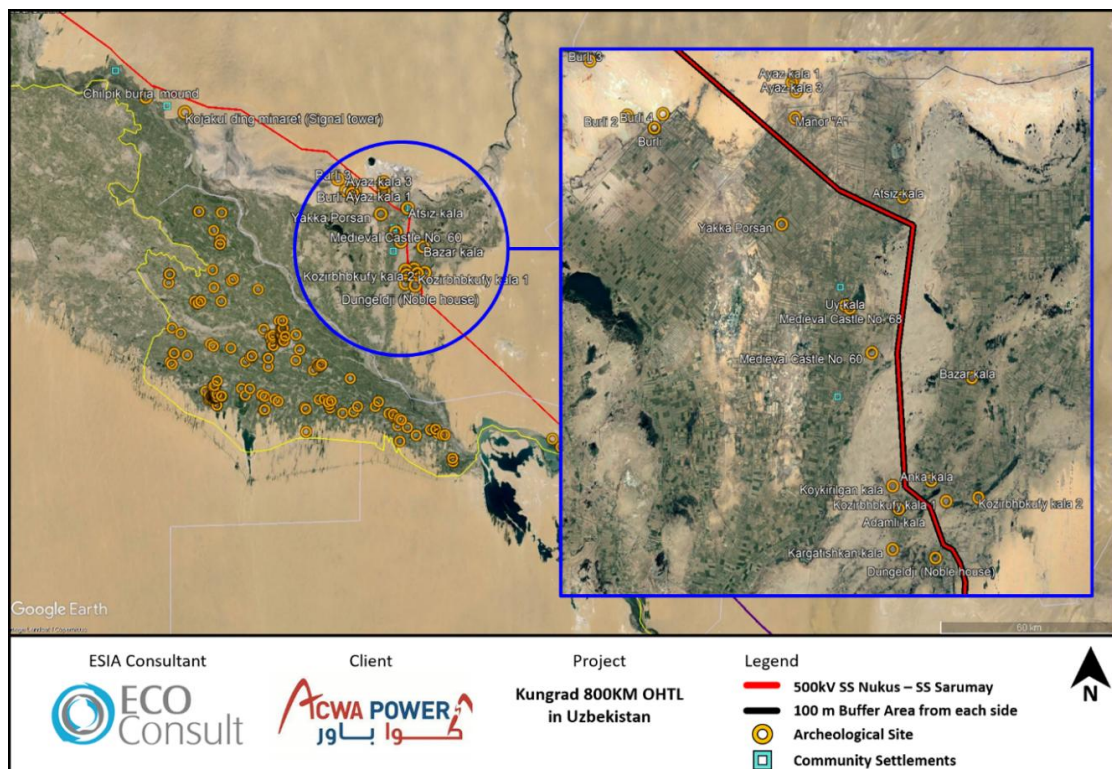


Figure 26: Archeological Site Surrounding the 500kV SS Sarymai – SS Karakul Part of the Project

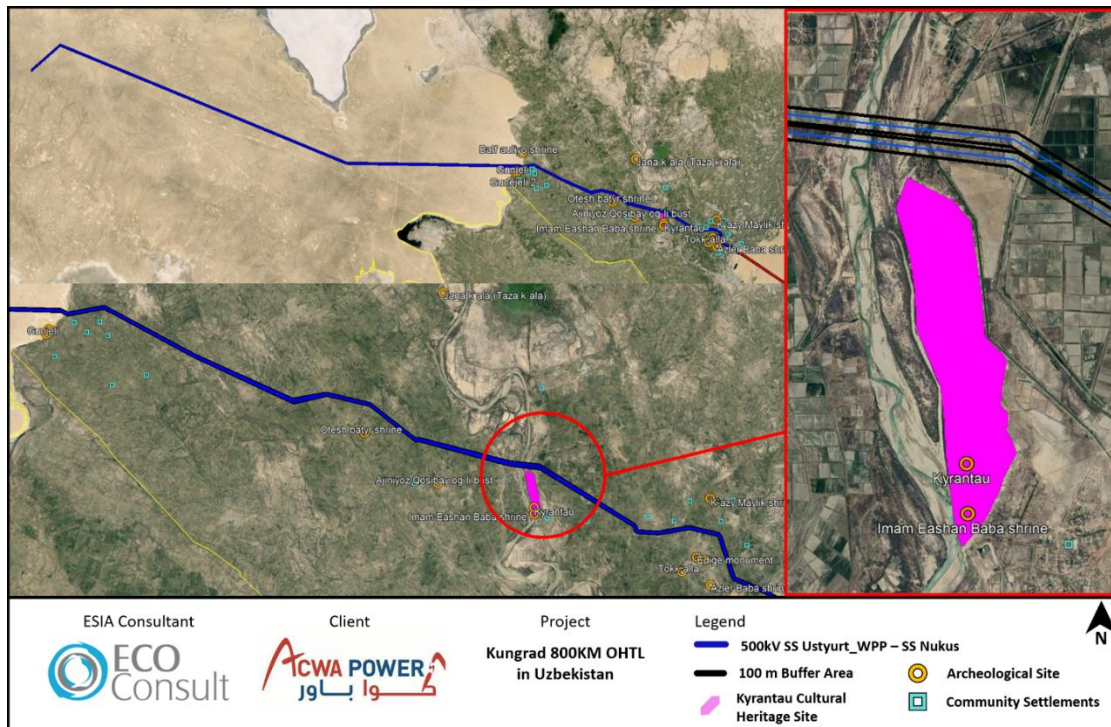


Figure 27: Archeological Site Surrounding the 500kV SS Ustyurt WPP - SS Nukus Part of the Project

4.3.3 Land Use, Land Acquisition and Resettlement

Secondary information was collected on community settlements (cities, towns, villages, etc.) to guide route mapping away from these areas. As noted in the figure below, the final route avoids all community settlements. The closest point from the OHTL to any community settlement is around 1km.

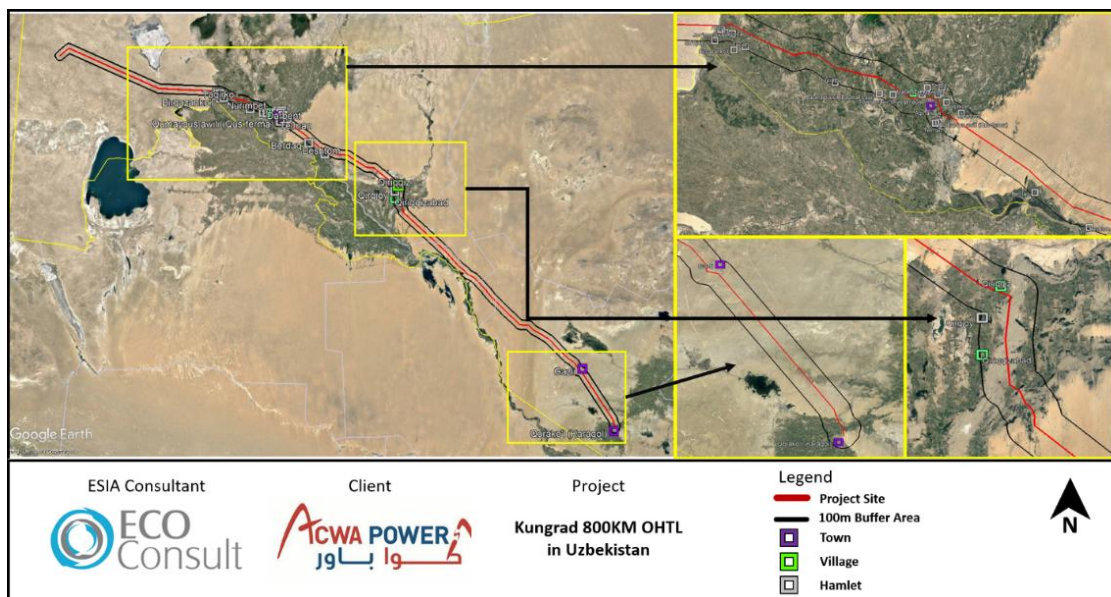


Figure 28: Closest Community Settlements

While physical displacement related to the loss of homes or farmsteads is avoided, economic displacement from the loss of farmland cannot be completely avoided.

Based on secondary data available, all OHTL routes aimed to the greatest extent possible to avoid agricultural lands. One of the objectives in the design of the OHTL was to select a route that is as short as possible considering the conditions for land acquisition, disturbance to agricultural lands and plantations.

However, given the requirement for the OHTL to connect with Nukus substation to supply Karakalpakstan Region with electricity, completely avoiding the agricultural lands within Kungrad, Kanlikul, and Nukus Districts is not possible.

As depicted by Figure 29, the only design alternative that can be considered is to bypass the agricultural lands by running the OHTL to the north, avoiding the agricultural land before rejoining the proposed line at the Nukus substation.

Comparing various environmental and social costs and benefits of this alternative option (see Table 14), reveals that this is not a sensible diversion. Although it reduces the distance that passes through agricultural land by 59km, reducing costs associated with agricultural impacts by \$1.2 million, it increases the total distance of the OHTL by 323km, adding \$103 million in extra costs. While the proposed route reduces visual impacts, this benefit is negligible in comparison. Furthermore, the alternative route impacts an additional 1,744km² of wilderness area and increases exposure to any potential migratory pathways of Macqueen's Bustards. As a result, it is more appropriate that the final OHTL route runs through the agricultural land.

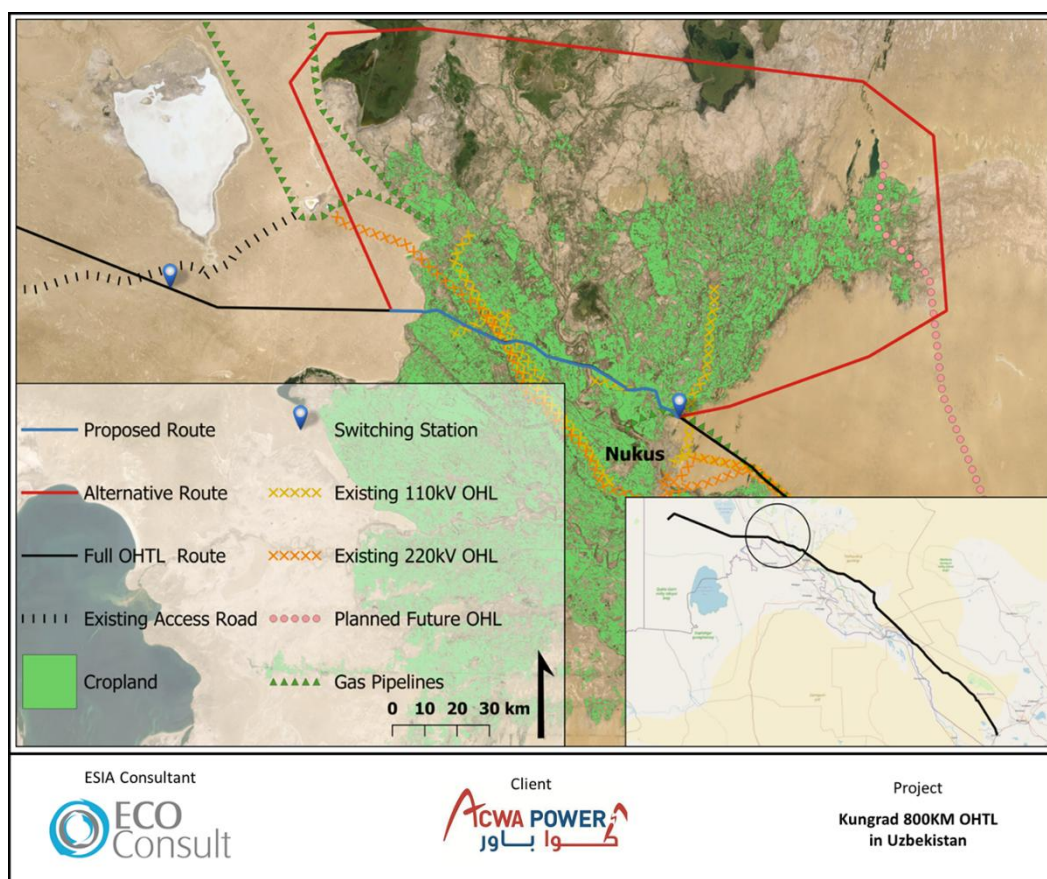


Figure 29: Alternative Route to Avoid Agricultural Lands with a Bypass in Karakalpakstan (1)

Table 14: Results for Alternative Route to Avoid Agricultural Lands with a Bypass in Karakalpakstan (1)

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	323	102,801,276	
Visual	Slight reduction in impact to properties	# houses	-914	-727,890	
Wilderness	Increase impact on wilderness areas as route takes a lengthy detour around agricultural land	km ²	2811		Moderate cost
Agricultural	Reduced impact on agriculture and associated costs	km	-59	-1,161,730	
Bustards	Not tracked migrations but much greater exposure due to huge increase in length				Minor cost
Total cost	This alternative results in a net cost			100,911,657	Moderate cost

Similarly, given the requirement for the OHTL to connect with Sarymai substation to supply Khorazm Region with electricity, completely avoiding the agricultural lands within the Ellikkala and Turtkul Districts would also require a significant diversion. The only design alternatives that can be considered is to bypass the agricultural land by running the OHTL to north. This would result in an increased length of the OHTL of around 66km and increase costs by around \$21 million. This alternative reduced agricultural impact but showed higher costs in all environmental & social issues assessed. As such, this alternative was not considered further.

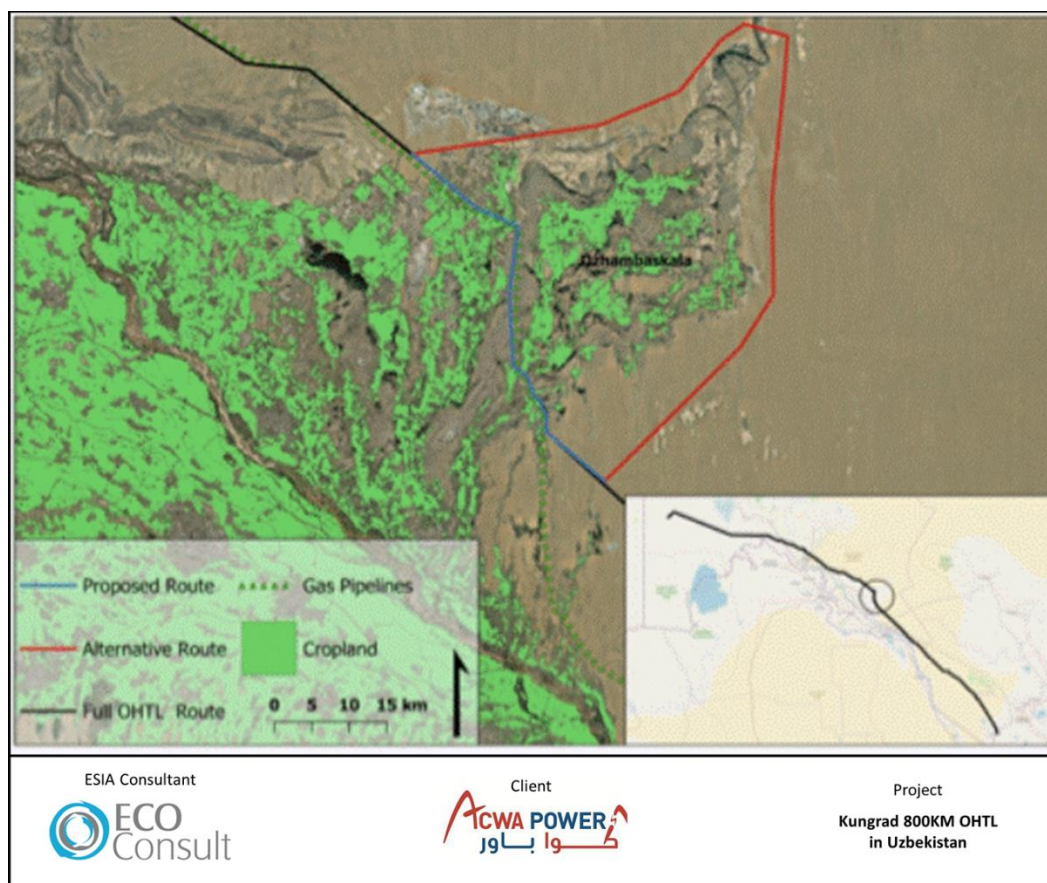


Figure 30: Alternative Route to Avoid Agricultural Lands with a Bypasses in the Ellikkala and Turtkul Districts

Table 15: Results for Alternative Route to Avoid Agricultural Lands with a Bypasses in the Ellikkala and Turtkul Districts

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	66	21,049,919	
Visual	Increased visual impact to properties	# houses	307	255,899	
Wilderness	Increased impact on wilderness	km ²	600		Minor cost
Agricultural	Slight reduction in impacts to agriculture and associated costs	km	-5	-96,087	
Bustards	1 tracked migration and the OHTL bends back on itself resulting in greater exposure for Bustards				Minor cost
Total cost	This alternative results in a net cost			21,209,731	Moderate cost

Finally, given the requirement for the OHTL to connect to Karakul substation in Bukhara Region, an alternative that completely avoids agricultural land within Karakul District was assessed. As depicted in the figure below, the only design alternative that can be considered is to bypass the agricultural land by running the OHTL to the east, which would increase the length of the OHTL by more than 32km.

As noted in the table below, the bypass with an additional 32km would increase financial (construction and O&M) costs by 10 million USD. This cost outweighs the benefits of avoiding the 4km of agricultural land that the proposed OHTL would need to pass through, which would result in costs of around 56,000 USD. In addition, the bypass would lead to minor costs from visual, wilderness and bustard impacts. As a result, it was concluded that the Bukhara bypass leads to a net cost for both the project and society and was therefore excluded.

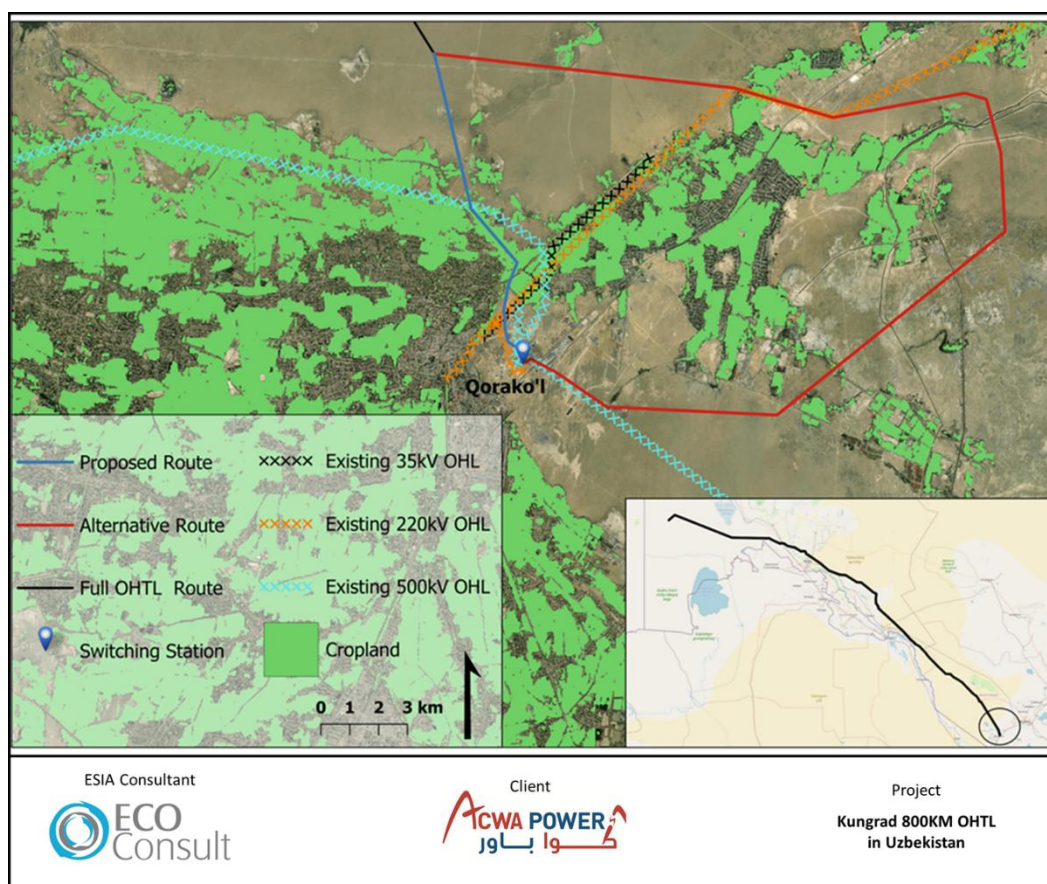


Figure 31: Alternative Route to Avoid Agricultural Lands with a Bypass in Bukhara

Table 16: Results for Alternative Route to Avoid Agricultural Lands with a Bypass in Bukhara

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	32	10,315,907	
Visual	Minimal increase in visual impact on properties	# houses	14	11,373	
Wilderness	Slight increase in the impact on wilderness areas	km2	193		Minor cost
Agricultural	Slight reduction in impacts to agriculture and associated costs	km	-3	-56,450	
Bustards	Short distance increase but OHTL bends back on itself resulting in greater exposure for Bustards				Minor cost
Total cost	This alternative results in a net cost			10,270,830	Moderate cost

Additional details on the final route and its impacts on physical and economical displacement is presented in “Section 8”.

During the forthcoming detailed design phase, it is expected that the existing transmission line route will undergo further optimization, and specifically, the micro-siting of the towers and related project infrastructure. This is further discussed within the standalone LRP.

The EPC Contractor will be expected to further consider land acquisition and resettlement requirements during the detailed design phase, to ensure that land acquisition is not increased, and ideally is minimized. The activities should include:

- Securing updated satellite imagery and map settlements, households, structures, and farmland within the proposed transmission line servitude.
- Conferring with the Developer Livelihoods Restoration Manager on other land-use, occupation or activities that may be affected and are not visible on the satellite imagery.
- Micro-place the towers and micro-route the transmission line to ensure zero physical displacement, the loss of farmland, and impact on farming infrastructure is minimized.
- Micro-routing will be concluded as early as possible to allow for valuation reports to be updated and fully completed in advance of construction works. This will allow for the payment of compensation where necessary.
- Transmission lines, unlike roads, railways, or other linear infrastructure, do not necessarily require the full acquisition of land or the restriction of any land-use rights. The Project will permit farmers to access their land within the servitude to continue annual crop farming and grazing. However, there will be certain restrictions as noted previously. Farming can resume after construction, and the land is available for farming during the operational life of the project. This substantially reduces the long-term economic displacement and livelihoods impacts to local farmers.

Minimization measures during implementation:

Due to the general vulnerability of households in the Karakalpakstan region, and generally, the Developer, and its EPC contractor, must undertake the following measures for the entire OHTL:

- The Developer will ensure that the EPC contractor is required to schedule the construction of sections of the OHTL to avoid temporary impacts on agriculture during the growing seasons as far as is practically possible.
- Avoid the blockage or disturbance to irrigation, but careful planning of culverts, and careful construction if near to canals with measures to avoid erosion and sedimentation of the canals.

- Micro-siting of the powerline to ensure that tower locations do not temporarily or permanently impede irrigation of areas of any farms that extend beyond the temporary construction zones during construction, or the permanent tower base locations. If it is determined that impacts will exceed those defined in this LRP, the project-affected party must be provided with compensation and livelihood restoration support for all potential losses prior to the impact occurring. This will ensure that their livelihoods are able to be restored or improved prior to undertaking the construction activity. This will safeguard people's livelihoods prior to construction starting and minimize impacts on their wellbeing throughout the project.
- Establish a fast-track method to rapidly value and compensate for losses in the event of construction of the OHTL causing an unintended impact on agriculture beyond the temporary construction area or permanent impact area.
- The EPC contractor must plan very carefully to avoid the blocking of canals, and if canals are blocked, immediate intervention to excavate. Construction of culverts, if required, to be timed to ensure no risk of lost irrigation.

4.3.4 Existing High Voltage Networks

Aligning with Other Proposed 500kV OHTL

Another option considered was to align the OHTL route with other planned 500kV lines in the vicinity of key areas for the MacQueen's Bustards such as their main breeding sites. Doing so would likely reduce collision risks to some extent because the residual impact from adding another line in the same corridor is minimal; the birds will already have to navigate around the proposed lines, so the cumulative impact would be lower than introducing a new, separate line.

Please refer to "Section 10" for additional details on such areas.

Within such areas, one option was available for routing the proposed 500kV OHTL with two planned 500kV lines as shown in the figure below. The alternative route follows an existing gas pipeline East from Uch-Uchak for around ¼ of its length, and then aligns with the planned OHTL (Dzhlakendy) and then with another planned OHTL (Bash) - for almost two thirds of the alternative OHTL's length on the east end, heading south to rejoin the south-eastern end of proposed route in Karakul. Both of these planned OHTLs are 500kv.

This alternative is a significant diversion, increasing the total distance of the OHTL by 173km. The financial costs of doing so would be around 55 million USD. However, this high cost would need to be considered in relation to the multiple environmental and social benefits it would lead to. As displayed in the table below, the alternative route would potentially give rise to a moderate benefit to MacQueen's Bustard, by not running through the middle of the main breeding area, but instead traversing generally around the outside of the north and west part of the breeding area, ingressing slightly in some places. The alternative would also reduce visual impacts, have a minor benefit in relation to wilderness areas (as it aligns with existing / planned infrastructure), and would result in a slight reduction in agricultural impacts. Although the line appears to go alongside a large area of agricultural land, the line itself does not cross many cropland areas (and less so than the proposed OHTL route) The additional 55 million USD translates to around 10% of total project construction and operation & maintenance costs over the 50-year project lifespan.

The other 500kV lines it aligns with are still in its planning stages, but are likely to go ahead. If the plans for them were scrapped, this alternative would not only lead to huge costs for the project, but also cause much greater negative impacts on the bustards due to the increased exposure from the extra 173km.

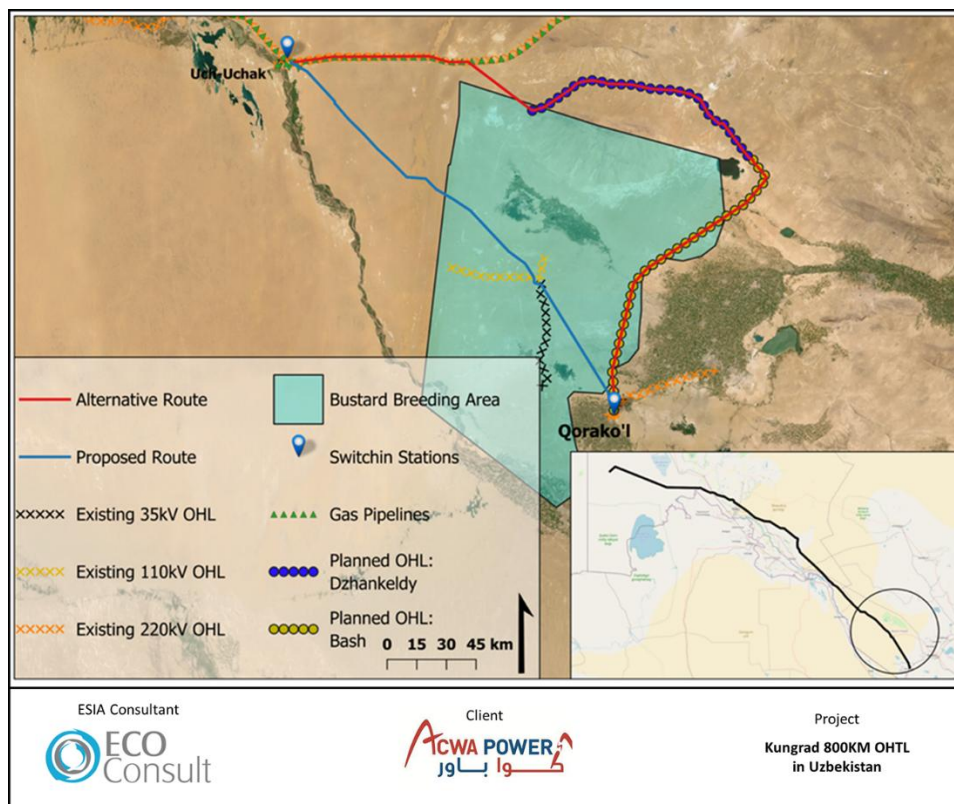


Figure 32: Alternative to Align with Proposed 500kV Lines within MacQueen's Bustards Breeding Areas

Table 17: Results for Alternative to Align with Proposed 500kV Lines within MacQueen's Bustards Breeding Areas

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	173	55,159,183	
Visual	Reduced visual impact on properties	# houses	-36	-28,433	
Wilderness	Although the quantitative data suggests this is a 'moderate cost', this route purposefully aligns with existing infrastructure so reduces the impact on wilderness areas	km2	1,254		Minor benefit
Agricultural	Reduced impact on agriculture and associated costs	km	-2	-29,743	
Bustards	Route avoids traversing the centre of the Bustard breeding area, instead skirting around it, ingressing slightly in places. It also aligns with existing and planned infrastructure (although it does bend back on itself resulting in some greater exposure for Bustards migrating)				Moderate
Total cost	Significant costs to projects need to be weighed up against the major societal benefits			55,101,006	Moderate

Overall, this option does provide a range of benefits, including potentially moderate benefits for MacQueen's Bustards as a result of avoiding going through the middle of the main breeding area, and instead skirting the outside, although ingressing slightly in places. However, this does come at a very high cost - of an additional 55 million USD which translates to around 10% of total project construction and operation & maintenance costs. The offset strategy considered for the bustards (discussed in "Section 10.3.4") is considered a much more cost effective mitigation measure.

Existing Other High Voltage Networks

In addition, alignment with existing high voltage networks (specifically along 220kV and 110 kV transmission lines) was considered, taking into account the required connection points for the OHTL (i.e., Kungrad, Nukus, Sarymai and Karakul substation) and the existing high voltage networks, alignment with the majority of the existing lines was not possible given that they run perpendicular to the proposed route. Alignment near an existing 220 and 110 kV line to the greatest extent possible was considered within a total of 40km stretch at two areas, as noted in the figure below – the first is for the part running from Nukus to Sarymai switching station (alignment within 100m) and the second for the part before Sarymai Switching station (alignment within 300m).

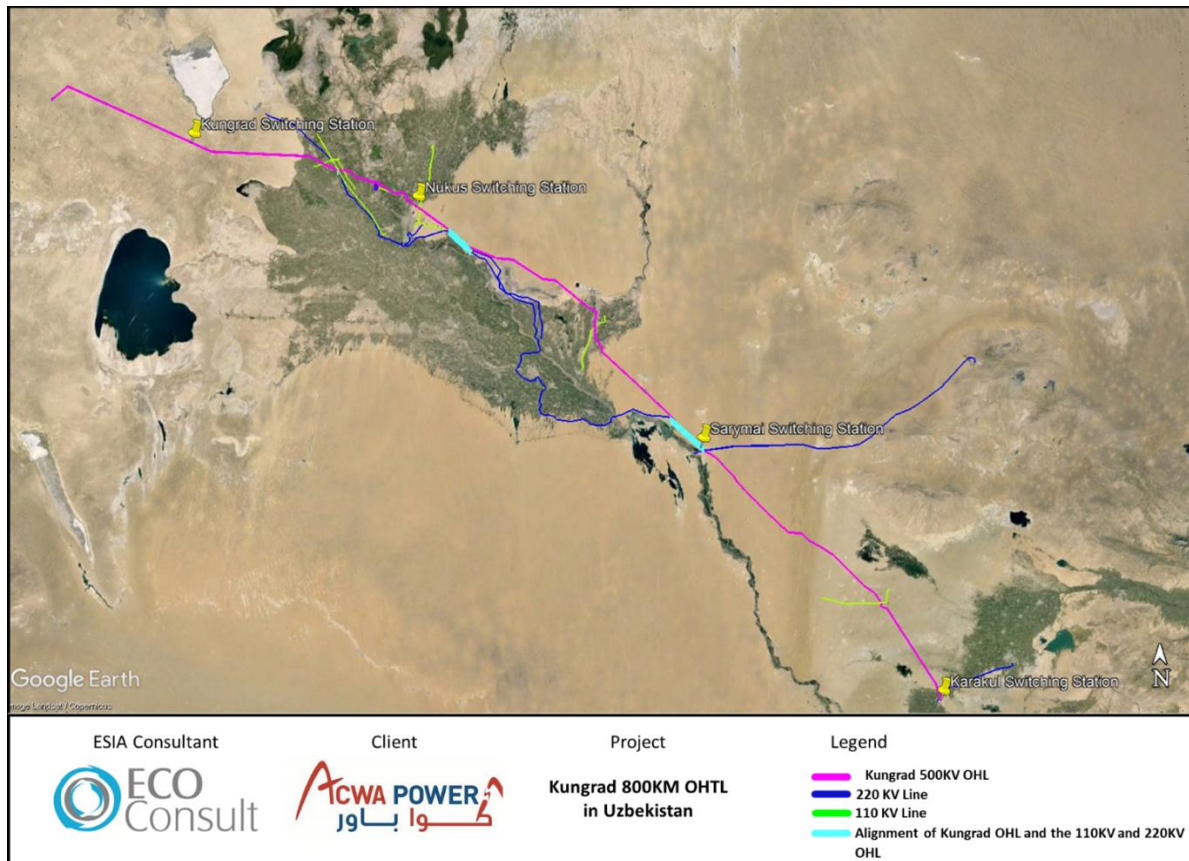


Figure 33: Kungrad OHTL and Other High Voltage Networks

An alternative route to enable further alignment in this section was evaluated, as is made clear in the map below. Aligning with the existing 220kV line would require an additional 77 km of OHTL, which would translate to an additional financial cost of 25 million USD. In addition, this alternative route travels through more developed land, leading to greater visual and agricultural costs. While it results in a minor benefit for wilderness areas and for Bustards due to the alignment with existing power lines, it is unlikely that that this would justify the additional costs of construction.

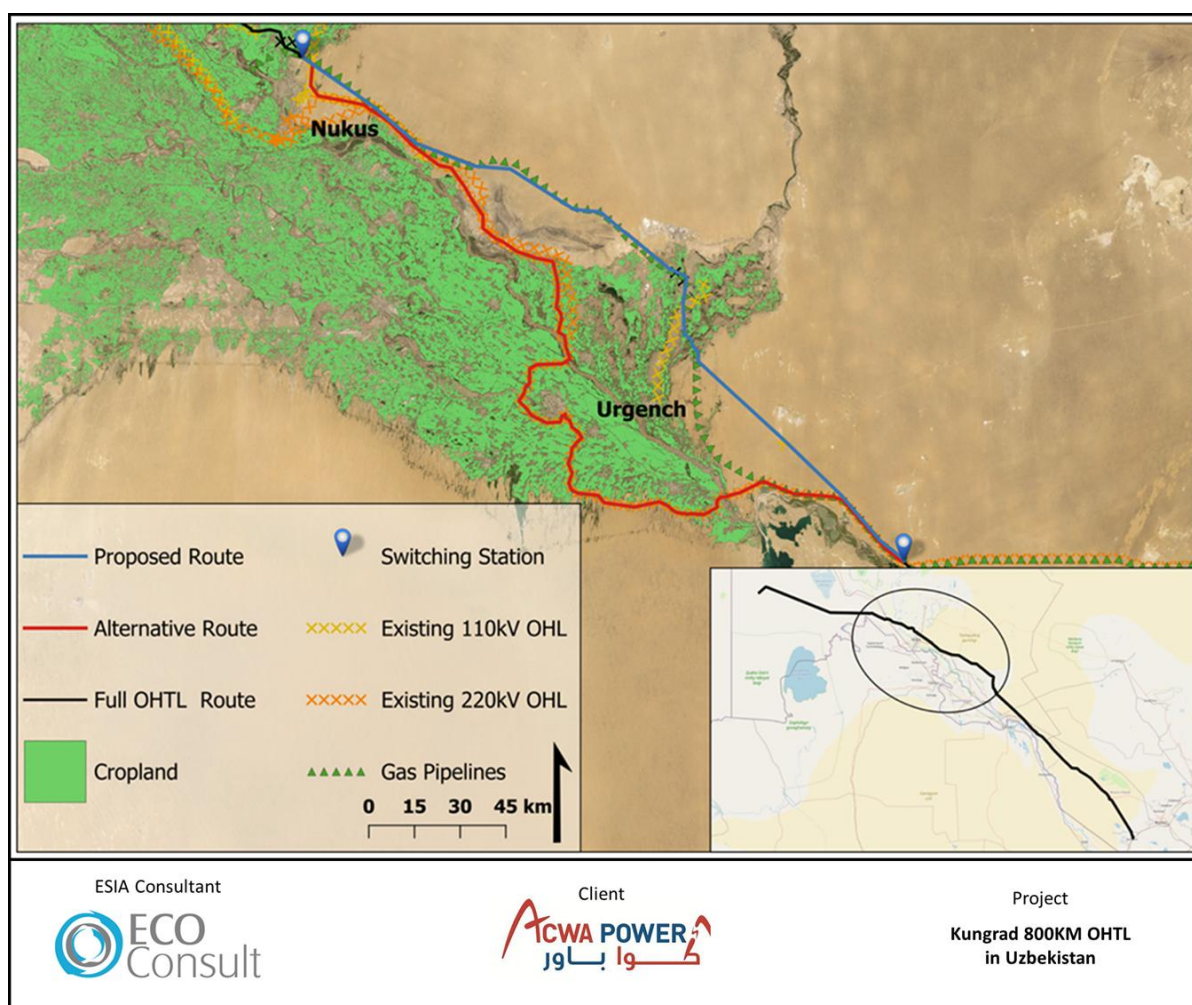


Figure 34: Alternative to Align with Existing High Voltage Power Lines

Table 18: Results for Alternative to Align with Existing High Voltage Power Lines

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	77	24,600,748	
Visual	Increased visual impact to properties	# houses	3,129	2,490,749	
Wilderness	Reduced impact on wilderness areas	km ²	-384		Minor benefit
Agricultural	Increased impact on agricultural land	km	108	2,111,135	
Bustards	1 tracked migration and reduced impact due to alignment with existing power lines				Minor benefit
Total cost	This alternative results in a net cost			29,202,633	Minor benefit

4.3.5 Other Infrastructure and Utilities

From the start and as part of the preliminary route mapping, secondary information was collected on existing highways, railways, and gas pipelines. The objective of all routes proposed was to follow to the greatest extent possible such exiting infrastructure elements to reduce environmental and social impacts. Additional details on these are provided below.

Existing Highways

Taking into account the required connection points for the OHTL (i.e., Kungrad, Nukus, Sarymai and Karakul switching stations) and the existing highway networks, alignment was mainly possible within a 30km stretch for the part running from Nukus to Sarymai switching station and a 200km stretch for the part running from Sarymai to Karakul, as noted in the figure below.

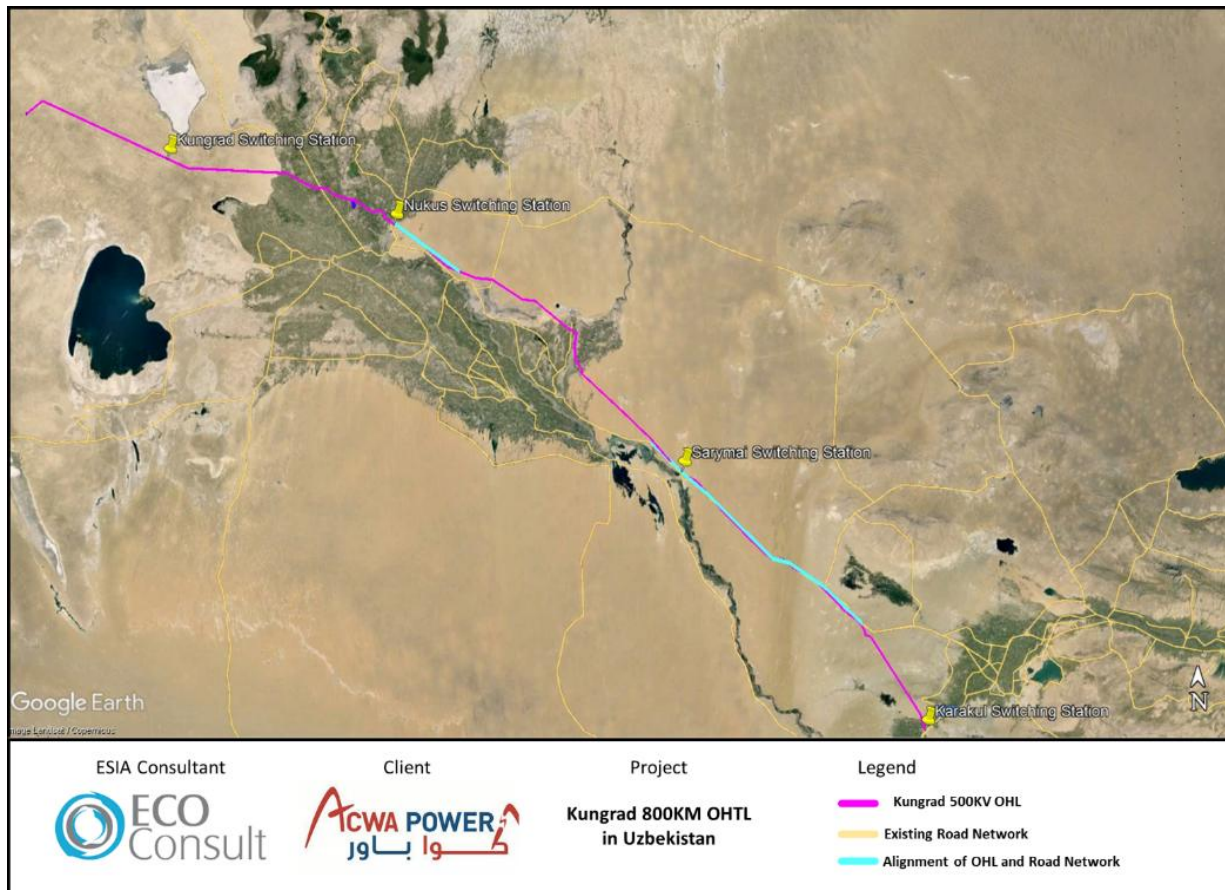


Figure 35: Kungrad OHTL and Existing Highways

Further alignment through an alternative route was explored, as depicted in the map below. Aligning with the existing highway would result in a 6 km increase in OHTL length translating into an additional cost of 1.8 million USD. Adding to these costs, the alternative route would pass through 15km more agricultural land, and significantly increase visual impacts due to the nearly 8,000 more houses within a 1km buffer. The diversion would also result in a minor cost to Macqueen's Bustards due to the additional distance in an area where Combreau et al (2011) tracked one migratory pathway.

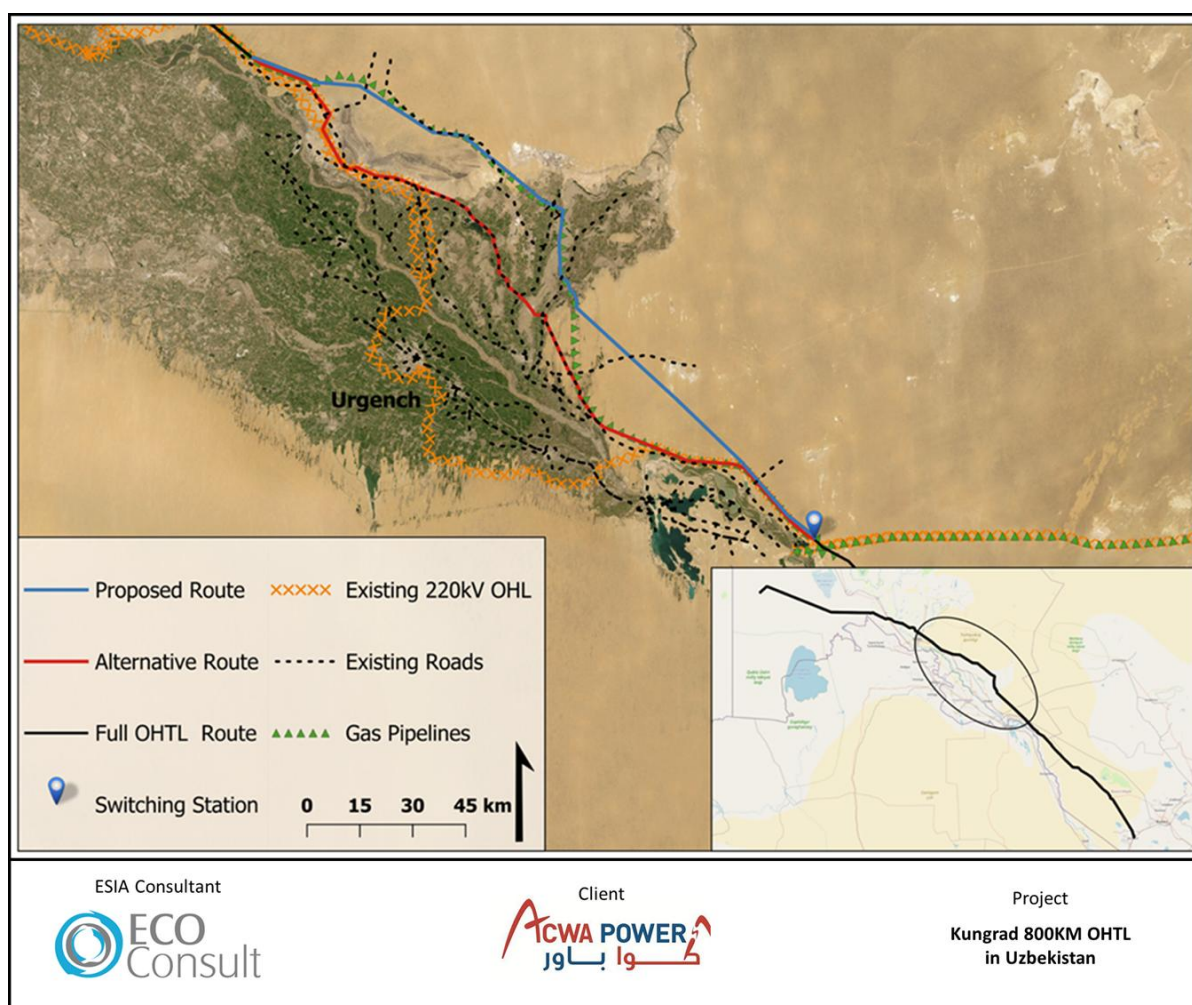


Figure 36: Alternative Route to Align with Existing Highways

Table 19: Results for Alternative route to align with existing highways

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	6	1,839,202	
Visual	Increased visual impact to properties	# houses	7,686	6,630,623	
Wilderness	Slight reduction in wilderness area and alignment with infrastructure reduces impact	km ²	-210		Minor benefit
Agricultural	Slight increase in impacts to agriculture and associated costs	km	15	290,845	
Bustards	1 tracked migrations but minimal change in OHTL as a barrier				Minor cost
Total cost	This alternative results in a net cost			8,760,670	Negligible impact

Planned access road

An additional alternative route was considered to align with the planned access road for the Kungrad project. It is important to consider this alternative because running parallel to this new road would reduce overall disturbance to a wilderness area. Figure 37 and Figure 38 below display the two alternative routes that are being considered based on how the planned access road intersects the proposed OHTL.

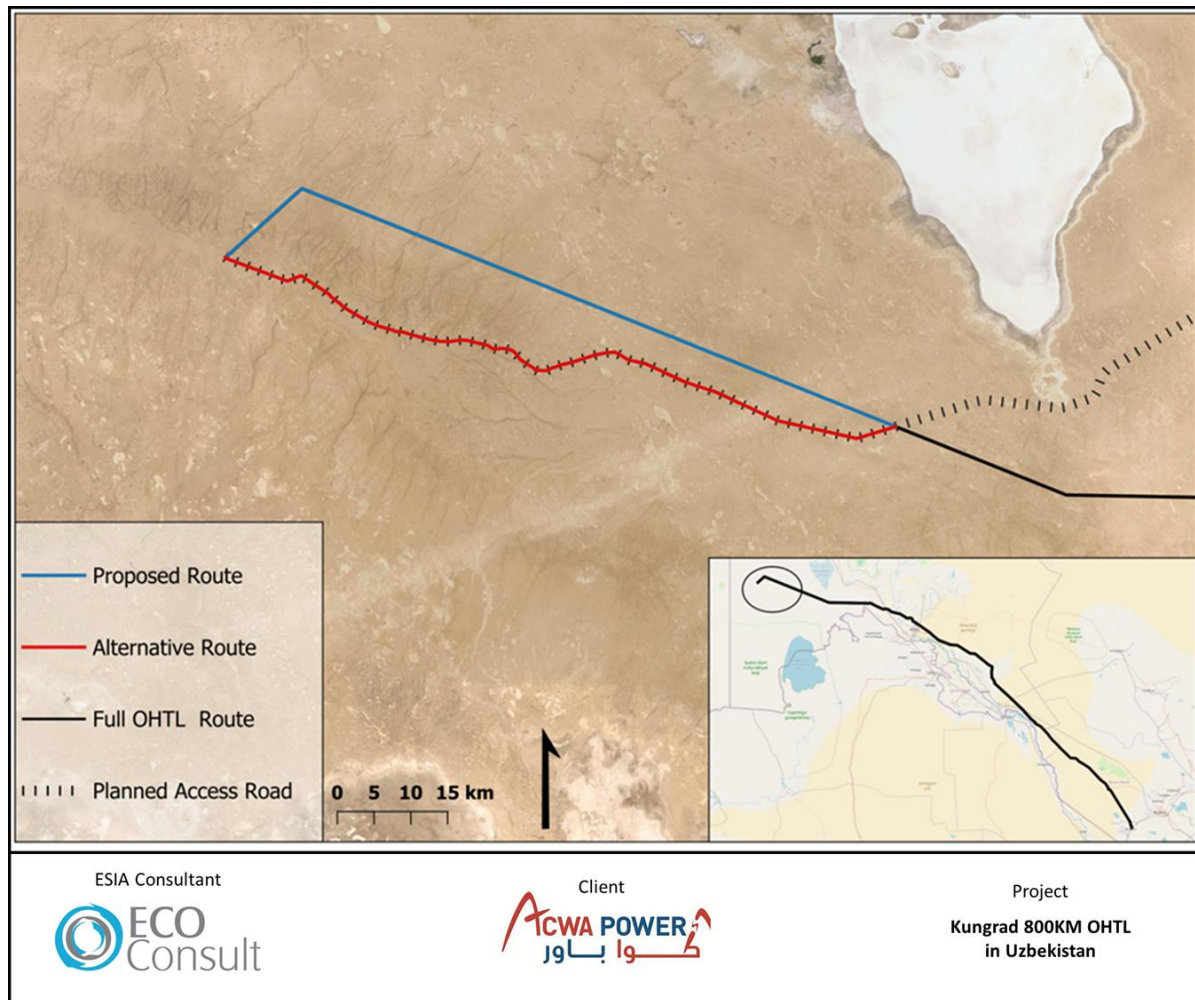


Figure 37: Map of Alternative Route to Align with Planned Access Road (1)

Assessment results of the alternative that aligns with first section of the planned access road (1) are displayed in the table below. As can be seen, the alternative route is 2.3km shorter than the proposed OHTL, which would reduce the costs by close to \$750,000. This more direct route is also a minor benefit with regard to impact on wilderness areas, reducing the overall area affected by an estimated 34km². The other issue categories (visual, agricultural and Bustards) are not affected by this alternative option. Overall, given the costs saved and the benefit to wilderness areas, this option should be seriously considered. Based on further discussions with the Developer, it was indicated that this option will be considered to the greatest extent possible as part of the detailed design process with the EPC Contractor to be undertaken at a later stage.

However, based on further analysis by the Developer, it was indicated that OHTL is aligned with road to the extent possible. The following points must be considered when considering full alignment:

- This would involve several angles, leading to higher use of angle towers, which increases both the cost and footprint (due to increased corridor width at corners).
- This would imply that the OHTL pass through turbine clusters. Considering the OHTL ultimately becomes a NEGU asset after construction, preference is to have minimum interference with the windfarm not only during operation of OHTL

Table 20: Results for Alternative route to align with planned access road (1)

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Reduced financial cost	km	-2.3	-744,114	
Visual	No buildings in sight, but route aligns with existing infrastructure so slight reduction in visual impact	# houses	0	0	Negligible impact
Wilderness	Alternative route aligns with access road, so there is a reduced impact on wilderness	km2	-33.6		Minor benefit
Agricultural	No change	km	0	0	
Bustards	No tracked migrations & minimal change in OHTL as a barrier				Negligible impact
Total cost	This alternative leads to a net benefit			-744,114	Minor benefit

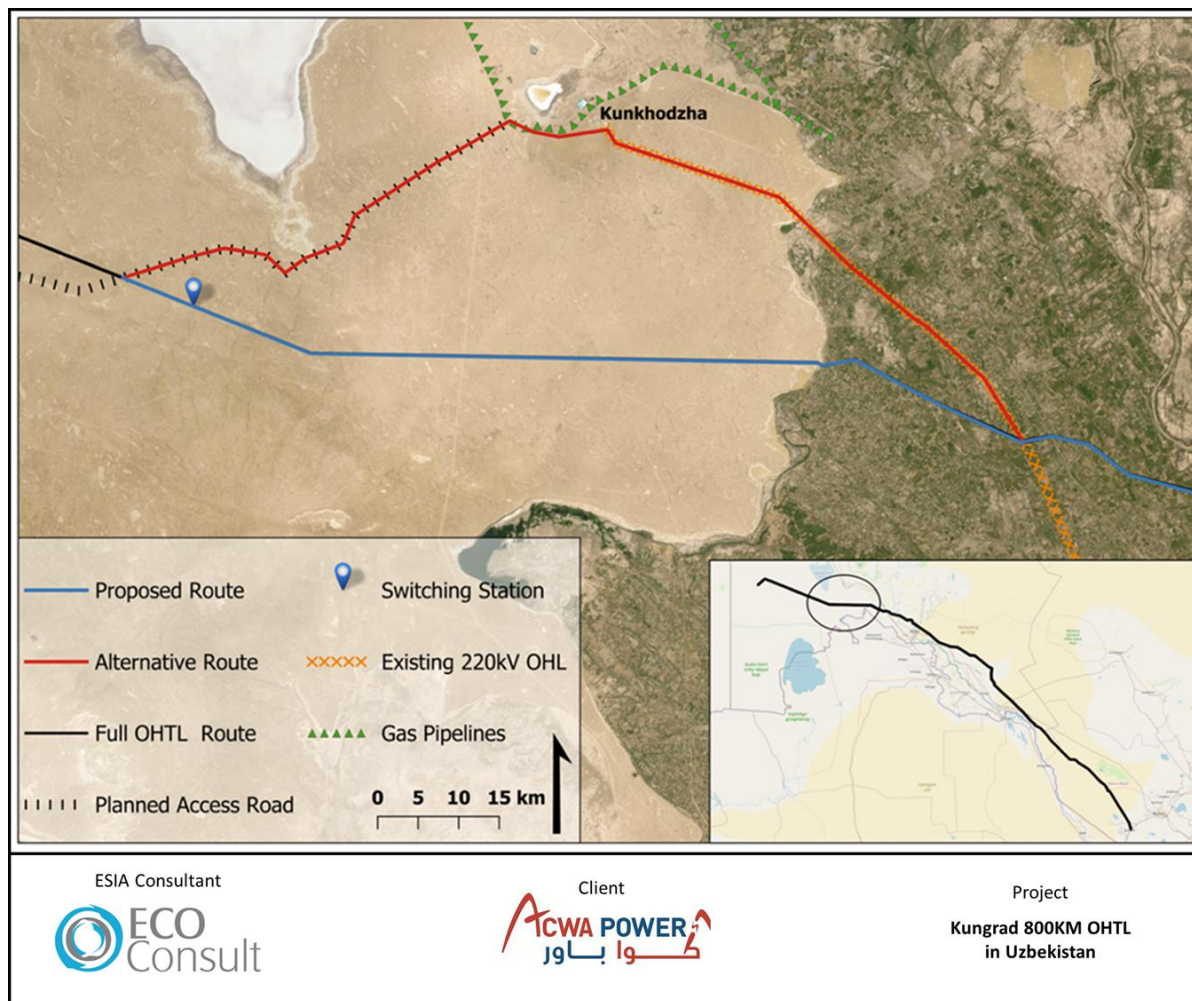


Figure 38: Map of Alternative Route to Align with Planned Access Road (2)

As can be seen in the figure above, the second alternative to align with planned access road starts where the first alternative finishes and follows the same access road north-east to then join an existing 220kV overhead transmission line (OHL) ⁷. It then follows the existing OHL south-east to rejoin the proposed route.

⁷ After the alternative was assessed, it became clear that the route does not align with the positioning of the planned switching station. Changing the route to do so would require a minor adjustment in length and positioning. Based on professional

The table below displays the results from the assessment. The detour north adds 18.4km in length, which increases costs by close to 6 million USD. The visual assessment found no buildings on site for either route. In terms of the impact on wilderness areas, the additional distance increases the area affected by 65km². However, since the majority aligns with planned infrastructure (access road and OHL line), this balances as a negligible impact overall. The alternative also leads to a slight increase in agricultural costs (61,00 USD) due to the additional 3km of agricultural land it passes through. Overall, given the additional costs and no associated benefits, this alternative leads to a net cost and so was not considered further.

Table 21: Results for Alternative route to align with planned access road (1)

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	18	5,854,664	
Visual	No buildings in sight, but route aligns with existing infrastructure so slight reduction in visual impact	# houses	0	0	
Wilderness	Majority of route aligns with existing infrastructure so reduced wilderness impacts	km ²	65		Negligible impact
Agricultural	Slight increase in agricultural costs	km	3	60,721	
Bustards	No tracked migrations & minimal change in OHTL as a barrier				Negligible impact
Total cost	This alternative leads to a net cost			5,915,385	Negligible impact

Existing Railways

Taking into account the required connection points for the OHTL (i.e., Kungrad, Nukus, Sarymai and Karakul switching stations), alignment along existing railways was not possible. As displayed in the figure below, all railway routes run perpendicular to the proposed OHTL route.

judgement, the changes in impacts would be negligible and thus the alternative route was not amended to align with switching stations.

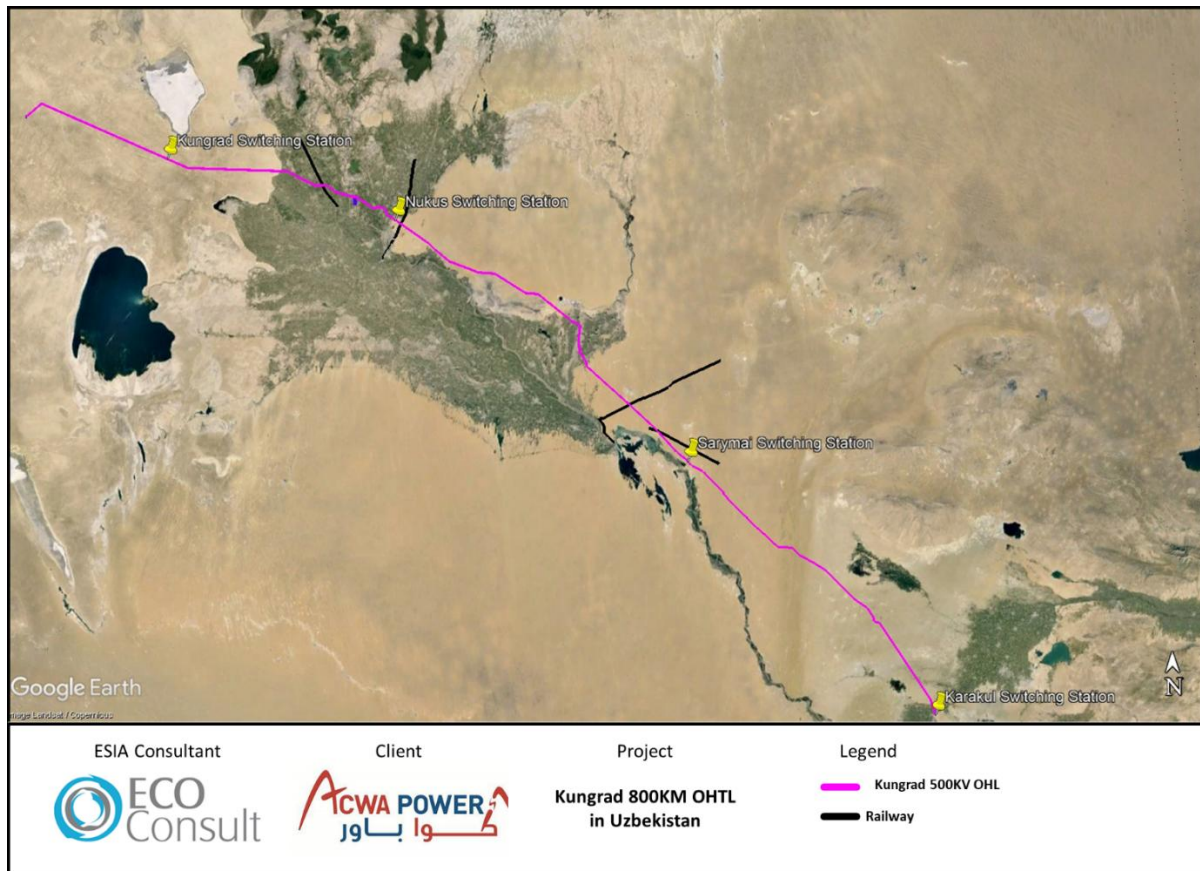


Figure 39: Kungrad OHTL and Railways

Existing Gas Pipelines

Taking into account the required connection points for the OHTL (i.e., Kungrad, Nukus, Sarymai and Karakul switching stations), alignment along existing gas pipelines has been possible within a 170km stretch for the part running from Nukus to Sarymai switching stations, as well as within a 150km stretch for the part running from Sarymai to Karakul switching station, as noted in the figure below. This alignment helps to reduce any additional visual and agricultural impacts as the location is already to a degree impacted.

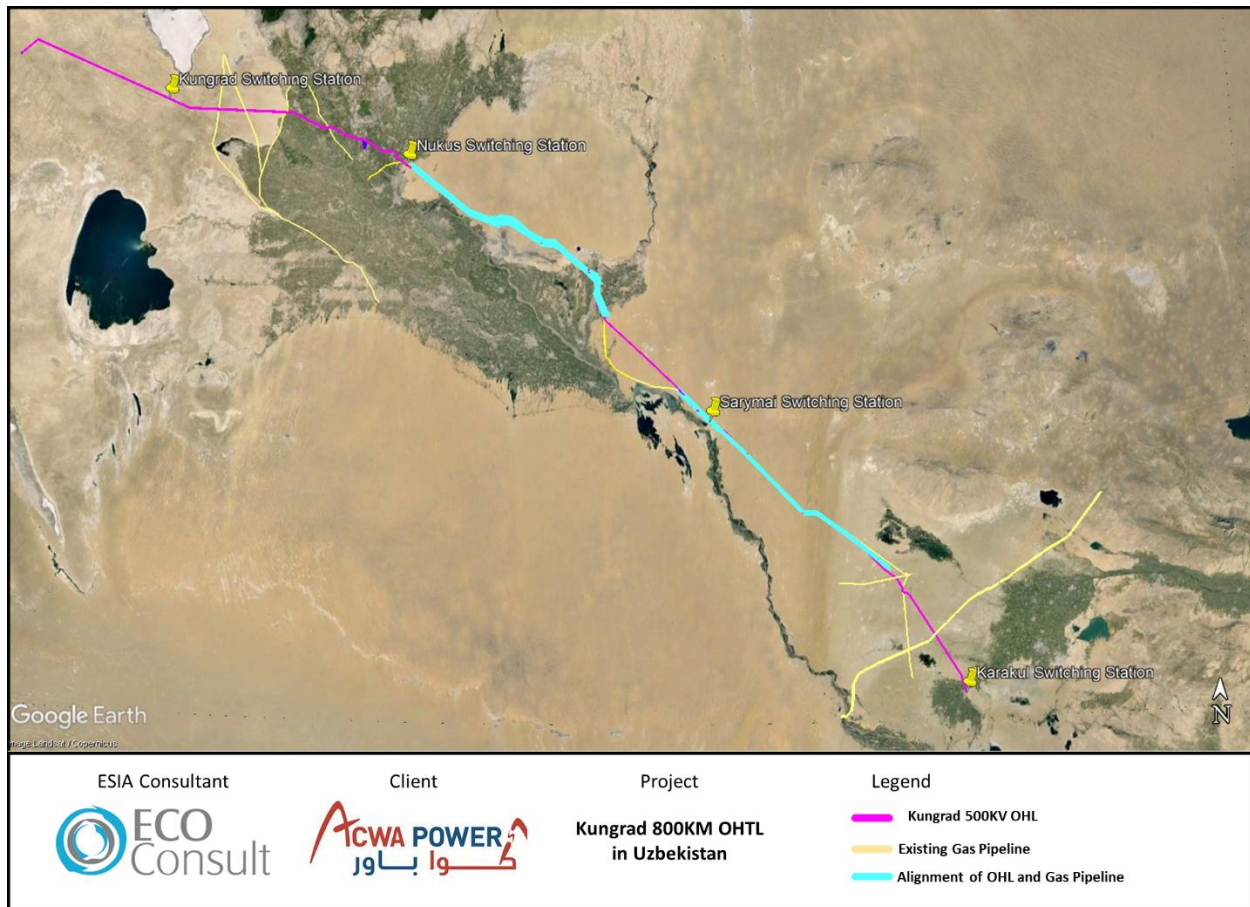


Figure 40: Kungrad OHTL and Existing Gas Pipelines

A third alignment was assessed as alternative route depicted in the map below. Alignment with this existing gas pipeline would result in a 12 km increase in OHTL length, leading to an additional cost of around 4 million USD. As displayed in the table below, the assessment of other environmental and social impacts resulted in a net cost for both the project and society due to increased visual, wilderness, agricultural, and Bustards costs.

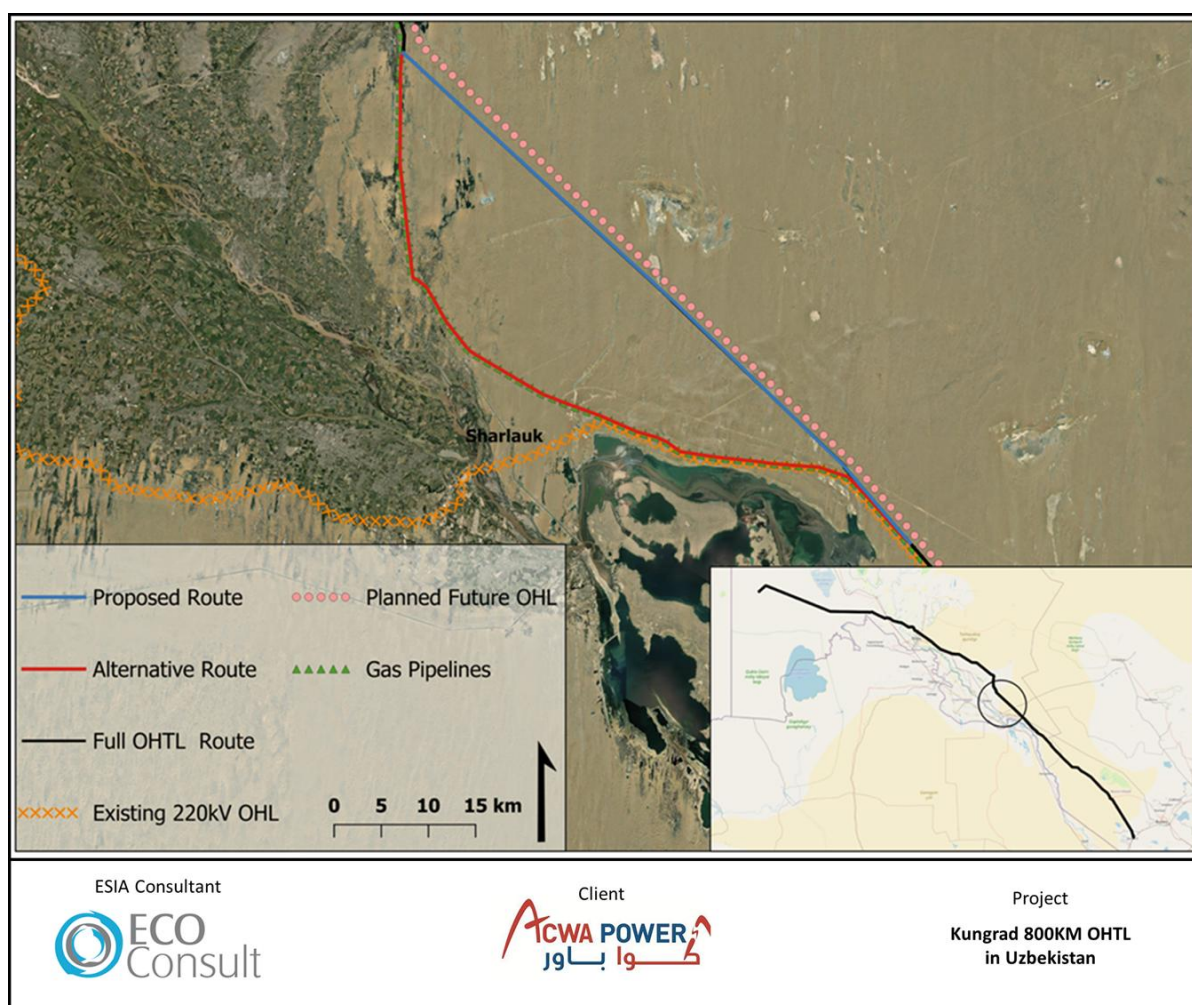


Figure 41: Alternative Route to Align with Existing Gas Pipelines

Table 22: Results for Alternative route to align with Existing Gas Pipelines

Issue	Details	Quantitative results			Qualitative value
		Unit	Change (units)	Change (US\$)	Societal impact
Financial	Increased financial cost	km	12	3,690,378	
Visual	Increased visual impact to properties, somewhat mitigated by existing pipelines	# houses	136	130,793	
Wilderness	Increased wilderness area	km ²	20		Minor cost
Agricultural	Slight increase in impact to agriculture and associated costs	km	0.1	2,318	
Bustards	1 tracked migration and greater exposure because OHTL aligns with a planned OHL				Minor cost
Total cost	This alternative results in a net cost			3,823,489	Minor cost

Existing Airports

Similarly, secondary information was collected on other infrastructure elements such as civil and military airports. The OHTL is not located within or near airports (the closest airport being Nukus Airport located around 7KM from the OHTL). In accordance with local requirements, no permit or formal clearance is required from the Civil Aviation Agency (CAA) for structures that are lower than 50m in height (as discussed in "Section 2.3" maximum towers height is around 37m) and in addition there are no restrictions on setback distances of OHTLs from airports. However, as part of the detailed design, the EPC Contractor will

consult with CAA to obtain technical conditions for the OHTL parts that run near Nukus airport (e.g., aviation lighting requirements).

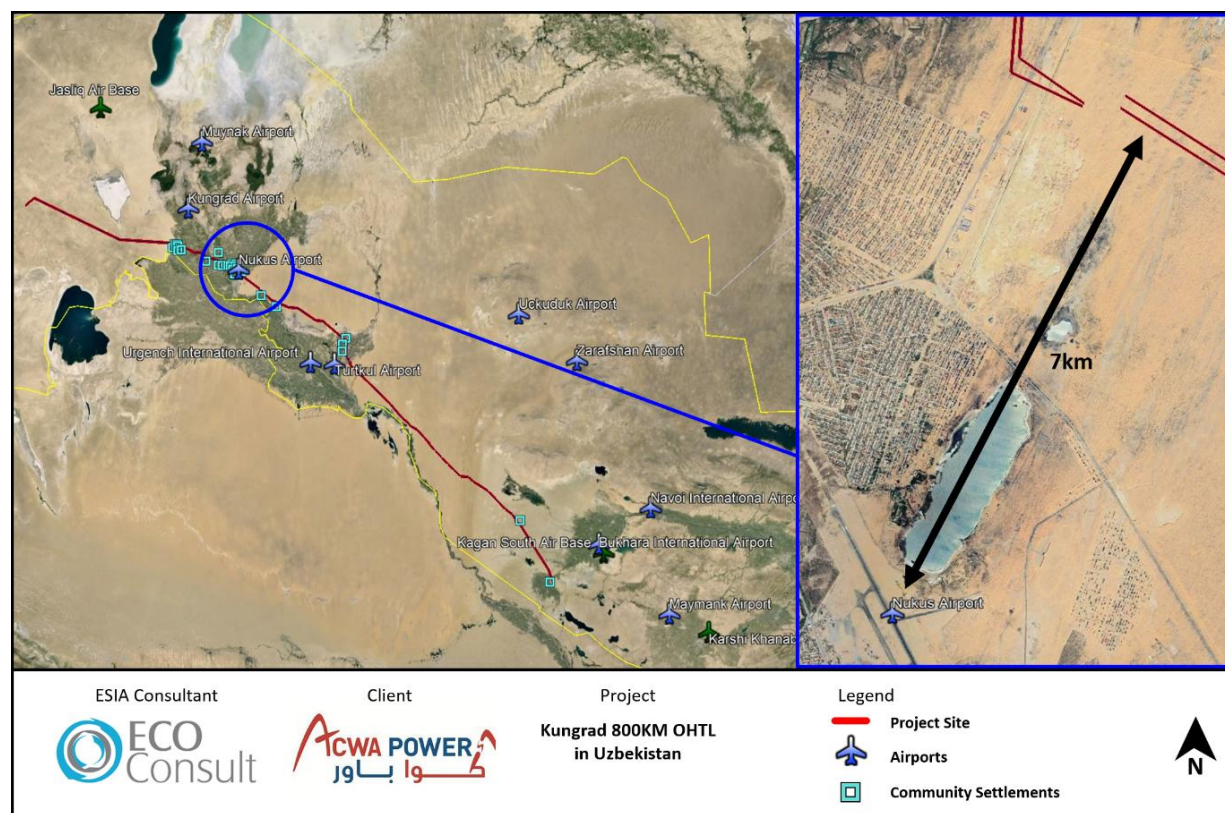


Figure 42: Project Site and Surrounding Airports

Additional Requirements

The final route has considered all design requirements that should be considered for intersection with the above infrastructure and utility elements in accordance with the “Electrical Installation Rules.” However, as part of the detailed design, the EPC Contractor will consult with relevant governmental entities to obtain technical conditions for the OHTL parts that intersect/cross with such existing elements.

4.3.6 Water Resources and Water Bodies

From the start, and as part of the preliminary route mapping, secondary information was collected on water bodies to include lakes, reservoirs, marshlands, water canals, rivers, etc. in order to avoid all these features.

The only exception is the Amu Darya River and Zarafshan stream as noted in the figure below. However, completely avoiding the river/stream is not practical as noted in the figure below. The only design alternative that can be considered is to bypass the Amu Darya River by running the OHTL to the north, but this would result in an increased length of the OHTL of more than 150km which is not realistic nor feasible. Similarly, bypassing the Zarafshan stream would result in an increased length of 50km. Currently, the expected crossing area of Amu Darya River is around 350m and for the Zarafshan stream is about around 20m. However, as discussed later in “Section 13.2.4” the Developer will avoid installing any towers within the Amu Darya River or the Zarafshan stream.

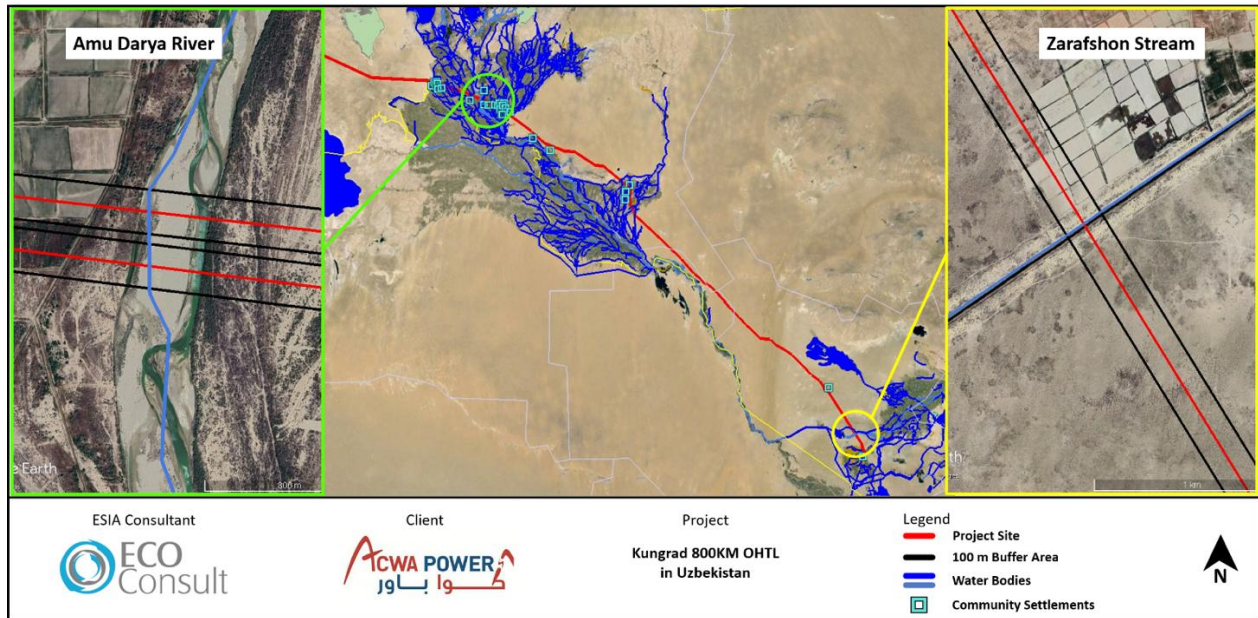


Figure 43: Project Site with Surrounding Water Bodies

4.3.7 Other

Based on a site survey it was noted that the initial and preliminary OHTL routes passed through a military area and compound. Further discussion and site visits were undertaken with the Ministry of Defense and Northern Military District who provided final boundary for the military area and required a setback distance of 165m. Based on that, the final route design avoided this area, and a permit was obtained on this from the Ministry of Defense.

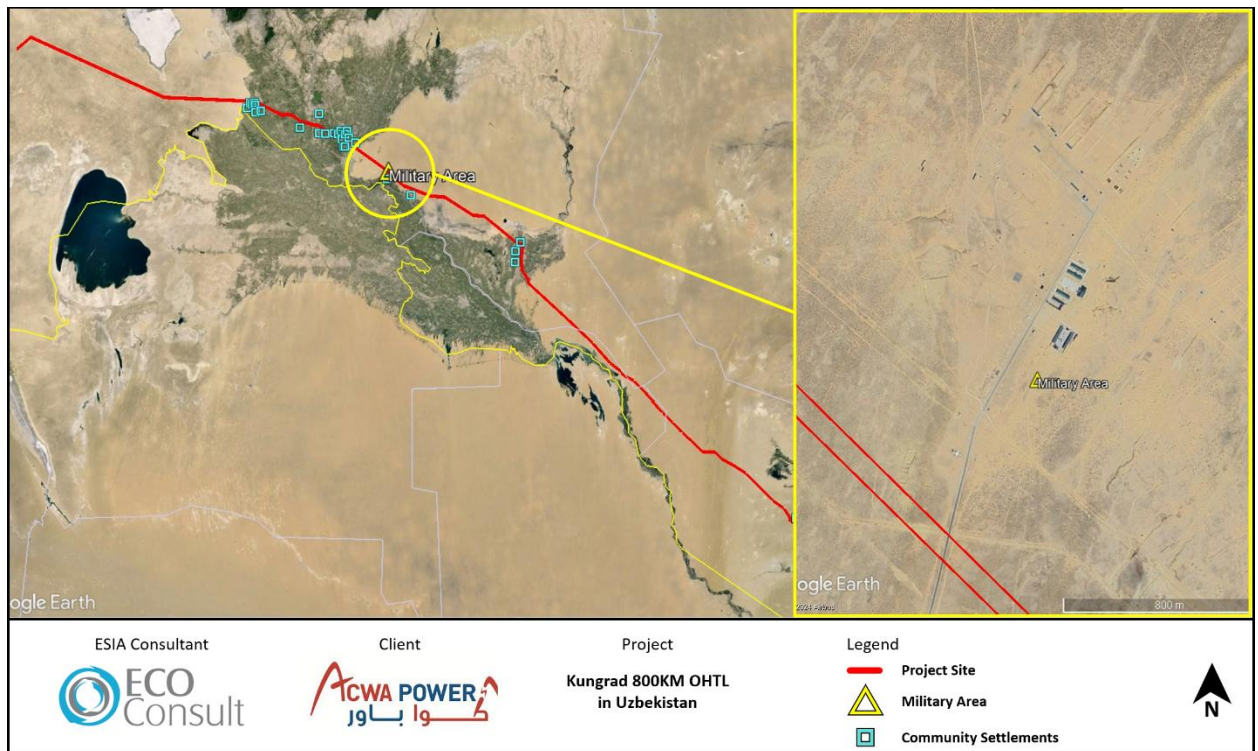


Figure 44: Military Area Adjacent to the Project

4.4 Underground Options

Additional alternatives related to biodiversity Impacts

It is important to reiterate a key project objective which is to minimize impacts on vulnerable migratory species like the Macqueen's Bustard. As such, a key strategy in the design of the OHTL was to ensure the most efficient / direct route possible that connects directly with the required switching station stations in Kungrad, Nukus, Sarymai and Karakul. Connecting with these switching stations is critical and is one of the key requirements of generating electricity from the Wind Project.

As noted throughout the previous sections, the Developer also aimed, to the greatest extent possible, to:

- Align with existing 500kV lines (as discussed previously in "Section 4.1"), but this was not possible as there are no existing 500kV lines within or near the proposed route;
- Align with existing infrastructure elements to include highways, railways, gas pipelines, and other high voltage networks (as discussed previously in "Section 4.2"). However, this still, to some extent, will result in the OHTL passing through some ecologically important areas (e.g., bird migration routes).

As noted within "Section 10", the OHTL will result in impacts of major significance on key species (most notably the MacQueen's Bustards). Such impacts are expected to remain of major significance with the implementation of mitigation and monitoring measures, and therefore will require offsetting.

As such, in addition to attempting to link with existing 500kV power lines (Section 4.2) and exploring alternative routing options (Section 4.3), as part of the ESIA process two options to underground the line were investigated through an environmental cost-benefit analysis. These are discussed in further detail below.

4.4.1 Undergrounding the Entire 500 kV Line

To eliminate all risks of bird collisions, including MacQueen's Bustards (and other species of global / national conservation concern), an underground option was considered based on consultation response from Birdlife International (as discussed in "Section 0"). To study this alternative in detail, a full Environmental Cost-Benefit Analysis (ECBA⁸) was undertaken by a specialized environmental economist, to compare the two options (i.e., OHTL vs. underground cable). The ECBA is presented in Annex I. The approach was based on standard international guidance on ECBA including OECD (2018) and the UK HM Treasury Green Book (2022).

The ECBA concludes that it is far more cost effective to construct an OHTL rather than place the cables underground. Based on a range of cost estimates, the cost ratio of constructing the line underground compared to overground in all scenarios is positive ranging from 1.4 to 20.1 times as expensive (without discounting). After applying a discount rate⁹ of 5%, the cost ratios range from being 1.7 to 26.3 times more expensive. This reveals that in all scenarios, the underground option is significantly less cost effective.

This seems to be the case even with considerable additional costs associated with mitigating and offsetting potential collision impacts relating to MacQueen's Bustard; as well as including costs for mitigating other

⁸ Technically speaking it was an 'Environmental Cost-Effectiveness Analysis', because the benefits for each option are considered to be the same, so only a comparison of costs was required.

⁹ Discounting is a common practice in cost benefit analysis. It effectively reduces flows of money in the future to a lesser 'present day' value, taking into account people's time preference for having money today rather than at some time in the future.

theoretical impacts such as depreciation of property values due to the visual impacts of the pylons and overhead cables; and societal cost of embodied carbon from the steel pylons and concrete bases. Furthermore, the ECBA excludes some additional costs which mainly relate to the underground option, thus making that option even less economically viable. The key reason is the significantly higher cost of construction of a 500kV underground cable compared to an overhead line. However, it is important to note that there is considerable uncertainty over the estimated engineering costs for a project of this scale in Uzbekistan. As such, a range of scenarios are investigated, including (1) Estimates provided by the Contractor for this project, (2) project costs of a similar project in Germany, (3) actual costs of another much shorter project in Uzbekistan, and (4) findings from the literature review.

Please refer to Annex I for the full ECBA study.

4.4.2 Hybrid Option

An alternative hybrid transmission line scenario was considered in the ECBA, where a critical section of the proposed OHTL would potentially be constructed underground to minimize impacts on the Macqueen's Bustard (where their migration paths are most concentrated), and to reduce visual impacts on intact wilderness areas.

Various papers, including Combreau et al (2011)¹⁰ indicate that the major migratory pathways for the Macqueen's bustard intersect with the Eastern section of the proposed OHTL. Therefore, it would be most strategic for any part of the transmission line to be put underground there.

This area is the Kyzylkum Desert, which has ecological value to local biodiversity and to some degree as a wilderness area. The desert is large and hosts a significant amount of unique flora and fauna which are adapted to the arid conditions, such as the Bustard. While it does contain considerable development, such as industrial cities and mining sites, these are restricted to small pockets in an otherwise barren desert. Placing a section in this region underground would therefore not only help mitigate the negative impacts on the Bustards but also leave any areas of wilderness relatively intact. However, since the full length of the OHTL that passes through the Kyzylkum Desert is ~350km, shorter options were also considered.

Two potential options for undergrounding a section in this area – one 150km (Option A) and the other 65km (Option B) – were assessed qualitatively in the ECBA. From a benefits perspective, both have two obvious moderate and two minor benefits, but as Option B has the highest concentration of migratory pathways it would be better to choose this option. The estimated costs, however, for undergrounding are considerable, and are likely to be prohibitive and so neither of the hybrid options are considered economically viable. Costs for Option A and B range from at least US\$ 0.45 to 2.6 billion and US\$ 0.2 to 1.1 billion, respectively (assuming the Low Saridarya cost estimates and the High cost estimate).

In addition to the above analysis, estimated total projects costs for various other hybrid options, ranging from putting 25km to 200km of the total 843km transmission line underground, were calculated for all 4 costing scenarios mentioned above. The analysis found that the additional cost of putting the line underground per km compared to overhead for the four costing scenarios ranged from US\$ 350,000 – US\$

¹⁰ Combreau O et al (2011). Migratory pathways and connectivity in Asian houbara bustards: evidence from 15 years of satellite tracking. PLoS One; 6(6):e20570.

19.3 million per km when undiscounted and US\$ 570,000 – US\$ 17.6 million per km when discounted. However, it is important to note that these estimates do not consider ‘economies of scale,’ in that the price per km of a 25km underground line will be greater than that of a 200km line.

Finally, another key and critical assumption and limitation to be kept in mind is that the technical and engineering “know-how” for construction of underground 500kV lines (i.e., anything beyond a couple of kilometres) is not available in Uzbekistan or within the nominated EPC contractors on the Project. Such engineering know-how at this point is generally available within developing countries (e.g., USA and Germany). Similarly, such engineering and technical know-how is also not available for the operation and maintenance of the 500kV line as will be required to be undertaken by NEGU. That will, therefore, also require a special dedicated team of technicians from outside of Uzbekistan. Such technical requirements and associated additional costs were not taken into account in the above analysis, and are considered a key and critical further limitation for consideration of any undergrounding options at this point in time.

4.5 Conclusion

The proposed OHTL route is the preferred option. None of the alternatives route variations evaluated above appear to be a better option. The only exception is the alternative to align with the planned access road (1) (Figure 37), which should be considered. Based on further discussions with the Developer, it was indicated that this option will be considered to the greatest extent possible as part of the detailed design process with the EPC Contractor to be undertaken at a later stage. However, based on further analysis by the Developer, it was indicated that OHTL is aligned with road to the extent possible. The following points must be considered when considering full alignment:

- This would involve several angles, leading to higher use of angle towers, which increases both the cost and footprint (due to increased corridor width at corners).
- This would imply that the OHTL pass through turbine clusters. Considering the OHTL ultimately becomes a NEGU asset after construction, preference is to have minimum interference with the windfarm not only during operation of OHTL

5. REGULATORY AND POLICY FRAMEWORK

This section presents the environmental clearance process in Uzbekistan, the key E&S legislations that are applicable for the Project, and the relevant international E&S standards and requirements.

5.1 Environmental Clearance Process in Uzbekistan

The Ministry of Ecology, Environmental Protection and Climate Change is the primary environmental regulator who reports directly to the Parliament and is responsible at national, regional, and local levels for the development and enforcement of the national environmental and conservation policy, issuing environmental permits, overseeing environmental compliance, and integrating environmental management across various sectors.

The Ministry's mandate is set forth in the Regulation on the State Committee for Nature Protection of the Republic of Uzbekistan enacted by the Parliament in 1996, including issuance of environmental permits for development projects.

The Uzbekistan EIA requirements are set forth within the "Resolution №541 of the Cabinet of Ministers on Procedure of EIA Mechanism (07 September 2020)". The EIA process is known as Otsenka Vliyaniya na Okruzhayushchuyu Sredu (OVOS) within the local context.

Annex 1 of the Resolution classifies high voltage transmission lines as Category 1, which will require the undertaking of an EIA study in order to obtain an environmental permit (EIA study is known as PZVOS within the local context). Category 1 EIA studies should be submitted to the central Ministry in Tashkent and not its representative ministry in Karakalpakstan.

The key components of the EIA study (or PZVOS) for Category 1 projects includes the following:

- Public hearing: a public hearing is required to be undertaken for the Project which should take place with the Karakalpakstan District Khokimiyat.
- Current state of the environment (before the project implementation): physical and geographical location, climatic characteristics of the area, existing sources of anthropogenic impact on the environment, condition of atmospheric air, geomorphological characteristics of the area, surface and ground water, soil, flora and fauna, noise, cultural heritage sites, and socio-economic aspects.
- Characteristics of the design object: description of the production facility, production technology with the provision of a master plan of the facility being designed and a technological scheme of production, data on water supply and sanitation, data on waste generated and methods of their processing.
- Assessment of the types and levels of impact on the environment
- Assessment of existing alternatives
- Assessment of possible emergency situations with environmental impact at the enterprise
- Environmental control and management measures
- Forecast of the state of the environment after the implementation of the project

The Draft EIA is then submitted to the Ministry for review. A conclusion is received within four (4) weeks following submission. The conclusion will either include approval of the EIA and issuance of environmental

permit or determination for a ZVOS. The ZVOS involves update of the PZVOS (i.e., EIA) with any additional information / research / surveys as requested by the Ministry based on their review of the PZVOS.

The environmental permit that will be issued will be for the construction phase of the Project. Prior to the operational phase, the Developer will be required to submit the ZEP, which is the final stage of the OVOS to be conducted prior to Project commissioning. This involved submission of a report that details any minor modifications compared to the submitted PZVOS as well as reporting normative to be provided during the operational phase.

In addition, it is important to note that the EPC Contractor will be required to obtain an OVOS for other Project components for which details are not available at this stage – this includes (but not limited to) batching plant and burrow pits. This has been added a requirement within the ESMP.

5.2 Uzbekistan E&S Regulatory Context

This section lists those legislations that are directly related to E&S compliance that must be adhered to by all parties involved in the Project throughout the planning and construction, operation, and decommissioning phase. These legislations include: (i) those issued by the Ministry of Ecology, Environmental Protection and Climate Change (laws, regulations, and instruction), and (ii) the relevant national legislations issued by other line ministries (laws, regulations, instructions, standards).

The table below lists the key relevant legislation to each of the E&S parameter and attributes being studied and assessed within this ESIA. **Annex I** presents a full legal review of each of the legislations provided below along with its relevance for the Project development.

Table 23: National Legislation and Guidelines Governing the E&S Compliance for the Project

Legislation
Environmental Management
Constitution of the Republic of Uzbekistan
Environmental Audit Law No. ZRU-678 of 2021
Law on Efficient Use of Power Energy of 1997
Law on Environmental Control of 2013
Law on Renewable Energy Sources of 2019
Land Use
Constitution of the Republic of Uzbekistan
Land Code (№ 598-I, 30.04.1998, as amended on 28.08.2019),
Civil Code
Resolution of Cabinet Ministers No. 146 (25th May 2011)
Decree 317 – Legalization of cadastral document of illegal land users
Presidential Decree on Measures to Ensure Equality & Transparency in Land Relations, Reliable Protection of Land Rights & Their Transformation into a Market Asset
The Law of the Republic of Uzbekistan “About Privatization of Non-Agricultural Land Plots” (26/4/2019)
Law of Uzbekistan on Protection of Private Property and Guarantees of Ownership Rights (2012)
Resolution of the President of Uzbekistan No.5495 (1 August 2021) “About the Measures for Basic Improvement of Investment Climate in the Republic of Uzbekistan”
The Law on Valuation Activity (No. 811-I dated August 19, 1999, amended in 2017).
Law No.ZRU-781 “On procedures for the compulsory acquisition of land plots for public needs with compensation”, June 29, 2022.
Unified National Standard (Registered by the Ministry of Justice of the Republic of Uzbekistan on June 4, 2020, Registration No. 3239)
Regulations on Procedure for issuing a Qualification Certificate of valuator #3153 dated 15.04.2019.

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On licensing of appraisal activities» #210 dated 08.05.2003.
Resolution of the President of the Republic of Uzbekistan "On further improving activities of valuation organizations and increasing their responsibility for the quality of services provided» #PP-843 dated 24.04.2008.
Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On approval of the mechanism for examination of reliability of evaluation reports" # 161 dated 28.07.2008.
Presidential Decree No. PD-3764 dated June 1, 2018 "On measures for the further development of the valuation services market".
Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated May 25, 2011, No. 146 "On measures to improve the procedure for providing land plots for urban planning activities and other non-agricultural needs"
Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated May 25, 2011, No. 146 "On measures to improve the procedure for providing land plots for urban planning activities and other non-agricultural needs".
Labor Code and Employment Law
Law on Citizens Appeals (11 Sep 2017).
Decree of the President of the Republic of UZB on measure to provide financial assistance to low income families. (No 6277 dated 11 August 2021)
Tax Code (25 December 2007)
Resolution of the President No. 3857 dated 17 July 2018 on Measures to Improve the Efficiency of Preparation and Implementation of Projects with the Participation of International Financial Institutions and Foreign Governmental Financial Organizations
Decree No. PF-6243 of the President of the Republic of Uzbekistan of June 8, 2021: "On the Measures of the Equality and Transparency in Land Relations, Reliable Protection of Land Rights and Making Them Market Assets"
Decree of Cabinet Ministers №317 dated 21 September on 2016 on amending and adding to some decrees of the Republic of Uzbekistan, aimed the further improvement of registration of cadastral document on real property
Presidential Resolution No. UP-6279 dated 17.07.2021 "On Increasing Wages, Pensions, Scholarships and Allowances"
Order No. 5491 dated 3 August 2019 of the President on additional measures to unconditionally ensure the guarantee of the property rights of citizens and business entities
Law on Valuation Activity. The Law on Valuation Activity (No. 811-I dated August 19, 1999, amended in 2017) stipulates regulations related to the implementation of valuation activities. Valuation of assets, including real estate, business, etc., is carried out on the basis of this law and government standards, departmental regulations, and other provisions of national legislation.
Decree of the President of the Republic of UZB on measure to provide financial assistance to low income families. (No 6277 dated 11 August 2021)
Law on Citizens Appeals (11 Sep 2017). The aim of this Law is to regulate the relations in the area of appeals of individuals and legal entities to government authorities and institutions. This normative legal act clearly prescribes the rights of a citizen when considering an appeal; guarantees of his safety in connection with the appeal, the requirements for a written appeal, the procedure for sending, registration and review of appeals, terms of their consideration.
Geology, Hydrology, Hydrogeology
Resolution of the Cabinet of Ministers No. 255 "On Approval of Some Administrative Regulations of State Services in The Sphere of Nature Management."
SanPin No 0183-05: Hygienic Requirements for the Quality of Soil in Populated Areas in the Specific Natural and Climatic Conditions of Uzbekistan.
SanPin No.0191-05: Maximum Permissible Concentrations (MPC) and Approximate Allowable Concentrations (AAC) of Exogenous Harmful Substances in soil.
SanPin No.0212-06: Sanitary Rules and Norms for the Hygienic Assessment of Soil Contamination of Different Types of Land Use.
SanPin № 0272-09: Sanitary Rules and Norms for Drawing Up Hygienic Justifications for Soil Protection Schemes from Pollution in the Conditions of Uzbekistan.
Biodiversity
Law № 73-II on Environmental Expertise
Law on Nature Protection of 1992

Law ZRU-363 on Environmental Control
Law ZRU-678 on Environmental Audit
Presidential Decree No. UP-5863 "Validating the Strategy for Environmental Protection in The Republic of Uzbekistan Until 2030."
Resolution of Cabinet of Ministers of Republic of Uzbekistan No. 95 "On Approval of General Technical Regulations of Environmental Safety."
Resolution of the Cabinet of Ministers No. 286 "Standard Regulations on the Procedure for Implementing Industrial Environmental Control."
Resolution of the Cabinet of Ministers No. 484 "On Approval of the Strategy for the Conservation of Biodiversity in The Republic of Uzbekistan for the Period 2019-2028".
Resolution of the Cabinet of Ministers No. 86 "Approval of The Uniform Regulation on the Procedures for Issuing Certain Documents Through a Special Electronic System."
Resolution of the Cabinet of Ministers No. 93 "On Additional Measures to Conserve Valuable Varieties of Trees and Shrubs Not Included in the State Forest Fund".
The Law of the Republic of Uzbekistan № 543-I "On Protection and Use of Flora and Vegetation."
The Law of the Republic of Uzbekistan, No. ZRU-877 "On plant protection" of 2023
The Law of the Republic of Uzbekistan № 710-II "On Protected Natural Reserves."
The Law of the Republic of Uzbekistan № 73-II "On Ecological Expertise."
The Law of the Republic of Uzbekistan ZRU-408, "On Protection and Use of the Wildlife."
The Red Book of the Republic of Uzbekistan
The Resolution of Cabinet of Ministries of the Republic of Uzbekistan No. 820 "On Measures to Further Improve the Economic Mechanisms for Ensuring Nature Protection."
The Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 14. "On Approval of the Regulation on the Procedure for the Development and Agreement of Projects with Environmental Standards."
The Resolution of the Cabinet of Ministries of the Republic of Uzbekistan No. 541 "On further improvement of the environmental impact assessment mechanism."
The Resolutions of Cabinet of Ministers of the Republic of Uzbekistan No. 290 "About the Settlement of Use of Biological Resources and about the Procedure for Passing of Allowing Procedures in the Field of Environmental Management."
Archaeology and Cultural Heritage
Constitution of the Republic of Uzbekistan
Criminal Code of the Republic of Uzbekistan
Code of the Republic of Uzbekistan on Administrative Responsibility
Law No. ZRU-229 "On Protection and Use of the Objects of Archaeological Heritage."
Law No. 269-II "On the Protection and Use of Cultural Heritage Sites."
Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 846 "On Approval of the National List of Real Estate Sites and Objects of Tangible Cultural Heritage."
Presidential Decree No. R-5181 "On Improving the Protection and Use of Objects of Tangible Cultural and Archaeological Heritage."
Presidential Decree no. PP-4068 "Regarding the Strengthening of the Protection, Management and Enhancement of Tangible and Intangible Cultural Heritage."
Air Quality and Noise
Sanitary Standards and Rules No. 0008-20 on Permissible Noise Levels in Residential Buildings, Public Buildings and Recreation Zones.
Sanitary Standards and Rules No. 0325-16 for Permissible Noise Levels in the Workplace
SanPin № 0293-11 "Hygienic regulations List of maximum permissible concentrations (MPC) of contaminants in the atmospheric air of inhabitant areas in the territory of the Republic of Uzbekistan."
SanPin №. 0339-16. "Sanitary rules and norms of planning and development of settlements of Uzbekistan."
Standard No. 0350-17, "Sanitary norms and rules for the protection of atmospheric air in populated areas of the Republic of. Uzbekistan."
The Law of the Republic of Uzbekistan № 353- I "On Atmospheric Air Protection."
Community Development

Decree No. 964 of 5 December 2017 "On the Measures for Perfection of the Activity of Self-Government Bodies Aimed at Ensuring Employment, firstly for the Youth and Women."
Decree of the Cabinet of the Ministers No. 1011 "On Perfection of the Methodology of Definition of Number of People in Need of Job Placement."
Resolution of the Cabinet of Ministries of the Republic of Uzbekistan No. 541 "On further improvement of mechanism for Environmental Impact Assessment."
Infrastructure and Utilities
Construction measure (KMK) 2.10.10-97: Norms & regulations for allocation of land for railways
Criteria and Procedure for Determining International Road Transportation of Loads.
Decree of the Cabinet of Ministers of the Republic of Uzbekistan No.1050 "On approval of Rules for Protection of Power Grid Facilities
Law No. 818-I "About traffic safety" of the Republic of Uzbekistan.
Law No. ZRU-117 on Highways
Law No. ZRU-56 on Telecommunications of 1995
Law № 725-1 "On Radio Frequency Spectrum."
Law on Electricity of 2009
Regulations on Provision of Energy Services, Resolution of the Cabinet of Ministers of the Republic of Uzbekistan.
Regulations on road safety during transportation of large and heavy loads by road transport.
Regulations on Rules for Cargo Transportation by road in the Republic of Uzbekistan
Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 22: Rules for Using Power Energy
Resolution of the President of the Republic of Uzbekistan №PP-57, "On measures to accelerate the implementation of renewable energy sources and energy-saving technologies in 2023."
Sanitary Norms No. 0236-07: Sanitary Standards and Regulations to Ensure Safety for Populations Living near High Voltage Power Lines.
Sanitary Rules and Regulations for The Placement and Operation of Radio Engineering Facilities in Populated Areas
Air Code for the Republic of Uzbekistan of 1993
Aviation Regulations (AP RUZ-150) Registered under No. 73
Labor and Working Conditions
Decree of the Cabinet of the Ministers No. 965 "On the Measures of Further Perfection of the Procedure of Establishment and Reservation of Minimum Number of Job Places for the Job Placement of Persons who are in need of Social protection and Face Difficulties in Searching Employment and Incapable of Competing in Labor Market with Equal Conditions."
Joint Decree of the Ministry of Labor and Social Protection of the Population (No. 33) and the Ministry of Healthcare (No. 13) of Uzbekistan "On the approval of the list of jobs with unfavorable working conditions where the employment of persons under 18 years is prohibited" registered by the Ministry of Justice of the Republic of Uzbekistan.
Labor Code of the Republic of Uzbekistan 1995
Law "On the employment of the population, No. ZRU- 642
Law No. ZRU-641 on Rights of Persons with Disabilities
Resolution of Cabinet of Ministers No. 244 "On the approval of the regulations on the procedure for the attraction and use of foreign workforce in the Republic of Uzbekistan."
Management of Solid Waste, Hazardous Waste and Wastewater
Law No. ZRU-784 on Drinking Water and Wastewater
Regulation "On the Procedure for the Disposal, Collection, Pay Settlement, Storage and Removal of Waste Industrial Oils."
Regulation on the Procedure for Handling Colored and Black Metal Scrap."
Resolution of Cabinet of Ministers of Republic of Uzbekistan No. 95 "On Approval of Regulatory and Legal Acts in the Field of Waste Management."
SanPin No. 0158-04 - Sanitarian Rules and Norms on collection, transportation and disposal of wastes contained asbestos in Uzbekistan."
SanPin № 0127-02 "Sanitary procedures for inventory, classification, storage and disposal of industrial waste."

SanPin № 0157-04 “Sanitary requirements to the storage and neutralization of solid domestic waste on special grounds in Uzbekistan.”
SanPin of the Republic of Uzbekistan № 0128-02 – “Hygienic classifier of toxic industrial wastes in the Republic of Uzbekistan.”
SanPin of the Republic of Uzbekistan №0300-11 “Sanitary Rules and Standards for managing collection, inventory, classification, treatment, storage and disposal of industrial waste in the context of Uzbekistan.”
The Law of the Republic of Uzbekistan No. 362-II “On Waste.”
The Resolution of Cabinet of Ministries of the Republic of Uzbekistan No. 820 “On Measures to Further Improve the Economic Mechanisms for Ensuring Nature Protection.”
The Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No 14. “On Approval of the Regulation on the Procedure for the Development and Agreement of Projects with Environmental Standards.”
Occupational Health and Safety
Joint Decree of the Ministry of Labor and Social Protection of the Population (No.7) and the Ministry of Healthcare (No. 1) of Uzbekistan.
Law No. ZRU-174 “About mandatory state social insurance against industrial accidents and occupational diseases.”
Law No. ZRU-393 of the Republic of Uzbekistan “On Sanitary and Epidemiological Welfare of Population.”
Order of the Head of the State Inspectorate for Supervision in the Electric Power Industry, No. 19 “On approval of safety rules when performing electrical installation work at power facilities.”
Ordinance No. 30-31 of the Ministry of Labor and Social Security and the Ministry of Health of the Republic of Uzbekistan
Sanitary Standards and Rules No 03225-16 for permissible noise levels in the workplace
SanPin (Sanitary Rules & Norms) 0372-20 (May 2020) on “Temporary sanitary rules and regulations on the organization of activities of state authorities and other organizations.”
Standard No. 0294-11 on “Permissible Amount of Harmful Substance in Air in Working Space.”
Public Health and Safety
Sanitary Norms No. 0236-07 “Sanitary Standards and Regulations to Ensure Safety for Populations Living near High Voltage Power Lines.”
The Electrical Installation Rules
Water Resources
Decree of the President of the Republic of Uzbekistan No. PP-5005 “On approval of the strategy for water resources management and development of the irrigation sector in the Republic of Uzbekistan for 2021-2023.”
Law No. ZRU-784 on Drinking Water and Wastewater
Presidential Decree No. UP-6024 Validating the Concept for The Development of Water Sector of The Republic of Uzbekistan for The Period Of 2020-2030.
The Law of the Republic of Uzbekistan No. ZRU-837-XII “On Water and Water Use.”

5.3 International Agreements

Uzbekistan has signed and ratified a number of international conventions committing the country to the conservation of E&S resources and protection of workers’ health & safety and labor rights. The following table lists the key conventions:

Table 24: Relevant International Conventions and Agreements

Name of Multilateral E&S Agreement	Year
Biodiversity and Natural Resources	
Agreement between the Government of Kazakhstan, the Government of Kyrgyzstan and the Government of Uzbekistan on Management of Water Resources in Central Asia	1996
Agreement on the Convention of African-Eurasian Migratory Waterbirds	2004
Agreement on the Cooperation in the Field of Joint Water Resources Management and Conservation of Interstate Sources	1992

Agreement on the Use of Water and Energy Resources of the Syr Darya Basin	1999
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	1996
Convention on Biological Diversity (CBD)	1995
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1997
Convention on the Conservation of Migratory Species of Wild Animals (CMS)	1998
Convention on the Conservation of the Migratory Species of Wild Fauna and Flora	1997
Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)	2007
Convention on Wetlands of International Importance (Ramsar Convention)	2002
Kyoto Protocol	1997
Montreal Protocol on Substances that deplete the Ozone Layer	1993
Paris Agreement	2017
Stockholm Convention on Persistent Organic Pollutants (POPs)	2019
United Nations Convention to Combat Desertification (UNCCD)	1995
United Nations Framework Convention on Climate Change (UNFCCC)	1993
Vienna Convention on the Protection of the Ozone Layer	1993
Human Rights	
UN Convention on the Elimination of All forms of Discrimination against Women	1995
UN International Covenant on Economic, Social and Cultural Rights	1995
UN Convention on the Rights of a Child	2008
UN Convention on the Elimination of All Forms of Racial Discrimination	1995
UN Convention on the Rights of Persons with Disabilities	2009
UN International Covenant on Civil and Political Rights	1995
Cultural Heritage	
Convention for the Safeguarding of the Intangible Cultural Heritage	2008
Paris Convention Concerning the Protection of the World Cultural and Natural Heritage	1993
Key ILO Conventions	
C 105: Convention on the Abolition of Forced Labor (ratified 1997)	1957
C 138: Convention on the minimum Age (ratified 2009)	1973
C 111: Discrimination (Employment and Occupation) Convention (ratified 1992)	1958
C 100: Equal Remuneration Convention (ratified 1992)	1951
C 29: Forced Labor Convention (ratified in 1992)	1930
C 87: Freedom of Association and Protection of the Right to Organize Convention (ratified in 2016)	1948
C 81: Labor Inspection Convention (ratified in 2019)	1947
C 138: Minimum Age Convention (ratified 2009)	1973
C 187: Promotional Framework for Occupational Safety & Health Convention (ratified in 2021)	2006
C 98: Right to Organize and Collective Bargaining Convention (ratified 1992)	1949
C 182: Worst Forms of Child Labor Convention (ratified 2008)	1999

5.4 Requirements for Project Financing

The Project will be seeking financing from International Financing Institutions (IFIs). Therefore, the Developer wishes to design and manage the project in accordance with international E&S standards and requirements. For the ESIA, it will be based on the requirements of the following entities, each of which is discussed in further details below:

- International Finance Corporation (IFC);
- Equator Principles (EP);
- European Bank for Reconstruction and Development (EBRD);

- Asian Development Bank (ADB); and
- Asian Infrastructure Investment Bank (AIIB).

5.4.1 International Finance Corporation (IFC)

The IFC of the World Bank provides a range of guidance documents related to the assessment and management of E&S issues in project development. Not only does IFC guidance provide a generally accepted basis for good practice, but it also provides the technical cornerstone for the Equator Principles which set out the E&S requirements of banks for project finance. The IFC requirements have become the *de facto* international E&S performance benchmark for project financing.

The IFC policy on E&S Sustainability puts into practice IFC's overall commitments to E&S sustainability. The policy seeks to: (i) enhance the predictability, transparency, and accountability of IFC's actions and decision making; (ii) help clients manage their environmental and social risks and impacts and improve their performance; and (iii) enhance positive development outcomes on the ground. In addition, the Policy identifies IFC's commitments, its roles, and responsibilities and other as applicable.

The IFC Performance Standards (PS) on Social and Environmental Sustainability set out a framework for managing and improving project performance from planning and assessment, through construction and operations to closure. The Performance Standards requirements are summarized in the table below.

Table 25: IFC Performance Standard Requirements

IFC PS	Key Points	Applicability to ESIA
PS1: Assessment and Management of Environmental and Social Risks and Impacts	PS1 underscores the importance of managing social and environmental performance throughout the life of a project by using a dynamic social and environmental management system. Specific objectives of this Performance Standard are: ▪ To identify and assess social and environment impacts, both adverse and beneficial, in the project's area of influence; ▪ To avoid, or where avoidance is not possible, minimize, mitigate, or compensate for adverse impacts on workers, affected communities, and the environment; ▪ To ensure that affected communities are appropriately engaged on issues that could potentially affect them; and ▪ To promote improved social and environment performance of companies through the effective use of management systems.	Applicable and considered for this ESIA
PS2: Labor and Working Conditions	The requirements set out in this PS have been in part guided by a number of international conventions negotiated through the International Labor Organization (ILO) and the United Nations (UN). Specific objectives of this Performance Standard are: ▪ To establish, maintain and improve the worker-management relationship; ▪ To promote the fair treatment, non-discrimination and equal opportunity of workers and compliance with national labor and employment laws; ▪ To protect the workforce by addressing child labor and forced labor; and ▪ To promote safe and healthy working conditions, and to protect and promote the health of workers.	Applicable and considered for this ESIA
PS 3: Resource Efficiency and	This Performance Standard outlines a project approach to pollution prevention and abatement in line with international available technologies and practices. It promotes the private sector's ability to integrate such technologies and practices as far as their	Applicable and considered for this ESIA

Pollution Prevention	use is technically and financially feasible and cost-effective in the context of a project that relies on commercially available skills and resources. Specific objectives of this Performance Standard are: ▪ To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities; and ▪ To promote the reduction of emissions that contribute to climate change.	
PS 4: Community Health, Safety and Security	This PS recognizes that project activities, equipment, and infrastructure often bring benefits to communities including employment, services, and opportunities for economic development. However, projects can also increase risks arising from accidents, releases of hazardous materials, exposure to diseases, and the use of security personnel. While acknowledging the public authorities' role in promoting the health, safety and security of the public, this PS addresses the project sponsor's responsibility in respect of community health, safety, and security.	Applicable and considered for this ESIA
PS 5: Land Acquisition and Involuntary Resettlement	Involuntary resettlement refers both to physical and economic displacement as a result of project-related land acquisition. Where involuntary resettlement is unavoidable, appropriate measures to mitigate adverse impacts on displaced persons and host communities should be carefully planned and implemented.	Applicable and considered for this ESIA and within standalone LRP
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	This Performance Standard reflects the objectives of the Convention on Biological Diversity to conserve biological diversity and promote the use of renewable natural resources in a sustainable manner. This Performance Standard addresses how project sponsors can avoid or mitigate threats to biodiversity arising from their operations as well as sustainably manage renewable natural resources. Specific objectives of this Performance Standard are: ▪ To protect and conserve biodiversity; and ▪ To promote the sustainable management and use of natural resources through the adoption of practices that integrate conservation needs and development priorities.	Applicable and considered for this ESIA
PS 7: Indigenous Peoples	Indigenous peoples may be particularly vulnerable to the adverse impacts associated with project development, including risk of impoverishment and loss of identity, culture, and natural resource-based livelihoods. PS7 seeks to ensure that business activities minimize negative impacts, foster respect for human rights, dignity, and culture of indigenous populations, and promote development benefits in culturally appropriate ways. PS 7 (Indigenous Peoples) is not considered to be applicable to this Project. The Indigenous World 2018 Report (IWGIA, 2018) states that Uzbekistan is not classified as a country with indigenous people.	Not applicable, Refer to "Section 14"
PS 8: Cultural Heritage	Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to protect irreplaceable cultural heritage and to guide project sponsors on protecting cultural heritage in the course of their business operations.	Applicable and considered for this ESIA

In addition, to the Performance Standards, the IFC have sector-specific EHS guideline documents. With regards to the ESIA the following are applicable:

- IFC General EHS Guidelines (2007): identifies detailed EHS management and technical recommendations which are applicable for all development projects; and
- EHS Guidelines for Electric Power Transmission and Distribution (IFC, 2007): Provide guidance's and information to users on EHS issues related to electric power transmission facilities. The Guideline provides a summary of EHS impacts associated along with recommendations for their management

as well as performance indicators and monitoring programs for environmental, occupational health and safety and community health and safety. Where relevant, the requirements of this guideline are reiterated clearly in subsequent sections that discuss the environmental attributes they relate to where national legislations are not available.

5.4.2 *Equator Principles 4 (EP 4)*

The Equator Principles Financing Institutions (EPFIs) have consequently adopted a set of E&S guidelines to ensure that large scale development projects properly determine, assess and manage the associated potential impacts on the natural environment and the affected communities.

The latest principles (EP 4) were issued in July 2020. The EP are summarized below.

Table 26: Summary of Equator Principles

No.	Principle	Discussions	Applicability for ESIA
1	Review & Categorization	Identifies categorization for projects as either Category A, B or C. This is determined by an E&S review and due diligence undertaken by the financial institution (and/or their advisor).	Not relevant for this ESIA study
2	Environmental & Social Assessment	This requires that for Category A and B projects that an Environmental and Social Impact Assessment (ESIA) is undertaken. The Principle provides guidance and illustrative list of issues that the ESIA study should address. This is discussed in further details in the table that follows. In addition, the Principle requires an assessment of potential adverse human rights impacts and climate change risks .	Applicable and considered for this ESIA
3	Applicable Environmental and Social Standards	Principle requires that assessment process comply with relevant host country laws. In addition, for projects located in Non-Designated Countries (such as the Uzbekistan) compliance with IFC Performance Standards on Environmental and Social Sustainability (Performance Standards) is required.	Applicable and considered for this ESIA
4	E&S Management System and EP Action Plan	For all category A and category B projects, the financing institution will require that the client develop and/or maintain an Environmental and Social Management System (MS). In addition, an Environmental and Social Management Plan (ESMP) must be prepared by the Client.	Applicable and considered for this ESIA
5	Stakeholder Engagement	Category A and B projects require effective and continuous stakeholder engagement with affected communities, workers, and other stakeholders as relevant.	Applicable and considered for this ESIA
6	Grievance Mechanism	Category A and B projects require an effective grievance mechanism for affected communities and workers as appropriate to receive and facilitate resolution of concerns and grievances.	Applicable and considered for this ESIA
7	Independent Review	An independent E&S review will be undertaken for Category A and B projects will on the EIA, ESMP, ESMS, SEP and other as applicable and an Equator Principles Action Plan (EPAP) will be prepared.	Not relevant for the ESIA study
8	Covenants	The Principle requires that the Client covenant and comply with ESMP and EPAP requirements and provide periodic reports to document compliance with ESMP and EPAP and local E&S regulations.	Not relevant for the ESIA study

9	Independent Monitoring and Reporting	After financial close, for category A and B projects, financing institution will require independent monitoring and reporting to assess project compliance with Equator Principles.	Not relevant for the ESIA study
10	Reporting and Transparency	Identifies E&S reporting requirements for the client for category A and B projects.	Not relevant for the ESIA study

As discussed in the table above and specifically under Principle 2, the Principle provides guidance and illustrative list of issues that the ESIA study should address. Such issues are identified below. The ESIA ensure that all issued identified below are addressed.

- Assessment of baseline E&S conditions (applicable and considered for ESIA);
- Consideration of feasible E&S preferred alternatives (applicable and considered for ESIA);
- Requirements under host country laws and regulations (applicable and considered for ESIA);
- Protection and conservation of biodiversity and identification of legally protected areas (applicable and considered for ESIA);
- Sustainable management and use of renewable energy sources (applicable and considered for ESIA);
- Use and management of dangerous substances (applicable and considered for ESIA);
- Major hazards assessment and management (applicable and considered for ESIA);
- Efficient production (applicable and considered for ESIA);
- Pollution prevention and waste minimization, pollution control, and waste management (applicable and considered for ESIA);
- Greenhouse gas emissions level and emissions intensity (applicable and considered for ESIA);
- Water usage, water intensity, and water source (applicable and considered for ESIA);
- Land cover and land use practices (applicable and considered for ESIA);
- Consideration of physical climate risks and adaptation opportunities and viability of project operations under changing weather patterns/climatic conditions (applicable and considered for ESIA);
- Cumulative impacts of existing projects, the proposed project and anticipated future projects (applicable and considered for ESIA);
- Consideration of actual or potential adverse human rights impacts (applicable and considered for ESIA);
- Labor issues and occupational health and safety (applicable and considered for ESIA);
- Consultation and participation of affected parties in the design, review, and implementation of the project (applicable and considered for ESIA);
- Socio-economic impacts (applicable and considered for ESIA);
- Impacts on affected communities and disadvantaged or vulnerable groups (applicable and considered for ESIA);

- Gender and gender disproportionate gender impacts (applicable and considered for ESIA);
- Land acquisition and involuntary resettlement (applicable and considered for ESIA and standalone LRP);
- Impacts on indigenous people (not applicable, Refer to “Section 14”);
- Protection of cultural property and heritage (applicable and considered for ESIA);
- Protection of community health, safety, and security (applicable and considered for ESIA); and
- Fire prevention and life safety (applicable and considered for ESIA).

5.4.3 *European Bank for Reconstruction and Development*

EBRD’s 2019 Environmental and Social Policy seeks to ensure, through its E&S appraisal and monitoring processes, that the projects it finances:

- Are socially and environmentally sustainable;
- Respect the rights of affected workers and communities; and
- Are designed and operated in compliance with applicable regulatory requirements and good international practice.

In addition, EBRD’s E&S policy identifies large scale wind power projects as ‘Category A’ which are projects that could result in potentially significant environmental and/or social impacts that require an environmental and social impact assessment.

To translate this objective into successful practical outcomes, EBRD has adopted a comprehensive set of Performance Requirements (PRs) covering key areas of environmental and social impacts and issues.

EBRD is committed to promoting European Union (EU) environmental standards as well as the European Principles for the Environment, to which it is a signatory, and which are also reflected in the PRs. EBRD expects clients to assess and manage the environmental and social issues associated with their projects so that projects meet the PRs.

The EBRD Performance Requirements applicable to this project are summarized in the table below.

Table 27: Overview of Key Points of EBRD Performance Requirements of Relevance to the Project

EBRD PR	Key Points Relevant to the Project	Applicability
PR 1: Assessment and Management of E&S Risks and Impacts	This PR outlines the process of appraising, managing, and monitoring environmental and social issues associated with a project consistent with the European Union environmental impact assessment directive (85/337/EEC as amended).	Applicable and considered for this ESIA

EBRD PR	Key Points Relevant to the Project	Applicability
PR 2: Labor and Working Conditions	This PR assures that human resources policies, procedures and standards will meet the following minimum requirements during the life of the Project with regards to labor and working conditions: - Establish and maintain a sound worker-management relationship and promote the fair treatment, non-discrimination and equal opportunity of workers; - Promote compliance with any collective agreements to which the client is a party, national labor and employment laws, and the fundamental principles and key regulatory standards embodied in the applicable ILO conventions; and - Protect and promote the health of workers, especially by promoting safe and healthy working conditions. In addition, EBRD requires compliance with applicable EU Occupational Health and Safety requirements and, where such requirements do not exist, applicable IFC Occupational Health and Safety guidelines (IFC PS2).	Applicable and considered for this ESIA
PR 3: Resource Efficiency and Pollution Prevention and Control	Pollution prevention and abatement are key ingredients of a sustainable development agenda and EBRD - financed projects must meet good international practice in this regard. The impacts and issues associated with polluting activities need to be considered in all economic activities, and from effluents and emissions at the facility level, to impacts at a regional and global level where appropriate. This performance requirement assures that all aspects of the Project will meet the following objectives: - To avoid or, where avoidance is not possible, to minimize adverse impacts on human health and the environment by avoiding or minimizing pollution directly arising from projects; - To assist clients in identifying project-related opportunities for energy and resource efficiency improvements and waste reduction; and - To promote the reduction of project-related greenhouse gas emissions.	Applicable and considered for this ESIA
PR 4: Health, Safety and Security	While bringing many positive benefits to local communities, projects can also increase the potential for community exposure to risks and impacts arising from temporary or permanent changes in population; transport of raw and finished materials; construction, operations and decommissioning; accidents, structural failures, and releases of hazardous materials. This performance requirement addresses the project proponent's responsibility to identify and to avoid or minimize the risks and adverse impacts to community health, safety and security.	Applicable and considered for this ESIA
PR 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Involuntary resettlement refers both to physical and economic displacement as a result of project-related land acquisition. Where involuntary resettlement is unavoidable, appropriate measures to mitigate adverse impacts on displaced persons and host communities should be carefully planned and implemented.	Applicable and considered for this ESIA and standalone LRP

EBRD PR	Key Points Relevant to the Project	Applicability
PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	EBRD recognizes the need for the protection and conservation of biodiversity in the context of projects in which it invests. In pursuing these aims, EBRD is guided by and supports the implementation of applicable international law and conventions and applicable EU Directives: ▪ To protect and conserve biodiversity; ▪ To avoid, minimize and mitigate impacts on biodiversity and offset significant residual impacts, where appropriate, with the aim of achieving no net loss or a net gain of biodiversity; ▪ To promote the sustainable management and use of natural resources; ▪ To provide for fair and equitable sharing of the benefits from project development and arising out of the utilization of genetic resources; ▪ To strengthen companies' license to operate, reputation and competitive advantage through best practice management of biodiversity as a business risk and opportunity; and ▪ To foster the development of pro-biodiversity business that offers alternative livelihoods in place of unsustainable exploitation of the natural environment.	Applicable and considered for this ESIA
PR 7: Indigenous Peoples	Indigenous peoples may be particularly vulnerable to the adverse impacts associated with project development, including risk of impoverishment and loss of identity, culture, and natural resource-based livelihoods. PR 7 seeks to ensure that business activities minimize negative impacts, foster respect for human rights, dignity and culture of indigenous populations, and promote development benefits in culturally appropriate ways.	Not applicable, Refer to "Section 14")
PR 8: Cultural Heritage	Cultural heritage is important as a source of valuable historical and scientific information, as an asset for economic and social development, and as an integral part of a people's cultural identity, practices, and continuity. EBRD requires the protection of cultural heritage from project activities.	Applicable and considered for this ESIA
PR 10: Information Disclosure and Stakeholder Engagement	EBRD considers stakeholder engagement as an essential part of good business practice and corporate citizenship. In particular, effective community engagement is central to the successful management of risks and impacts on communities, as well as central to achieving enhanced community benefits. The specific objectives of this PR are: ▪ To identify people or communities that are or could be affected by the Project, as well as other interested parties; ▪ To ensure that such stakeholders are appropriately engaged on environmental and social issues that could potentially affect them through a process of information disclosure and meaningful consultation; and ▪ To maintain a constructive relationship with stake holders on an ongoing basis through meaningful engagement during project implementation.	Applicable and considered for this ESIA

5.4.4 Asian Development Bank (ADB)

ADB's Safeguard Policy Statement (SPS) (2009) builds on three previous safeguard policies on the environment, involuntary resettlement and indigenous peoples, bringing them into one policy to more comprehensively address E&S impacts and risks.

The SPS aims to promote sustainability of project outcomes by protecting the environment and people from project's potential adverse impacts through minimizing, mitigating, and /or compensating for adverse impacts when avoidance is not possible.

In addition, the SPS helps borrowers/clients to strengthen their safeguard systems and develop the capacity to manage E&S risks.

The key requirements under the ADB SPS are summarized in the table below.

Table 28: ADB SPS Requirements

Scope of Application	Requirements	Applicability
Environment	- Environmental Assessment - Environmental planning and Management - Information Disclosure, Consultation and Participation - Grievance Redress Mechanism - Monitoring and Reporting - Unanticipated Environmental Impacts - Biodiversity Conservation and Sustainable Natural Resource Management - Pollution Prevention and Abatement - Health and safety - Physical cultural resources	Applicable and considered for this ESIA
Involuntary Resettlement	- Compensation, Assistance, and Benefits for Displaced Persons - Social Impact Assessment - Resettlement Planning - Negotiated Land Acquisition - Information Disclosure - Consultation and Participation - Grievance Redress Mechanism - Monitoring and Reporting - Unanticipated Impacts - Special Considerations for Indigenous Peoples	Applicable and considered for this ESIA and standalone LRP
Indigenous Peoples	- Consultation and Participation - Social Impact Assessment - Indigenous Peoples Planning - Information Disclosure - Grievance Redress Mechanism - Monitoring and Reporting - Unanticipated Impacts	Not applicable, Refer to "Section 14"

In addition, the following is also considered applicable in relation to ADB requirements:

- Social Protection Strategy (2001). This strategy defines social protection as a set of policies and programs designed to reduce poverty and vulnerability by promoting efficient labor markets, diminishing people's exposure to risks, and enhancing their capacity to protect themselves against hazards and interruption/loss of income. It spells out the scope of ADB's commitment to develop priority interventions in supporting social assistance and welfare service programs including child protection and micro- and area-based schemes to address poverty, and vulnerability; social insurance programs to cushion risks associated with unemployment, ill-health, disability, work-related injury and old age; and labor market policies and programs designed to generate employment, improve working conditions.

- Gender and Development Policy (1998). The policy focuses on mainstreaming gender considerations into all ADB activities and aims to promote gender equity and improve status of women and treats gender as a cross-cutting themes influencing all social and economic processes.
- Access to Information Policy (2018). The Policy reflects ADB's ongoing commitment to transparency, accountability, and participation by stakeholders.

5.4.5 Asian Infrastructure Investment Bank (AIIB)

AIIB's operations are required to comply with policies addressing environmental and social impacts, among other policies. The Environmental and Social Framework (ESF) incorporates AIIB's policy addressing environmental and social impacts. An update to AIIB's Environmental and Social Framework (ESF) was approved on June 26, 2024, introducing provisions for the newly approved Climate Policy-based Financing instrument. In addition to the update approved in June 2024 ESF, there are three other versions of the ESF, one as amended through February 2019 (2019 ESF), one as amended through May 2021 (2021 ESF) and one as amended through November 2022 (2022 ESF). The version applicable to a given AIIB-financed project (Project) depends on when the Project enters or entered AIIB's investment pipeline.

The Environmental and Social Policy (ESP) of AIIB comprises mandatory environmental and social requirements for each Project and is accompanied by (a) three associated mandatory Environmental and Social Standards (ESSs) setting out requirements applicable to Clients on; and (b) an Environmental and Social Exclusion List (ESEL) which sets forth activities and items that are excluded from financing by AIIB and that the Client is required to exclude from the Project.

The ESSs cover the following:

- ESS 1: Environmental and Social Assessment and Management,
- ESS 2: Land Acquisition and Involuntary Resettlement, and
- ESS 3: Indigenous Peoples.

ESS 1 (Environmental and Social Assessment and Management): When the Bank determines the Project is likely to have adverse environmental and/or social risks and impacts, the Client must conduct an assessment and design appropriate measures to avoid, minimize, mitigate, offset, or compensate for them. The objective is to achieve environmental and social soundness and sustainability and support integration into decision-making. ESS 1 applies if the Project is likely to have adverse risks and impacts. The scope is proportional to the risks, and it ensures quality assessment and management through mitigation and monitoring.

ESS 2 (Land Acquisition and Involuntary Resettlement): (applicable for the OHTL) If the Project is likely to involve Involuntary Resettlement, the Client must address it in the social section of the assessment and provide a plan or framework (e.g., LARP/LAP/RP or LARPF/LAPF/RPF) to the Bank.

The objectives of ESS 2 are: (a) to avoid Involuntary Resettlement wherever feasible; (b) to minimize Involuntary Resettlement by exploring Project alternatives; (c) where avoidance of Involuntary Resettlement is not feasible, to enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-Project levels and to provide resettlement assistance; (d) to understand and address gender-related risks and differential impacts of Involuntary Resettlement; (e) to improve the overall socioeconomic status of the displaced poor and other vulnerable groups; and (f) to conceive and implement resettlement activities as sustainable development programs, providing sufficient resources to

enable the persons displaced by the Project to share in Project benefits. ESS 2 applies if the Project would or may involve Involuntary Resettlement (including Involuntary Resettlement of the past or foreseeable future that the Bank determines is directly linked to the Project).

ESS 3 (Indigenous Peoples): If the Project would involve Indigenous Peoples the Bank requires the Client to address this in the social section of the assessment report, complemented by more in-depth coverage, as required under ESS 3. The Client covers impacts on Indigenous Peoples in an Indigenous Peoples Plan or Indigenous Peoples planning framework, which is provided to the Bank as a freestanding document, an annex to the assessment report, or incorporated as a recognizable element of the report.

ESS 3 is not applicable for the Projects in Uzbekistan, since there is no communities or groups of people which can be identified/defined as indigenous peoples in the country.

5.4.6 Other

There are additional international E&S standards and requirements that were considered throughout the ESIA study. Those are identified in the table below along with their applicability.

Table 29: Other International E&S Requirements and Standards

Requirement	Applicability
IFC Good Practice Note – Addressing Grievances from Project-Affected Communities & IFC Good Practice Manual – Doing Better Business Through Effective Public Consultation and Disclosure	Those identify additional requirements that should be considered and taken into account as part of the planned stakeholder engagement activities as well as the SEP that is provided as a standalone document.
IFC Good Practice Note: A Good Practice Handbook for Companies Doing Business in Emerging Markets	The note identifies key concepts and principles of stakeholder engagement and how to integrate stakeholder engagement with the project cycle. This has been considered for the SEP that is provided as a standalone document.
EBRD and IFC Guidance Note on Worker's accommodation	identify key issues of concern that should be addressed as well as best practice requirements to be taken into account in relation to worker accommodation.
▪ IFC Good Practice Note on Non-Discrimination and Equal Opportunity ▪ IFC Good Practice Note – Managing Retrenchment ▪ IFC Handbook for Labor and Working Conditions – Measure & Improve Your Labor Standards Performance ▪ Good Practice Note: Managing Risks Associated with Modern Slavery ▪ International Labor Organization (ILO) Conventions. This will include all ILO conventions signed and ratified by the Government of Uzbekistan and at a minimum all ILO conventions covering core labor standards and all ILO conventions covering the basic terms and conditions of employment	Those are related to workforce management as applicable within the ESIA and associated management plans.

Good Practice Note (GPN) IFC's Use of Security Forces: Assessing and Managing Risks and Impacts	The handbook provides practical, project-level guidance for companies to better understand and implement the requirements outlined in PS 4. Chapters focus on risk assessment, managing private security, managing the relationship with public security, preparing a security management plan, and assessing allegations or incidents related to security personnel.
UN Voluntary Principles on Security and Human Rights	Promotes implementation of a set of principles on providing security for their operations in a manner that respects human rights
Addressing Gender-Based Violence and Harassment (GBVH): Emerging Good Practice for the Private Sector	The note prevents the physical, sexual, emotional and financial harm GBVH causes to individuals, as well as the financial, reputational and legal risks it poses to businesses and investors

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 as 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 April 2023.

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); and
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 are listed in the table below. This includes all stakeholders across all regions within which the OHTL runs. The list can be updated and modified in the course of the Project development and as a result of the cooperation of the parties.

Table 30: Identified Groups of Stakeholders

Stakeholder Group	Description	Relevance
Stakeholders who may be directly or indirectly affected by the Project		
Local communities which as identified in “Section 2.2” earlier includes:	▪ Karakul ▪ Gazli ▪ Qiriqqizabad ▪ Qirqjoy ▪ Qiriqqiz ▪ Beshtom ▪ Berdaq ▪ Darbent ▪ Toqimbet ▪ Qumayqus awili ▪ Mamiqshi ▪ Jiydeli (Zheydeyli) ▪ Shuyit ▪ Telman ▪ Madeniyat ▪ Aqman'g'it ▪ Baymaklyaul ▪ Madeniyat ▪ Qizilu'y ▪ Tulegenau ▪ Jiydeli ▪ Taqirko'l	This includes the following groups within the local communities in specific: ▪ <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, visual impacts, etc.). Such impacts are discussed and identified within the ESIA. ▪ <u>Community Leaders</u>: They are socially active members and known figureheads for local community members, who may or may not hold government positions. ▪ <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.).

▪ Birqazanko'l ▪ Jon'ishqaliko'l ▪ Sag'ir awil ▪ Abilla ▪ Gu'njiliko'l ▪ Qipshaq ▪ Nurimbet ▪ Qran taw (Krantau)		
Project Affected Person (PAPs) which mainly include farmers across the OHTL route.		OHTL construction and operation could entail economic displacement impacts on such PAPs (such as disturbance or agricultural activities, land fragmentation, land access, grazing/livestock activities) and/or physical displacement impacts. Please refer to the Livelihood Restoration Plan (LRP) for additional details on the PAPs.
Stakeholders who may Participate in Implementation of the Project		
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.
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		
Government Ministries		
Ministry of Ecology, Environmental Protection and Climate Change (both Tashkent and Republic of Karakalpakstan)	Local government body mandated to implement state laws on environment protection and management and the use of natural resources.	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 (both Tashkent and Republic of Karakalpakstan)	Local government body mandated to protect and manage water resources.	For this Project, this will include ensuring water requirements of the Project do not impact and affect existing water resources.
Ministry of Health (both Tashkent and Republic of Karakalpakstan)	Official governmental entity responsible for setting health policies and legislations as well as ensuring protection.	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 (both Tashkent and Republic 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 are undertaken properly and in accordance with relevant legislations.
Ministry of Labor (both Tashkent and Republic 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 (both Tashkent and Republic of Karakalpakstan)	The ministry is the entity responsible for the preservation and protection of archaeology 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 may be required for OHTL 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 may be required for OHTL to ensure military aviation infrastructure and operations are maintained.
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 some parts of the OHTL route 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 (both Tashkent and 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	This is a government agency that works on programs and social issues for youth. They have offices in Karakalpakstan as well as Bukhara and Khorazm Region.	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	This is a government entity that works on programs and social issues for women. They have offices in Karakalpakstan as well as Bukhara and Khorazm Region.	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 OHTL route.
Regional and Local Government Ministries and District Authorities		
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. This is applicable for the OHTL route that runs within Karakalpakstan.

Khorazm Region Khokimiyat	Responsible for acting on behalf of its citizens for the sustainable development of the Region.	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. This is applicable for the OHTL route that runs within Khorazm Region.
Bukhara Region Khokimiyat	Responsible for acting on behalf of its citizens for the sustainable development of the Region.	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. This is applicable for the OHTL route that runs within Bukhara Region.
- Beruniy District Khokimiyat - Ellikkala District Khokimiyat - Nukus District Khokimiyat - Kanlikul District Khokimiyat - Kungrad District Khokimiyat - Karauzyak District Khokimiyat - Shumanay District Khokimiyat - Turtkul 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. This is applicable for the OHTL route that runs within Karakalpakstan.
- Jondar District Khokimiyat - Karakul District Khokimiyat - Peshkun District Khokimiyat - Romitan 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. This is applicable for the OHTL route that runs within Bukhara Region.
Tuproqqala 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. This is applicable for the OHTL route that runs within Khorazm Region.
NGOs		
Birdlife International (BLI)	International partnership for nature conservation. BLI uses bird science and collect and analyze data from around	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 the OHTL.

	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.	
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 the OHTL.
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 conservation, and raise awareness and concern for bustards.	Might have relevant data as applicable relate to bustards within the OHTL route and/or Uzbekistan in general. In addition, they could have concerns about impacts from the Project on bustards mainly due to collisions with the OHTL.
Association of Persons with Disabilities of Uzbekistan	This is an active NGO for Disabled People that has branches in Karakalpakstan, Bukhara and Khorazm	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.
National Association of NGOs in Uzbekistan	Umbrella NGO for all NGOs in Uzbekistan including social NGOs. They also have a Karakalpakstan branch office as well as an office Bukhara Region and Khorazm Region.	Their specific focus is expected to be the potential for inclusion and engagement of workforce and businesses within the Project development process.
“Tadbirkor Ayol” Association of Businesswomen	They have branches in Karakalpakstan as well as Bukhara and Khorazm and they focus on empowering women and developing their business skills and livelihoods.	Their specific focus is expected to be the potential for inclusion and engagement of women within the workforce and women-owned businesses within the Project development process.
Ne Molchi	NGO that works within the area of women domestic violence.	Could be interested to participate in the GBVH grievances from workers or stakeholders (such as local communities).
Republican information and educational center “INTILISH”	With divisions in all regions of Uzbekistan (including Karakalpakstan, Bukhara and Khorazm). Center works to improve the quality of life of the vulnerable groups by maintaining health, increasing cultural and educational levels, and social adaptation.	Their specific focus is expected to be the potential for inclusion and engagement of workforce and businesses within the Project development process.
Republican Kungrad Interdistrict Phthisiatric Hospital № 4 / Kungrad Central District Hospital / Kungrad Railway hospital / Kungrad Infectious diseases Hospital	The key and main health care facilities located within Kungrad District under which Project is administratively located .	They could provide health care services to the project and its workforce (such as routine and non-routine medical examinations, checkups, etc.) including emergency response should they occur (such as workforce occupational accidents).

"Zhumaniyazov" Family Doctor's Office	The key and main health care facilities located within Beruniy District under which Project is administratively located .	
Elikkala district hospital/ Family polyclinic № 60/ Republican Psycho- Neurological Dispensary №2/ "Dustlik" Family Doctor's Office / Republican Elikkala interdistrict Phthisiatric hospital №1	The key and main health care facilities located within Elikkala District under which Project is administratively located .	
Kanlikul District Medical Association, hospital for adults and children	The key and main health care facilities located within Kanlikul District under which Project is administratively located .	
Karauzyak District Medical Association, hospital for adults and children / "Koybak" Family Doctor's Office	The key and main health care facilities located within Karauzyak District under which Project is administratively located .	
Shumanai Central District Hospital	The key and main health care facilities located within Shumanay District under which Project is administratively located .	
Turtkul Central District Hospital	The key and main health care facilities located within Turtkul District under which Project is administratively located .	
District medical association	The key and main health care facilities located within Tuproqqala District under which Project is administratively located .	
Multidisciplinary central district polyclinic	The key and main health care facilities located within Karakul District under which Project is administratively located .	
Multidisciplinary central district polyclinic	The key and main health care facilities located within Romitan District under which Project is administratively located .	
Regional district central hospital	The key and main health care facilities located within Pekshu District under which Project is administratively located .	

Central district polyclinic	The key and main health care facilities located within Jondor District under which Project is administratively located .	
Other		
Oil and Gas companies	The OHTL crosses several oil and gas pipelines throughout its route within the various regions. Those could be addressed collectively through consultations with the State Committee on Geology and Mineral Resources of the Republic of Uzbekistan as discussed earlier.	Ensure that construction and operation activities of the OHTL do not impact or disturb the oil and gas pipeline and infrastructure elements.
Uzbekistan Railway O'zbekiston Temir Yo'llari	The OHTL crosses a railway throughout its route within the various regions.	Ensure that construction and operation activities of the OHTL do not impact or disturb the railway infrastructure elements.
Other unidentified infrastructure elements	The OHTL crosses several unidentified infrastructure elements throughout its route within various regions. Those must be identified by the EPC Contractor as part of the detailed design along with the entities managing them.	Ensure that construction and operation activities of the OHTL do not impact or disturb such infrastructure elements.
Falcon Hunting Solutions	This is the entity managing MacQueen's Bustard (Houbara Bustard) hunting activities for Arab royal families within the Ustyurt plateau.	Such hunting activities and their locations can conflict with the proposed OHTL route.
International Fund for Houbara Conservation in Abu Dhabi (OAE) / Emirates Bird Breeding Center for Conservation (EBBCC)	This entity is managing re-introduction efforts for this species in Uzbekistan.	Such release and reintroduction efforts and their locations could be located within or near the OHTL route.
Academic and Research Institutions		
RES group of the Academy of Sciences (Karakalpakstan and Tashkent Office)	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 include biodiversity, birds, bats, archeology and cultural heritage, environment and other.
Institute for the Human Science under Academy of Science (Karakalpakstan and Tashkent Office)	Branch under the Academy of science with specific focus on archeology and cultural heritage.	

National Institute of Zoology under Academy of Science (Karakalpakstan and Tashkent Office)	Branch under the Academy of science with specific focus on biodiversity.	
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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 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.

Refer to “Section 14” which describes the Socio-Economic conditions of the affected parties for a more detailed analysis on such identified stakeholders. This analysis covers the identified vulnerable households, the Regions and local communities in Uzbekistan and Karakalpakstan impacted by the Project, Household findings within the Project area.

6.2.2 Indigenous Peoples

A detailed analysis on Indigenous Peoples (IP) has been undertaken part of this ESIA to determine whether there are Indigenous Peoples in Uzbekistan in general. The assessment concluded that there are no indigenous groups in the country. Please refer to “Section 14.3.3” for additional details.

It is therefore concluded that the Project will not entail any relevant impacts on indigenous peoples.

6.3 Stakeholder Consultation and Engagement to Date

This section presents the outcomes of stakeholder consultation and engagement activities to date. As noted earlier, this includes all stakeholders across all regions within which the OHTL runs.

6.3.1 Consultations and Approvals Undertaken to Date by Technical Consultant

The table below presents the key consultations undertaken to date and the permits obtained as part of the technical assessment undertaken, as discussed previously under “Section 4.2.” The permits presented below are obtained with regards to the final route as presented under “Section 2.3”.

Table 31: Consultations and Approvals Undertaken by Technical Consultant

Entity	Relevance
- Khokimiyat of Kungrad District - Khokimiyat of Shumanay District - Khokimiyat of Kanlikul District - Khokimiyat of Nukus District - Khokimiyat of Karauzyak District - Khokimiyat of Beruniy District - Khokimiyat of Ellikkala District - Khokimiyat of Turtkul District - Khokimiyat of Tuproqqala District - Khokimiyat of Romitan District - Khokimiyat of Peshkun District - Khokimiyat of Jondor District - Khokimiyat of Karakul District	Consultations undertaken to finalize the OHTL route and obtain permit for the final route accordingly. This included all the Khokimiyat within which the OHTL passes. These are the key local administrations responsible for the local governance, land use planning, and development at the district level.
Ministry of Water Resources	Consultation and permit for OHTL route.
- Ministry of Culture and Tourism of Karakalpakstan / Agency of Cultural Heritage - Ministry of Culture and Tourism / Agency of Cultural Heritage of the Republic of Uzbekistan - Ministry of Culture and Tourism / Department of Cultural Heritage of Bukhara region - Ministry of Culture and Tourism / Department of Cultural Heritage of Khorazm Region	Consultations undertaken to finalize the OHTL route within known sites of importance and obtain permit for the final route accordingly. Refer to “Section 4.2” for additional details.
Ministry of Defense of the Republic of Uzbekistan North-Western Military District	Consultations to reroute OHTL near military area and obtain permit on final route. Refer to “Section 4.2” for additional details.

6.3.2 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 which provides information on Project, its location, components, ESIA process, key impacts, and other.

- National governmental entities;
- Regional governmental entities;

- Non-Governmental Organizations (NGOs); and
- Academic and research institutions.

Table 32: Overall Summary of Targeted Consultations

Entity	Date	Key Outcomes
Supreme Council / Parliament of the Republic of Karakalpakstan Meeting with Deputy Chairman of the Supreme Council	18 May 2023	▪ 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. ▪ 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. ▪ 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. ▪ Khokimiyat and Mahallas can share information to local communities through their appropriate local channels. ▪ It is important to keep Mahallas informed of any job and procurement opportunities and announcements as they will help with announcements of such opportunities. ▪ The Project should consider risks associated with its remote location as applicable including ensuring availability of amenities such as water, gas, and transportation for workers. ▪ Project should coordinate with ongoing geological exploration work in Ustyurt territory. ▪ 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. ▪ 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.
Ministry of Ecology, Environment Protection and Climate change Republic of Karakalpakstan	15 June 2023	▪ 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). ▪ The OHTL should avoid the National Nature Park “South Ustyurt” and the state order reserves “Barsakelmes.” ▪ 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. - Project should implement a systematic approach to stakeholder engagement to build and maintain constructive relationships with stakeholders, especially with directly affected communities. - Project should align with national requirements for the assessment of environmental and social impacts. - 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 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.
Department of Chamber of State Cadasters for the Republic of Karakalpakstan	15 June 2023	- Obtain information on land ownership (government, private, etc.) for the OHTL - Obtain information on number of farmers and farmlands within which the OHTL passes
Ministry of Health of Karakalpakstan / Republican Sanitary Epidemiological Service	17 May 2023	- 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: - 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, - 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 µTl) in residential areas. - 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. - With regards to the OHTL, the following should be considered: - 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 - 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.

		Measures must be implemented that ensure mitigation against soil erosion, preventing water pollution, and management of waste generated during construction and maintenance phases.
Department of Archeology at the Karakalpak Research Institute of Humanities	15 June 2023	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. In addition, provided a methodology and scope of work to be done for the survey that would be part of the ESIA. This is discussed in further details in “Section 11”.
Regional Electricity Power Networks	15 June 2023	- Key issue from an E&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. - No additional issues of concern or requirements were provided.
NEGU	August 204	‘E&S Team’ contacted NEGU to obtain information on experience and costing of undergrounding 500kV transmission lines. - NEGU Indicated that they have no experience in construction or operation / maintenance of 500kV underground lines. They do have some experience in undergrounding other lower voltage lines, but for extremely short distances. - NEGU indicated that the only experience in undergrounding 500kV lines in Uzbekistan was on the Sari Darya Thermal Power Plan project where undergrounding was required for a couple of meters within the substation area as no other option was available due to technical constraints. NEGU indicated that this was done by ACWA Power and required that the ‘E&S Team’ contact the relevant technical team to obtain information on costing and experience on such a Project.
Uzbekistan Society for the Protection of Birds / Karakalpakstan Branch	18 June 2023	- With regards to the OHTL: - 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 within the OHTL ESIA. Please refer to the standalone document for additional details. - Provided information on future plans for IBAs and KBAs within the general route area. Results are discussed further within the OHTL ESIA. Please refer to the standalone document for additional details - Stated that they are not aware of any particular ‘special “hot spots”’ in relation to biodiversity and avifauna located within the OHTL route. - Required that appropriate biodiversity and avifauna mitigation measures be considered along the OHTL / on the pylons based on the outcomes of the assessment. - No additional issues of concern or requirements were provided.
Academy of Sciences of Uzbekistan	18 June 2023	Provided requested information on biodiversity and avifauna in relation to Important Birds Areas (IBAs), Key Biodiversity Areas (KBAs) within the general

Karakalpakstan Branch		OHTL route area as well as the Amu Darya River. Results are discussed further within the OHTL ESIA. Please refer to the standalone document for additional details - Provided information on future plans for IBAs and KBAs within the general OHTL route area. Results are discussed further in within the OHTL ESIA. Please refer to the standalone document for additional details - Required that appropriate biodiversity and avifauna mitigation measures be considered along the OHTL / on the pylons based on the outcomes of the assessment. - No additional issues of concern or requirements were provided.
Karakalpak Research Institute for the Human Science / Academy of Science	15 June 2023	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 within the OHTL ESIA. Please refer to the standalone document for additional details
Emirates Bird Breeding Center for Conservation (EBBCC)	Oct 2023	- Cooperation agreement will be signed between ACWA Power and EBBCC for project activities in Uzbekistan. - 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).
Birdlife International / IUCN SSC Bustard Specialist Group	21 December 2023 13 March 2024 1 May 2024	- The OHTL is a major concern, and this is specifically in relation to MacQueen's Bustard (and other species but to a lesser extent). MacQueen's Bustard will be migrating across the whole length of the OHTL, albeit in different concentrations, from different breeding populations within west Kazakhstan, central Kazakhstan, eastern Kazakhstan and further east (e.g. China/Mongolia), as well as the breeding populations within Uzbekistan. - It was stated that a significant proportion (approximately 85%, in 2014) of the global breeding population of this species breed to the north of the proposed OHTL and therefore a very large proportion of those (and the total breeding population) will migrate through the area of the proposed OHTL, twice per year. - This therefore presents a significant risk to the species and it's conservation status. Current estimates are that OHTL collisions are accounting for approximately 3% of total mortality in this species (from conversation with John Burnside – check below), although unsustainable levels of winter hunting / poaching are the most significant driver of population decrease. Given the high risk that OHTL presents to MacQueen's Bustard and its global conservation status and that BFDs currently are largely ineffective at significantly reducing this risk, Birdlife's position and that of Nigel (co-Chair of the IUCN Bustard Group) is that the whole line from the Kungrad WF to Karakul switching station should be undergrounded. A fully costed cost benefit an. sis should therefore be completed as part of the alternative assessment, and this has been completed as part of the revised ESIA (check "Section 4.5").
IUCN SSC Bustard Specialist Group / Bank Watch	Online meetings and	Based on the request of this stakeholder group, no summary of discussions will be included.

	e-mail communication (June – October 2024)	
John Burnside (International Expert in MacQueen's Bustard)	29 April 2024	- John discussed the core breeding areas for MacQueen's Bustard near Bukhara as shown in the figure below. The core breeding areas (green areas) with higher breeding densities is present from the Lake to the NW of Bash to the west and south to the northern part of the Karakyr Lake Suitable habitat for breeding MacQueen's but lower breeding densities (orange areas) are present to the south of the core area and this is bisected by the proposed OHTL. Breeding in areas to the west of the core (green) and suitable (orange) areas is also possible however it is considered that breeding densities may be lower, although these areas are not as extensively studied.  - Breeding density along the main road (A380) are likely to be lower due to disturbance and displacement and carcasses along the road are not known (e.g. road collisions). - The main season that the OHTL poses an impact is post-breeding movements when birds start to aggregate for migration and or post-breeding moulting as well as during autumn migration movements. - Migration routes that are shown on the various papers are likely to be skewed based on where birds have been ringed / tagged in breeding grounds however main populations in Kazak (western population) are likely to migrate to the west of the Aral Sea and the other main Kazak (eastern) population (and birds from further east) are likely to use the route shown through Bukhara region, mainly avoiding flying over the mountains. Other populations however will migrate more generally north to south through the route of the OHTL, but migration activity would be expected to be lower (less significant) as breeding populations in these areas are smaller with a lower population density. - Flight heights of birds on migration are likely to be between 60 and 100m however birds moving through the landscape (e.g. daily movements or local post-breeding

		movements) are likely to be 20 to 30m. OHTL mortality is significant and is thought to contribute to approximately 3% of annual mortality however hunting pressures in wintering grounds are likely to be very significant.
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6.3.3 Project Affected Persons (PAPs)

Detailed consultation and engagement activities were undertaken with all Project Affected Persons (PAPs) (e.g. farmers) as part of the Livelihood Restoration Plan (LRP). Those are discussed in detail within the LRP. Please refer to the document for additional details.

6.3.4 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;
- FGD with key biodiversity experts from governmental entities and NGOs; and
- FGD with key local entities and communities across the OHTL route.

(i) Supreme 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 within Karakalpakstan.

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.



Figure 45: Sample Photos from the Meeting

(ii) ***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 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 and gather any available existing scientific research works on OHTL territory; and
- Discuss in specific conservation efforts and requirements of the MacQueen's bustard.



Figure 46: 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 universities in various research activities related to the Project throughout its lifecycle;
- Need for ongoing research and data collection within the area, particularly regarding the impact on birds, mammals, invertebrates, and other key species.
- 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.
- 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, and other;

Part of the Project site is a territory 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.

6.3.5 *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. 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 47: 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 Disclosure Sessions

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

- Session #1: Regional session at Karakalpakstan Regional level;
- Session #2: Regional session at Khorazm Region; and
- Session #3: Regional session at Bukhara Region.

All sessions will be open invitation sessions that will be announced to local communities through the following avenues at least two (2) weeks in advance of the session.

- Official news channel of Region as applicable
- Telegram groups of Region as applicable

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

- District Khokim for the relevant districts as identified under Table 30 earlier;
- Mahalla Committee including Mahalla Chair for local communities identified under Table 30 earlier;

- Village leaders that include elected leaders, religious leaders, business leaders and key members of the local community;
- Vulnerable groups (as identified within “Section 14”);
- Educational workforce (teachers in schools);
- Key and main healthcare facilities within each District as identified under Table 30 earlier; and
- Key national grassroots social NGOs within Karakalpakstan, Bukhara and Khorazm Region as identified under Table 30 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;
- Comments on scope of work undertaken, key issues identified and any other issues of concern; and
- Cover issues of and solicit feedback on key issues such as worker influx, accommodation and transportation, labor condition and skills needs, and other as appropriate.

In addition, the sessions will ensure consultation and disclosure provisions for the illiterate.

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 Project Affected Persons (PAPS)

Upon appointment of the EPC Contractor and completion of the detailed design, another round of detailed consultation and engagement activities will be undertaken with all Project Affected Persons (PAPs) (e.g. farmers) as part of the Livelihood Restoration Plan (LRP). Those are discussed in detail within the LRP. Please refer to the document for additional details.

6.4.3 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);
- Livelihood Restoration Plan (LRP) including summary of LRP leaflet;
- Environmental, Social, Health and Safety (ESHS) Management System (MS) Manuel

The above will be disclosed in three (3) main languages to include English, Uzbek and Karakalpak language.

6.4.4 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. 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.

7.1 Assessment of Baseline Conditions

7.1.1 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.

A. Secondary Data Review

Prior to the undertaking of any site-related surveys, a full and detailed review of up-to-date high-quality drone images for the OHTL route was 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 5km). A 5km radius has been selected given that no visibility is expected beyond this distance taking into account the maximum height expected of the transmission towers (37m as identified earlier).

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

B. Site Survey

A detailed site survey for the OHTL route and a 100m buffer area from each side was undertaken. The survey aimed to characterize the general topography and landscape characteristics of the Project area as well as any potential visual receptors onsite.

7.1.2 Results and Outcomes

Landscape

Based on a site visit undertaken by the 'E&S Team', it is noted that the route runs through diverse and various landscape features that can be generally categorized as follows: (i) desert areas; (ii) agricultural areas; and (iii) areas with some shrub vegetation.



Figure 48: General Landscape and Visual within the Project

The figure below presents the general landscape features (desert, agriculture, and natural) across the OHTL.

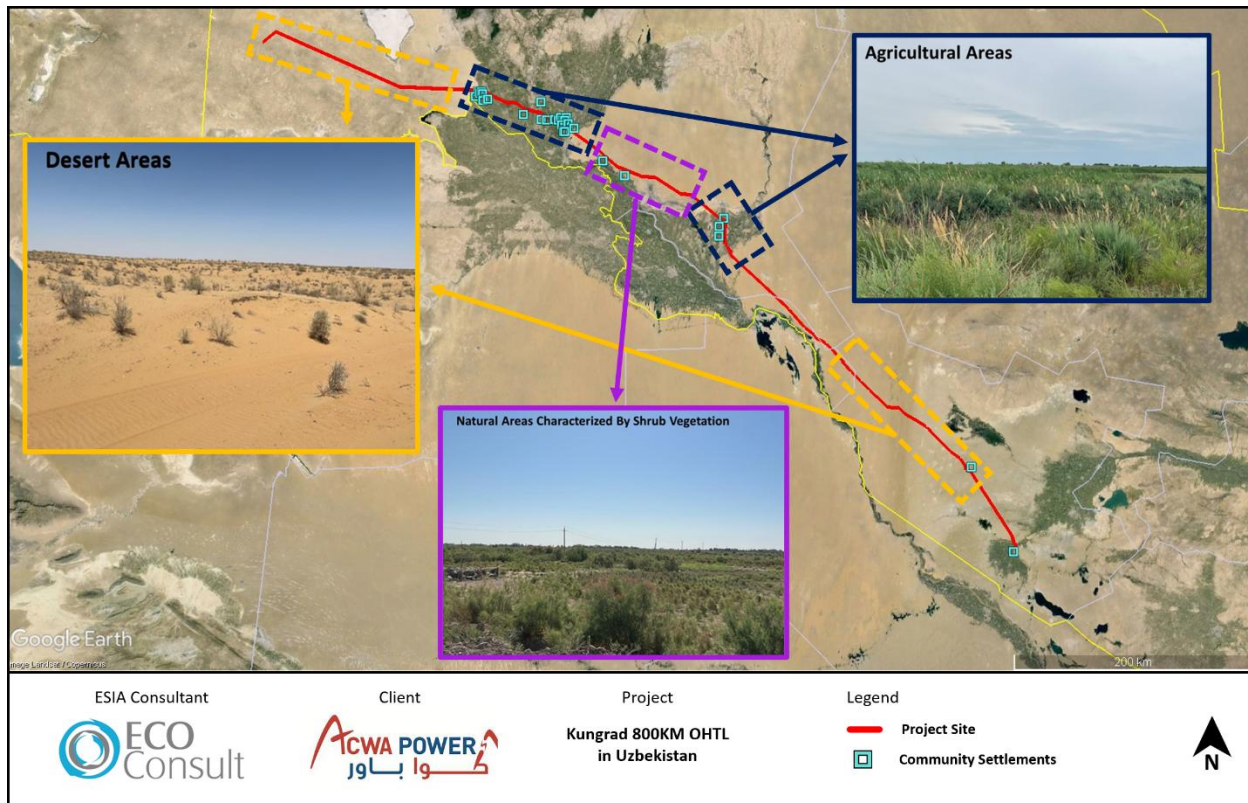


Figure 49: General Landscape across the OHTL

In general, the OHTL generally runs through a uniform topographical profile with minor and gradual variations/changes in elevation, with the exception of two (2) areas as illustrated in the figure below. The first significant change features a 70m drop in elevation, while the second is around 40m.

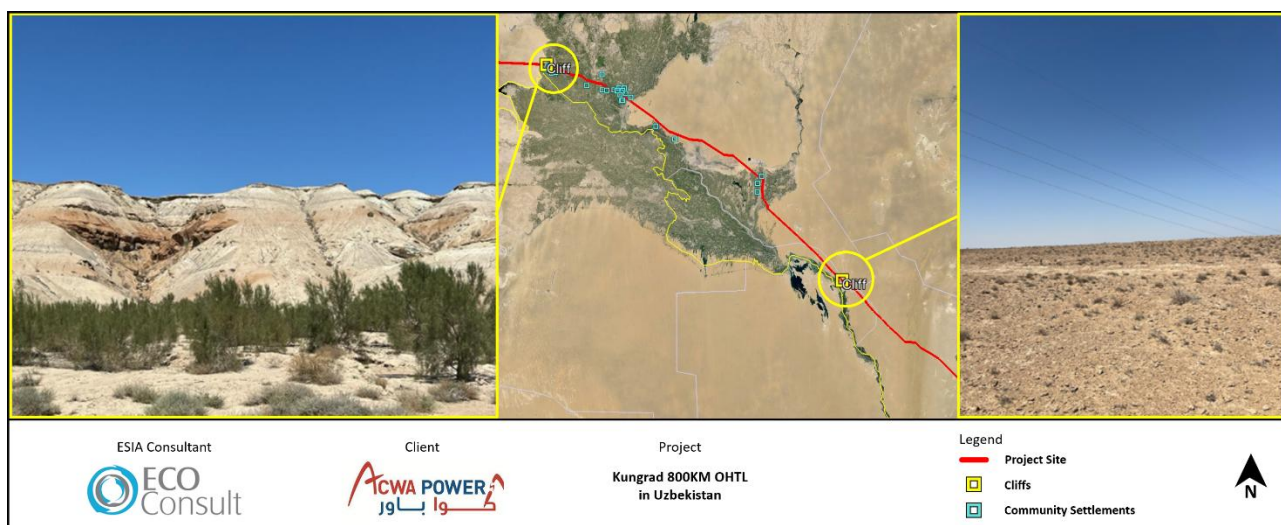


Figure 50: Key Points with Drastic Changes in Topography Along the Route

Visual

For the purpose of the assessment below, critical visual receptors are based on the “Guidelines for Landscape and Visual Impact Assessment (GLVIA)” as per the table below.

Table 33: Critical Visual Receptors

Critical Receptors definition per GLVIA
Residents at home.
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.
Travelers on scenic routes

Based on a site visit undertaken by the ‘E&S Team’, no critical visual receptors were recorded within the OHTL route or a 100m buffer on either side.

A detailed desktop review was undertaken to document all critical visual receptors in accordance with the criteria identified above. A buffer distance of 5km was selected from each end of the OHTL.

Table 34: Critical Visual Receptors Across the OHTL

Town/Village	Distance from OHTL (Km)
Community Settlements	
Karakul	3.2
Gazli	3.55
Qiriqqizabad	4.32
Qirqjoy	4.75
Qiriqqiz	1.25
Beshtom	4.7
Berdaq	4.14
Darbent	2.8
Toqimbet	3.96

Qumayqus awili	3.19
Mamiqshi	1.39
Jiydeli (Zheydeyli)	1.04
Shuyit	4.22
Telman	3.8
Madeniyat	3.53
Aqman'g'it	2.86
Baymaklyaul	4.65
Madeniyat	3.06
Qizilu'y	1.33
Tulegenau)	2.22
Jiydeli	1.07
Taqirko'l	4.23
Birqazanko'l	2.93
Jon'ishqaliko'l	2.43
Sag'ir awil	1.41
Abilla	0.97
Gu'njiliko'l	4.91
Qipshaq	2.28
Nurimbet	4.62
Qran taw (Krantau)	1.66
Recreational Areas	
Ashkul. A public place for to relaxation.	4.75
Yurta Yurt camp	4.22
Ayaz qala yurt camp	4.18
Central Park	2.98
Hippodrome	4.96
Amphitheater	2.65
Archeology and Cultural Heritage Sites	
Azer baba shrine	2.15
Mechet shrine	4.33
Ayaz qala1 remains of fortifications of the Kushan culture	3.94
Ayaz qala2 remains of fortifications of the Kushan culture	3.57
Ruins Ayaz qala remains of fortifications of the Kushan culture	3.45
Ruins 1 of the Aqaz qala fortification	3.23
Ruins 2 of the Aqaz qala fortification	3.19
Ayaz qala 3 remains of fortifications of the Kushan culture	3.39
Oy qala fortress	3.86
Qoy qirilgan qala fortress	0.85
Angha qala fortress	1.47
Meshekli Fortress	4.17
ruins of a Meshsekli historical fortress	4.77

Historical Cemetery Uch uchoq	3.48
Shrine	3.33
Cemetery and historical monuments of Chibirdon ota	0.26
Shrine	4.30
Otesh batir shrine	2.93
Tok taw monument	4.57
Ruins of "Yakke parsan" settlement	4.51
Ruins of "Bezirgen" settlement	1.96
Gunjeli archeological site1	2.53
Gunjeli archeological site 2	2.04
Krantaw medevil settlements	3.95
Burli3 ancient object	4.53
Burli4 ancient object	4.13
Usadba A early medieval castle	1.80
Castle N60 early medieval castle	1.83
Castle N68 early medieval castle	4.20
Noname castle early medieval castle	1.45
Adamli kala early medieval antique monument	1.48
Kuzi kirilgan kala early medieval antique monument	1.21
Kargatishkan kala early medieval antique monument	3.58
Ruins of Meshekli historical fortress	4.63

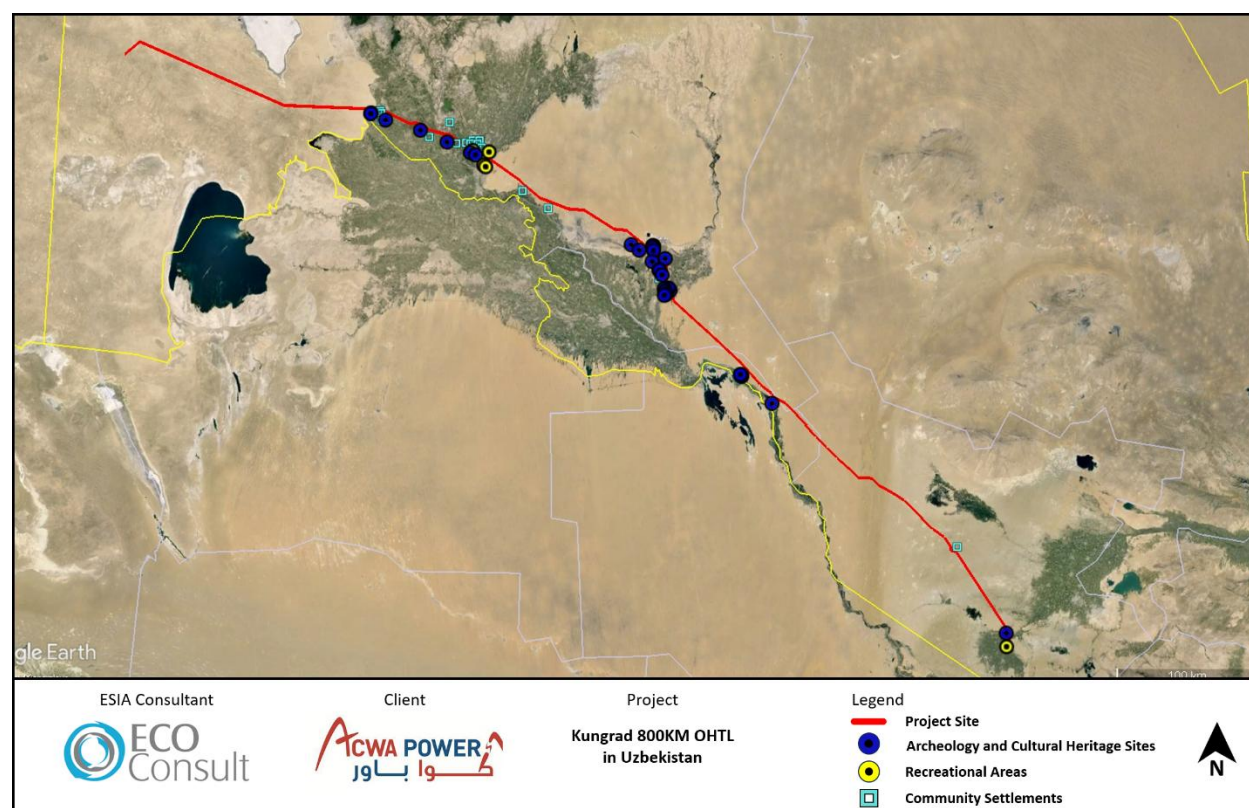


Figure 51: Critical Visual Receptors Across the OHTL

7.2 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.

7.2.1 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.
- Construction vehicle movements to and from the construction site and for general construction operations

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.

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). 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.

Construction Phase		
Type	Negative	N/A
Duration	Medium-term	Limited to construction phase which is 24 months
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
Frequency	Frequent	As they will occur continuously during construction
Timing	Not relevant	Throughout entire construction period
Extent	Medium	Expected within 5km only
Significance	Minor	

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 workday.
 - 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 9.1.1”.
- 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.

7.2.2 Visual Impact during Operation

Key impacts are mainly limited to the operation phase. Visual impacts associated typically concern the OHTL towers themselves (e.g., color, height, and number) and impacts relating to their interaction with the character of the surrounding landscape and the visual receptor which might be present.

However, the towers are not considered mega or huge structures that would impose a key change on the landscape and visual character of the area. Under a worst-case scenario, views from the critical receptors identified earlier could mainly include the OHTL towers. This assumes that there will be a direct line of sight from the receptor to the tower – i.e. that there is no blockage of view due to onsite receptors or difference of in elevation that would prevent the OHTL tower from being visible.

Although the receptor's identified earlier are considered sensitive, the magnitude of change is considered in general to be very small given that it is likely to include just a number of towers that would have direct views and in such a case it would result in a perceptible change in the existing view, and/or without affecting the overall quality and/or character of the view and where the OHTL would form an apparent small element in the wider landscape that may be missed by the observer or receptor.

Taking the above into account, such impacts are likely to be minor.

Operation Phase		
Type	Negative	N/A
Duration	Long-term	Throughout entire operational period

Magnitude	Low	Views will not affect overall quality and/or character of the view may be missed by the observer or receptor
Reversibility	Reversible	Given that
Sensitivity	High	Given that there are sensitive receptors from which views are possible
Likelihood	High	Given nature of activities expected
Frequency	Frequent	Given that towers will permanently be installed
Timing	Not Relevant	Throughout entire operational period
Extent	Medium	Expected within 5km only
Significance	Minor	

Mitigation Measures

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

- A Stakeholder Engagement Plan (SEP) along with a grievance mechanism will be implemented by the Developer. Please refer to the standalone SEP for additional details. In the case grievances are received from any of the sensitive receptors in relation to tower visibility, the Developer should consider planting native vegetation or trees around the receptor location to screen the view through creating buffer zones of natural or landscaped features to help blend the OHTL into the landscape.

Following the implementation of these mitigation measures, the significance of the residual impact 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.

8. 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.

Note: a standalone Livelihood Restoration Plan (LRP) has been developed for the OHTL. The LRP provides in detail the outcomes of land use baseline and impact assessments. A summary is provided below – please refer to LRP for any additional details.

8.1 Baseline Conditions

The Project will require access to land that is comprised of either (1) private leaseholds (which is mostly farmland but includes some desert areas) or (2) state land covering mostly desert land. The transmission line will extend along an estimated 115 kilometres of arable farmland, while the remaining 728 kilometres will be through the open desert or government land which is unoccupied. Some private land is also located in desert area and thus the total length located over private land is 253km. The arable land is irrigated by an extensive network of canals. The most common crops are cotton and rice. Water shortages exist, soil is saline in many areas and some farms have been abandoned. The desert land is largely unutilized, with some sections used for livestock grazing. The OHTL will pass over gravel and asphalt roads, irrigation canals, existing small powerlines, train tracks, gas pipelines, bridges, cemeteries, and grazing areas. Micro-siting of the towers will avoid displacement impacts on this infrastructure.

The displacement impacts of the Project have been established using a detailed cadastral search conducted in May – August 2025 with the cadastral departments of the affected districts and an official valuation study conducted by government approved valuers. The data obtained from cadastral departments was overlayed with the final OHTL design using Geographical Information Systems (GIS). The main displacement impacts are as follows:

1. Agriculture:
 - 1.1. Minimal agricultural impact along 115km of the total 844km due to routing the maximum length of the OHTL through government land which is mostly desert.
 - 1.2. Minimal total permanent impact on arable land of approximately 24.9ha
 - 1.3. Minimal temporary impact on arable land of approximately 633.2ha
 - 1.4. An estimated 202 formal farmers to be impacted by the project (including newly identified farmers).
2. Housing: 22 structures have been identified through physical inspection, however only 18 were inside the servitude and 4 were located close by. Some will require demolition in line with national regulations and will therefore be compensated in alignment with the entitlement framework in the LRP. These structures have been included in the LRP valuation process. Other structures are abandoned or even from the Soviet era and owners are unknown. All structures are non-residential in nature and as such

no Physical Displacement occurs. A register of the 18 structures, their size and usage is included in section 3.7.5 of the LRP.

3. Government land: 72.8ha of government land will be permanently impacted falling on an estimated 92 plots along the route that are owned by public institutions such as veterinary committee, forestry, khokimiyats and others. The land owned by public institutions such as the Veterinary Committee is predominantly desert land and largely unutilized, however livestock grazing is permitted. Permanent and temporary impact on grazing land will be insignificant. The LRP developed has also not attempted to identify livestock herders on desert land along the 729km of OHTL. This is because the temporary and permanent impact on livestock farmers is so minor that it would not be practical to identify these individuals nor compensate for such small losses. Livestock grazing will be able to continue in the servitude, and unused parts of the temporary construction corridor. Livestock will be able to cross the servitude and temporary construction corridor during construction.

4. Linear infrastructure and assets: The impact on linear infrastructure will be very small because the overhead transmission line will be raised above linear infrastructure as far as possible to avoid impacting this infrastructure, and all safety laws and rules followed.

8.2 Impacts

Economic Displacement – Agriculture

- 202 affected households are identified as being economically displaced and will be compensated and will receive livelihood restoration as per the requirements of the LRP. As confirmed during the LRP studies (including socio-economic survey, cadastral study, valuation study and extensive engagement) there were no informal land users identified that would be impacted by the OHTL. It is believed that this is due to the amnesty currently in place, allowing informal land users to register for a formal land lease, and to register their properties with no penalty.” In respect of both formal and informal land users it is to be noted that these farmers are eligible for compensation for loss of crops or improvements to the land in the LRP Entitlements Framework (Table 6-2 of the LRP).
- During consultations, all Khokimiyats were notified that while valuation and assessment is conducted, no land should be put to the auction. Though this situation can change between the current moment and the start of OHTL construction process. The ‘E&S Team’ cannot guarantee (and khokimiyats themselves) cannot guarantee that the land will not be put into auctions, as the land is not allocated to the Developer yet. There may be government instructions to auction the land not belonging to anyone at the moment.
- Farmers are expected to lose a maximum of one season of agriculture within the temporary construction use zones (LRP, section 2.2.3)

Construction Phase – Permanent Impact		
Type	Negative	N/A
Duration	Long-term	Throughout entire operational period
Magnitude	Low	Minimal permanent impact on arable land of 24.9ha by the tower bases. The permanent acquisition of land for the towers is anticipated to only affect 0.01% of the total affected private leaseholds
Reversibility	Irreversible	Given that it will be throughout entire operational period

Sensitivity	High	Given that it entails impacts on arable land of farmers which entails economic resettlement
Likelihood	High	Given nature of activities expected
Frequency	Frequent	Given that towers will permanently be installed
Timing	Not Relevant	Throughout entire operational period
Extent	Minor	Expected within set footprint
Significance	Moderate	
Construction Phase – Temporary Impact		
Type	Negative	N/A
Duration	Short-term	Throughout the construction phase only
Magnitude	Low	Minimal temporary impact on arable land of 633.2ha. The temporary construction corridor and laydown areas will limit access to 0.3% of the total private farmland for one season (Scheduled over two years across the entire OHTL). access will be granted after completion of the construction phase into the servitude.
Reversibility	Reversible	Given that it will be throughout the construction phase only
Sensitivity	High	Given that it entails impacts on arable land of farmers which entails economic resettlement
Likelihood	High	Given nature of activities expected
Frequency	Frequent	Given that impact will be continuous during construction
Timing	Not Relevant	Throughout entire operational period
Extent	Minor	Expected within set footprint
Significance	Moderate	

The following identifies the mitigation measures that will be implemented by the Developer to address the impact above. With the implementation of the below, the residual impact can be considered as not significant.

Mitigation and Monitoring Measures

The Developer has developed and will implement a Livelihood Restoration Plan (LRP) in accordance with Uzbekistan legislation, ADB, EBRD and IFC safeguards for involuntary resettlement. The LRP has involved the following key tasks: stakeholder engagement and grievance management, assets inventory, valuation study, socio-economic baseline census, drafting and disclosing livelihood restoration planning measures, drafting the Eligibility and Entitlement Framework for compensation, and drafting the LRP document. Following approval the Developer will present, disclose, and finalize the LRP document. Thereafter, the developer will implement the LRP in full. These key tasks are detailed in the sections that follow:

Task 1 - Stakeholder Engagement Phase 1

The LRP development commenced with an initial phase of stakeholder engagement. A grievance mechanism was established prior to this initial phase of engagement and run by the consultant during the LRP phase. Thereafter will become the responsibility of the Developer. This initial phase of engagement undertook the following disclosures to the stakeholders:

- Explained the proposed project.
- Explained the potential impacts on land and livelihoods.

- Explained the livelihood restoration planning process, step by step.
- Established and communicated the cut-off date and related conditions.
- Informed Project-Affected Parties (PAPs) about the assets inventory, valuation, and socio-economic survey.
- Explained and provided contact details and access points for the grievance mechanism.

Stakeholders include regional government officials, district government officials, mahalas of project-affected communities, and PAPs themselves. A background information document was developed and distributed to stakeholders prior to the disclosure. This contains the information that was disclosed. The background information document is in a language and non-technical format that is understandable to all the stakeholders. Stakeholders were given the opportunity to clarify any aspect of the livelihood restoration planning process and provide their input into the process. This phase of engagement has been documented through meeting records, attendance registers, and photographs. Key issues raised by stakeholders have been summarized, considered and adjustments made to the livelihood restoration planning process. Meaningful input from women, and vulnerable groups were obtained through focus group discussions undertaken and there were documented. Subsequently these inputs were considered, and the process adjusted as required.

Task 2 – Assets inventory, valuation, and socio-economic baseline census

As reported in the LRP (section 5.2), “The socio-economic survey was undertaken by the local consultant team, Green Business Innovations, throughout the months of October and November 2023 and was then updated in August – September 2025 both to incorporate new households which required onboarding into the project after design changes and land auctions, but also critical data on demographic and vulnerability for existing households was checked and updated where necessary.. The aim of this survey was to establish a set of important socio-economic baseline data of which the Project can assess and monitor its impact on the affected households throughout the project lifecycle. The survey also provides key insight from the PAPs regarding their sentiments towards the Project, concerns and input into the livelihood restoration planning process. These baselines interviewed a total of 202 affected leaseholders belonging to 193 households which consisted of a total of 1079 household members.

The surveys were undertaken by 6 surveyors: 4 in Karakalpakstan and 2 Surveyors in Bukhara and Khorazm. A surveyor conducted the surveys using the ODK Collect Forms app in Android tablets. The forms were built with the ODK Software and included multiple choice questions, text notes, photos, GPS locations, skip logic, the implementation of multiple languages, repeating elements, and other crucial aspects. Data on the tablets were collected in either online or offline formats. All surveys were conducted in-person.”

A valuation study was undertaken, consisting of an asset inventory survey and valuation of these assets is the basis for developing the compensation packages for each affected party as is required by national law and international good practice. Land, buildings, and trees within the entire survitudes (RoW) are surveyed. Crops are only be surveyed within the temporary and permanent impact zone (15m wide (divided into 3 strips near the centerline of each powerline, and a rectangular buffer of 7.5m from each side of the powerline tower bases). Trees above 6 meters and structures which are located within the wider security zone are also valued and will be compensated.

The LRP reports (section 6.4) “Consistent with national law, the Project has appointed certified valuers to undertake a valuation study covering 100% of private affected right-holders. This study has been used to determine the scope of land access (See LRP Chapter 3: Land Access, Minimization and Scope of Displacement) and a cost estimate.”

The valuation study includes the following key tasks:

- Collecting cadastral data for all land parcels along the OHTL route.
- Collecting three years of financial records from the agricultural department to assist in calculating lost profit.
- Undertaking market rates research to gather input rates into full replacement value rate calculations. This involves triangulation of primary data with existing government compensation rates.
- An inventory of affected assets within the servitudes (RoW), temporary impact zone and permanent impact zone is undertaken, and the data used in valuation, in tandem, with the cadastral and financial records. The inventory will be phased, with the temporary impact zone undertaken pre-financial close and submission of the LRP, and the permanent impact zone modelled prior to submission of the LRP and updated based on final tower locations after submission of the initial draft of the LRP to the lenders.
- A valuation report will be produced for each PAP, showing detailed calculations of their compensation.
- Each farmer will be explained their valuation in detail and be requested to sign-off on their respective valuations at the point when the valuation reports are finalized after final tower locations are sited. Farmers will also be explained that they may conduct their own independent valuations if they prefer.

The Developer, in collaboration with the Government of the sovereign Republic of Karakalpakstan and Government of Uzbekistan, previously called a cut-off for eligibility for compensation. All parties owning or making use of land and/or assets within the cut-off zone, before this cut-off date, will be eligible for compensation for their losses. Households that were onboarded after this cut-off date due to route changes or land auctions will also be eligible for compensation. According to national entitlements which is equivalent to ADB requirements the cash compensation at replacement cost for primary (and secondary crops if any) on affected land based on 1 year of production costs (inputs) plus an allowance equivalent to 1 year average net income based on the average income over the past 3 years shall be provided

Market rates and average yields have been localized to the respective districts, to ensure accurate calculation of full replacement value. Compensation rates and formulas will include all components to enable full restoration of an asset including new materials, labor, transport, transaction costs, taxes, and any other incidental costs. Where transitional losses occur during the period it takes to restore assets, these losses are calculated and included in the valuation report.

The valuation study was completed in Q4 2025 after the EPC Contractor finalized the route design and all properties impacts were known.

Task 3 – Draft livelihood restoration planning measures

After the data collection and valuation phase, the livelihood restoration planning measures are drafted based on the data collected. These planning measures include the eligibility and entitlement framework,

livelihood restoration programs, gender, and vulnerable people's measures. The current livelihood restoration programs included in LRP include:

- Water Pump Package & High Value Crop/Orchard and Salinity irrigation training
- Solar Pannel Package & High Value Crop/Orchard and Salinity irrigation training
- Vocational Training Support
- Fodder Chopper/Pelletizer Machine
- Capital Support – Materials / Equipment
- Sewing Machine & Enterprise Program – Handicrafts (2-Year Cycle)
- Dairy Processing Machine & Enterprise Program – Food Processing (2-Year Cycle)
- Vulnerable Household Livelihood Support for Poultry (2-Year Cycle)

The livelihood restoration planning measures have been workshopped internally with the Developer to ensure alignment prior to disclosure. The LRP has been prepared in close coordination with PAPs based on their needs and interests.

Task 4 – Stakeholder Engagement Phase 2

A second phase of stakeholder engagement was undertaken in November 2025 to disclose the draft LRP including the livelihood restoration planning measures including the eligibility and entitlement framework, livelihood restoration programs, gender measures, and vulnerable people's measures.

This phase of engagement included and is aimed to improve PAP understanding of the livelihood restoration planning process, the entitlement matrix, draft livelihood restoration measures, the valuation process, the cut-off date, and the grievance mechanism.

Stakeholders included regional government officials, district government officials, mahalas of project-affected communities, and PAPs themselves.

Prior to disclosure, an information document was developed and distributed to stakeholders, containing the draft livelihood restoration planning measure content for disclosure. The background information document is in a language and non-technical format to be understandable to all the stakeholders.

During this phase of engagement, stakeholders were given meaningful opportunities to provide their input into the draft livelihood restoration planning measures. Express opportunities for meaningful input from women, and vulnerable groups will be enabled during the phase of engagement, documented, and considered.

This phase of engagement was documented through meeting records, attendance registers, and photographs in the LRP and its appendices. Key issues are summarized and considered, and adjustments were made to the livelihood restoration planning measures taking into consideration the input of the stakeholders.

Task 5 – Implementation

The Developer will implement the measures of the LRP in full. This may take place in a phased manner in accordance with the LRP schedule, which will be carefully aligned with the construction schedule of the Project to avoid and minimize displacement impacts. The LRP will be considered as having been completely implemented after this is confirmed by a third-party completion audit. Farmers will be given advanced notice to harvest their crops and the construction schedule shall be adjusted to avoid crop season.

Due to the general vulnerability of households in the Karakalpakstan region, and generally, the Developer, and its EPC contractor, must undertake the following measures for the entire OHTL:

- The Developer will ensure that the EPC contractor is required to schedule the construction of sections of the OHTL to avoid temporary impacts on agriculture during the growing seasons as far as is practically possible.
- Avoid the blockage or disturbance to irrigation, but careful planning of culverts, and careful construction if near to canals with measures to avoid erosion and sedimentation of the canals.
- Micro-siting of the powerline to ensure that tower locations do not temporarily or permanently impede irrigation of areas of the farm/s that extend beyond the temporary construction zones during construction, or the permanent tower base locations. If it is determined that impacts will exceed those defined in this LRP, the project-affected party must be provided with compensation and livelihood restoration support for all potential losses prior to the impact occurring, to ensure that their livelihoods are restored or improved prior to undertaking the construction activity.
- Establish a fast-track method to rapidly value and compensate for losses in the event of construction of the OHTL causing an unintended impact on agriculture beyond the temporary construction area or permanent impact area.
- The EPC contractor must plan very carefully to avoid the blocking of canals, and if canals are blocked, immediate intervention to excavate. Construction of culverts, if required, to be timed to ensure no risk of lost irrigation.

Vulnerable people

It is acknowledged that loss of land is irreversible and may affected vulnerable people to a greater degree. As noted above and in the LRP, permanent land loss is minimal and will be further minimized by the EPC Contractor through a consultative process during micro-siting of the tower bases.

The LRP undertook a Vulnerable People's Study (Chapter 8) identified a range of mitigatory measures such as

- “The Company will ensure that the EPC contractor is required to schedule the construction of sections of the OHTL to avoid temporary impacts on agriculture during the growing seasons as far as is practically possible
- Avoid the blockage or disturbance to irrigation, but careful planning of culverts, and careful construction if near to canals with measures to avoid erosion and sedimentation of the canals

- Micro-siting of the powerline to ensure that tower locations do not temporarily or permanently impede irrigation of areas of the farm/s that extend beyond the temporary construction zones during construction, or the permanent tower base locations. If it is determined that impacts will exceed those defined in this LRP, the project-affected party must be provided with compensation and livelihood restoration support for all potential losses prior to the impact occurring, to ensure that their livelihoods are restored or improved prior to undertaking the construction activity
- Establish a fast-track method to rapidly value and compensate for losses in the event of construction of the OHTL causing an unintended impact on agriculture beyond the temporary construction area or permanent impact area.
- The EPC contractor must plan very carefully to avoid the blocking of canals, and if canals are blocked, immediate intervention to excavate. Construction of culverts, if required, to be timed to ensure no risk of lost irrigation.
- The LRP identifies specific households which meet a set of vulnerability criteria. A set of specific measures has been proposed to address the adverse effects on specific vulnerable households identified in the LRP. This includes bespoke livelihood restoration initiatives and focused monitoring and support.

Economic Displacement - land fragmentation and land access

The LRP (Section 2.2.4) established that “There will be no permeant access roads established for the Project for construction or O&M activities. Access to construction vehicles and machinery during construction and for maintenance activities during operation will be only to tower locations. Access will be through existing tracks or dirt roads as applicable that lead directly to each exact footprint location.” Consequently, no economic displacement impacts are anticipated due to loss of access to productive lands.

Table 2.1 in the LRP identifies the land take for the various types of tower footprints. These range from 122 sqm to 403 sqm. This will have a very minor impact on the land parcels of the farms and will not fragment the useable land. Furthermore the EPC Contractor will undertake micro siting of the precise locating of the tower base in consultation with the farmer. This will further mitigate impacts and avoid fragmentation.

Unaffected portions of an affected arable plot are included in the valuation and compensation if the same becomes unviable after impact. Viable and non-viable portions were determined by the registered valuer and incorporated into the valuation calculation of each PAH.

Micro-siting of the powerline has already been done to ensure that tower locations do not temporarily or permanently impede irrigation of areas of the farm/s that extend beyond the temporary construction zones during construction, or the permanent tower base locations, further small adjustments to the locations may still occur during construction. If it is determined that impacts will exceed those defined in this LRP, the PAH must be provided with compensation and livelihood restoration support for all potential losses prior to the impact occurring, to ensure that their livelihoods are restored or improved prior to undertaking the construction activity.

Physical Displacement

22 structures have been identified through physical inspection, however only 18 were inside the servitude and 4 were located close by. Some will require demolition in line with national regulations and will therefore be compensated in alignment with the entitlement framework in the LRP. These structures have been included in the valuation process. Other structures are abandoned or even from the Soviet era and owners are unknown. All structures are non-residential in nature and as such no Physical Displacement occurs. A register of the 18 structures, their size and usage is included in the LRP. The LRP preliminary asset inventory has not found any residential structures and no physical displacement is anticipated.

Therefore, physical displacement impacts are irrelevant.

Economic Displacement: Grazing & Livestock Herders

A small number (approximately 2%) of commercial leaseholder farmers identified in the LRP have used their land as private paddocks for sheep (mostly karakul variety) and cattle and consider this as their primary livelihood. These farmers will be able to continue grazing under the OHTL and will be compensated according to the Entitlement Framework in the LRP and be entitled to livelihood restoration which includes targeted initiatives aimed at livestock owners.

The LRP also addressed the issue of impacts on livestock herders on government and noted: “The government Committee for Livestock also owns large areas of desert land, on which they permit use by communal livestock herders. This LRP has not attempted to identify livestock herders on desert land along the 728km of OHTL that runs through desert. This is because the temporary and permanent impact on livestock farmers is so minor that it would not be practical to identify these individuals nor compensate for such small losses. Livestock grazing will be able to continue in the servitude, and unused parts of the temporary construction corridor. Livestock will be able to cross the servitude and temporary construction corridor during construction.” (LRP section 7.1)

Given the very small permanent impacts, the vast areas of government grazing land available and the mitigation already included in the LRP for livestock owning leaseholders it is concluded livestock herders and farmers including business owners will not experience any economic displacement.

Construction Phase		
Type	Negative	N/A
Duration	Medium-term	Based on issues provided above.
Magnitude	Low	
Reversibility	Reversible	
Sensitivity	Low	
Likelihood	Low	
Frequency	Rare	
Timing	Not relevant	
Extent	Low	
Significance	Not significant	

9. WASTE MANAGEMENT

This section provides an assessment of potential impacts from waste management 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 Impacts

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

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 NEGU during the operation phase (although during operation it is expected to be very limited as it will only include minimal and specific routine and non-routine maintenance activities..

Construction Phase		
Type	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Medium-term	
Magnitude	Medium	
Reversibility	Reversible	
Sensitivity	Medium	
Likelihood	Medium	
Frequency	Frequent	
Timing	Not relevant	
Extent	Medium	
Significance	Moderate	

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 13.2.6”.

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 NEGU during the operation phase:

- 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.
- Distribute a sufficient number of properly contained containers clearly marked as "Construction Waste" for the dumping and disposal of construction waste.
- 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); This is a key requirement given that with the Project's workforce there could be huge amounts of waste that could be recycled (e.g., plastic from water bottles supplied for drinking purposes). “Section 13.1.7” identifies further details on recycling companies and coordination / engagement with such entities should be considered;
- 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 the EPC Contractor during the construction phase and NEGU during the operation phase:

- 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 (if applicable). 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 13.2.6”.

Mitigation Measures

The following identifies the mitigation measures to be applied by the EPC Contractor during the construction phase and NEGU during the operation phase (if applicable):

- 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;
- Ensure that constructed septic tanks during construction 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 the EPC Contractor during the construction phase and NEGU during the operation phase:

- 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 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 13.2.6”.

Mitigation Measures

The following identifies the mitigation measures to be applied by the EPC Contractor during the construction phase and NEGU during the operation phase (as applicable):

- 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 the EPC Contractor during the construction phase and NEGU during the operation phase:

- 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 operation activities entails 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 the EPC Contractor during the construction phase and NEGU during the operation phase (as applicable):

- 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 switching station 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 the EPC Contractor during the construction phase and NEGU during the operation phase:

- 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.

9.1.2 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 towers, 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	Medium-term	
Magnitude	Medium	
Reversibility	Reversible	
Sensitivity	Medium	

Likelihood	Medium	
Frequency	Periodic	
Timing	During rain events	
Extent	Medium	
Significance	Moderate	

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 sediment 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;
- Erect wind erosion control that could include: (i) water application on disturbed soils of the project to control dust; (ii) minimizing removal of topsoil; (iii) avoid deposits if loose spoils.
- Return surfaces disturbed during construction to their original (or better) condition to the greatest extent possible;

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.

10. BIODIVERSITY

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to biodiversity. 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

10.1.1 Standards and Regulatory Requirements

(i) National Requirements

The management of protected areas in the RUz depends on different bodies, from the Cabinet of Ministers at national level to regional and local authorities. The main institutions responsible of managing these sites and for protection nature resources, biodiversity and hunting are:

- Ministry of Ecology, Environmental Protection, and Climate Change¹¹;
- Department of Protection of Water, Land Resources and Subsoil under the Ministry;
- Department of Biodiversity and Protected Areas under the Ministry;
- Department for Monitoring the Implementation of Forest Legislation Requirements under the State Forestry Committee;
- Ministry of Water Resources;
- The State Committee on Geology and Mineral Resources; and
- Regional administrations (“Khokimiyat”).

Protected areas fall under the law “On Natural Protected Areas” (updated 2014) that follow the IUCN classification of Protected Areas Management (IUCN 1994); these account for a total 10,634,666 ha. There are 7 types of Protected Areas under Uzbekistan law, as follows:

- State Sanctuary;
- Complex (landscape) Reserves;
- Natural Parks;
- State Natural Monuments;
- Territories for the preservation, reproduction and restoration of individual natural objects and complexes;
- Protected Landscape; and

¹¹ As noted earlier this was previously known as State Committee on Ecology and Environmental Protection (SCEEP)

- Territories for the management of individual natural resources.

(ii) Lender Requirements

European Bank for Reconstruction and Development (EBRD)

EBRD PR6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources establishes general requirements for the conservation of biodiversity and sustainable management of living natural resources covering aspects such as the assessment of issues and impacts on biodiversity.

Where applicable the Project will follow the EBRD's E&S Eligibility Criteria for Onshore Wind Power Projects which includes targets set out by the EU Biodiversity Strategy including the Habitats Directive (92/43/ECC), the Birds Directive (2009/147/EC), the Bern Convention (June 1973) and the EU Regulation on Invasive Alien Species (1143/2014).

The Birds Directive (2009/147/EC)¹²

Often migratory, wild bird species can only be protected by cooperating across borders. Urban sprawl and transport networks have fragmented and reduced their habitats, intensive agriculture, forestry, fisheries and the use of pesticides have diminished their food supplies, and hunting needs to be regulated in order not to damage populations. Concerned with their decline, Member States unanimously adopted the Directive 79/409/EEC in April 1979. It is the oldest piece of EU legislation on the environment and one of its cornerstones. Amended in 2009, it became the Directive 2009/147/EC PDF.

Habitat loss and degradation are the most serious threats to the conservation of wild birds. The Directive therefore places great emphasis on the protection of habitats for endangered and migratory species. It establishes a network of Special Protection Areas (SPAs) including all the most suitable territories for these species. Since 1994, all SPAs are included in the Natura 2000 ecological network, set up under the Habitats Directive 92/43/EEC.

500 wild bird species across Europe are protected under the five annexes to the Birds Directive as explained in the table below.

Table 35: Annexes to the EU Birds Directive

Annex	Explanation
I	194 species and sub-species are particularly threatened. Member States must designate Special Protection Areas (SPAs) for their survival and all migratory bird species.
II	82 bird species can be hunted. However, the hunting periods are limited and hunting is forbidden when birds are at their most vulnerable: during their return migration to nesting areas, reproduction and the raising of their chicks.

¹² Source: http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

III	Overall, activities that directly threaten birds, such as their deliberate killing, capture or trade, or the destruction of their nests, are banned. With certain restrictions, Member States can allow some of these activities for 26 species listed here.
IV	The directive provides for the sustainable management of hunting but Member States must outlaw all forms of non-selective and large scale killing of birds, especially the methods listed in this annex.
V	The directive promotes research to underpin the protection, management and use of all species of birds covered by the Directive, which are listed in this annex.

The Habitats Directive (92/43/EEC¹³)

Adopted in 1992, the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.

Annex I list 233 European natural habitat types, including 71 priorities (*i.e.*, habitat types in danger of disappearance and whose natural range mainly falls within the territory of the European Union).

All in all, over 1,000 animal and plant species, as well as 200 habitat types, listed in the directive's annexes are protected in various ways:

Annex II species (about 900): core areas of their habitat are designated as sites of Community importance (SCIs) and included in the Natura 2000 network. These sites must be managed in accordance with the ecological needs of the species.

Annex IV species (over 400, including many annex II species): a strict protection regime must be applied across their entire natural range within the EU, both within and outside Natura 2000 sites.

Annex V species (over 90): Member States must ensure that their exploitation and taking in the wild is compatible with maintaining them in a favorable conservation status.

Definition of EBRD Critical Habitat and Priority Biodiversity Features

PR6 defines critical habitat and priority biodiversity features as:

Critical Habitat:

The most sensitive biodiversity features; which comprise one of the following:

- Highly threatened or unique ecosystems;
- Habitats of significant importance to endangered or critically endangered species;
- Habitats of significant importance to endemic or geographically restricted species;
- Habitats supporting globally significant migratory or congregatory species;

¹³ Source : http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

- Areas associated with key evolutionary processes; or
- Ecological functions that are vital to maintaining the viability of biodiversity features described in this paragraph

Priority Biodiversity Features (PBF):

This concept replaces the previous definition of natural habitat and encompasses a sub-set of biodiversity that is particularly irreplaceable or vulnerable, but at a lower priority level than critical habitats; which include:

- Threatened habitats;
- Vulnerable species;
- Significant biodiversity features identified by a broad set of stakeholders or governments (such as Key Biodiversity Areas or Important Bird Areas); and
- Ecological structure and functions needed to maintain the viability of priority biodiversity features.

The criteria for the determination of Critical Habitat Features and those defined as Priority Biodiversity Features are shown in the table below.

Table 36: Criteria and Conditions for Identifying Critical Habitats and Priority Biodiversity Features*

Criterion	Priority Biodiversity Feature	Critical Habitat
1. Priority ecosystems		
<i>Threatened ecosystems</i>	(PR6 para. 12-i)	(PR6 para. 14-i)
(a) Habitats listed in Annex 1 of EU Habitats Directive (EU members only) or Resolution 4 of Bern Convention (signatory nations only)	(a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention	(a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive marked as “priority habitat type”
(b) IUCN Red-List EN or CR ecosystems	(b) EAAA** < 5% of the global extent of an <i>ecosystem</i> type with IUCN status of CR or EN	(b) EAAA ≥ 5% of global extent of an ecosystem type with IUCN status of CR or EN
		(c) EAAA is ecosystem determined to be of high priority for conservation by national systematic conservation planning
2. Priority Species and their Habitats		
<i>Threatened species</i>	(PR6 para. 12-ii)	(PR6 para. 14-ii)
(a) Species and their habitats listed in EU Habitats Directive and Birds Directive (EU members only) or Bern Convention (signatory nations only)	(a) EAAA for species and their habitats listed in Annex II of Habitats Directive, Annex I of Birds Directive, or Resolution 6 of the Bern Convention	(a) EAAA for species and their habitats listed in Annex IV of the Habitats Directive (See EU restrictions)
(b) IUCN Red List EN and CR species	(b) EAAA supports < 0.5% of global population OR < 5 reproductive units of a CR or EN species.	(b) EAAA supports ≥ 0.5% of the global population AND ≥ 5 reproductive units of a CR or EN species.
(c) IUCN Red List VU species	(c) EAAA supports VU species.	

Criterion	Priority Biodiversity Feature	Critical Habitat
(d) Nationally or regionally (e.g., Europe) listed EN or CR species	(d) EAAA for regularly occurring nationally or regionally listed EN or CR species.	(c) EAAA supports globally significant population of VU species necessary to prevent a change of IUCN Red List status to EN or CR, and satisfies threshold (b) (d) EAAA for important concentrations of a nationally or regionally listed EN or CR species
<i>Range-restricted species</i>	(PR6 para 12-ii) (a) EAAA for regularly occurring range-restricted species	(PR6 para. 14-iii) (a) EAAA regularly holds $\geq 10\%$ of global population AND ≥ 10 reproductive units of the species***
<i>Migratory and congregatory species</i>	(PR6 para 12-ii) (a) EAAA identified per Birds Directive or recognized national or international process as important for migratory birds (esp. wetlands)	(PR6 para. 14-iv) (a) EAAA sustains, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population at any point of the species' lifecycle. (b) EAAA predictably supports ≥ 10 percent of global population during periods of environmental stress

*Quantitative thresholds derived from IUCN Key Biodiversity Area Standard and aligned with International Finance Corporation's (IFC) Guidance Note 6 (rev. 2019)

**EAAA = *ecologically appropriate area of analysis*, as defined above

***The IUCN Key Biodiversity Areas standard cites the following definition for reproductive unit: "the minimum number and combination of mature individuals necessary to trigger a successful reproductive event at a site. Examples of five reproductive units include five pairs, five reproducing females in one harem, and five reproductive individuals of a plant species."

International Finance Corporation (IFC)

The biodiversity section of this ESIA also follows the IFC PS6 (2012) and associated Guidance Note (GN6 published on January 1, 2012 and last updated June 14, 2021) on biodiversity conservation and sustainable management of living natural resources.

The IFC PS6 main objectives are:

- To protect and conserve biodiversity
- To maintain the benefits from ecosystem services

- To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities

IFC PS6 requires that a conservation value is allocated to the ecological features (protected areas, habitats and species) which are likely to be directly or indirectly impacted in the Project Area of Influence (AoI). Under the IFC guidance, the requirements of PS6 apply to projects in all habitats, whether or not those habitats have been previously disturbed and whether or not they are legally protected. Specifically, a project is required to:

- Assess significance of project impacts on all levels of biodiversity as an integral part of the social and environmental assessment process
- Take into account differing values attached to biodiversity by specific stakeholders
- Assess major threats to biodiversity, especially habitat destruction and invasive alien species

In accordance with IFC PS6, habitats are divided into modified, natural and critical habitats. Critical habitats can be either modified or natural habitats supporting high biodiversity value, including:

- Habitat of significant importance to critically endangered and/or endangered species (International Union for Conservation of Nature and Natural Resources (IUCN) Red List)
- Habitat of significant importance to endemic and/or restricted-range species
- Habitat supporting globally significant concentrations of migratory species and/or congregatory species
- Highly threatened and/or unique ecosystems
- Areas associated with key evolutionary processes

Since habitat destruction is recognized as a major threat to the maintenance of biodiversity and to assess likely significance of impacts, IFC PS6 requires the following depending on habitat status:

Modified Habitat: exercise care to minimize any conversion or degradation of such habitat, depending on scale of project, identify opportunities to enhance habitat and protect and conserve biodiversity as part of operations.

Natural Habitat: developer will not significantly convert or degrade such habitat unless no financial/technical feasible alternatives exist, or overall benefits outweigh cost (including those to biodiversity), and conversion or degradation is suitably mitigated. Mitigation must achieve no net loss of biodiversity where feasible; offset losses through creation of ecologically comparable area that is managed for biodiversity, compensation of direct users of biodiversity.

Critical Habitat: in areas of critical habitat the developer will not implement project activities unless there are no measurable adverse impacts on the ability of the critical habitat to support established populations of species described or on the functions of the critical habitat; no reduction in population of a recognized critically endangered or endangered species and lesser impacts mitigated as per natural habitats.

*IUCN Red List of Threatened Species*¹⁴

¹⁴ <https://www.iucnredlist.org/>

The IUCN Red List of Threatened Species is the world's most comprehensive information source on the extinction risk of animals, fungi and plants. Assessors place species into one of the IUCN Red List Categories, based on a series of assessment criteria. For each species, The IUCN Red List provides information about its range, population size, habitat and ecology, use and/or trade, threats and conservation actions. The IUCN Red List Categories indicate how close a species is to becoming extinct.

Species are assessed against five criteria based on geographic range, population size and population decline/increase, in addition to extinction probability analyses. These criteria determine which category is most appropriate for the species.

Species in the Vulnerable, Endangered and Critically Endangered categories are collectively described as 'threatened'. The IUCN Red List does not include Not Evaluated species. Critically Endangered species may also be tagged as Possibly Extinct or Possibly Extinct in the Wild.

10.1.2 Critical Habitat Assessment

(i) Introduction

Critical Habitat' is a concept applicable to several international financial lending institutions, designed to enable the identification of areas of high biodiversity value in which development would be particularly sensitive and require special attention. The concept has been developed in consultation with numerous international conservation organizations and thus takes into account many pre-existing conservation approaches, such as Key Biodiversity Areas, Important Bird Areas, and Alliance for Zero Extinction Sites.

The concept is further defined in the following documents:

- EBRD PR6 Biodiversity Conservation and Sustainable Management of Living Natural Resources
- IFC PS 6 on Biodiversity Conservation and Sustainable Management of Living Resources.
- Asian Development Bank (ADB) Safeguard Policy Statement (SPS) 2009, ADB Environment Safeguards A Good Practice Sourcebook Draft Working Document.
- A number of multilateral banks have policies closely aligned with PS6, and more than 75 private banks signed up to the Equator Principles have an implicit commitment to PS6.

The CHA comprises several steps in order to ensure the process is robust:

- Initial Screening – which involves making stakeholder consultation and/or an initial published and grey literature IUCN Red List of Threatened Species; IFC PS6 GN6 (IFC, 2012); EBRD PR6; Biodiversity Conservation and Sustainable Management of Living Natural Resources Guidance Note (EBRD 2022) and; World Database of Key Biodiversity Areas.
- Establishment of baseline which includes field data collection and verification of available information e.g., Habitat Survey; Bird Survey; Bat Survey; Invertebrate Survey; Reptile Survey.
- Critical habitat determination:
 - a) Identification of appropriate scale for assessment
 - b) Determination of Ecologically Appropriate Area of Analysis.
 - c) Assessment against Critical Habitat criteria.

(ii) Literature Review and Stakeholder Consultation

The Critical Habitat Assessment was based on existing literature in addition to global and regional datasets, including Integrated Biodiversity Assessment Tool (IBAT, 2020). All species classified as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) in the IUCN Red List have been screened within the CHA, as well as those species considered to be endemic, near-endemic or range restricted and those of elevated in-country conservation status (e.g., UzRDB CR or EN Species).

The assessment has been conducted using the best recent and available information at the time of its production and the full results of the Critical Habitat Screening and Assessment are included as a standalone document – **Kungrad 1.5GW Wind Farm Critical Habitat Assessment (CHA)**.

(iii) Scale of Assessment

A Critical Habitat Assessment is usually carried out at a landscape scale, using Ecologically Appropriate Areas of Analysis (EAAA) for determining the presence or absence of Critical Habitat qualifying features under PS6 Criteria 1 – 3 and PR6 Criterion 2 – Priority Species and their Habitats. They are identified at a landscape scale, considering large-scale ecological processes where appropriate, and can therefore be much larger than the project concession or lease area itself. The principles of determination of EAAA only apply to terrestrial areas and cannot be applied to airspace above a site unless it is associated directly with the utilization of a terrestrial habitat.

The Critical Habitat Assessment (CHA) methodology described in IFC's Guidance Note 6 heavily draws on the IUCN's Key Biodiversity Area (KBA) Standard, which focuses on geographic areas of land and water that are amenable to site-based conservation. It is for this reason that, for birds, the CHA methodology can be readily applied to terrestrial and water areas, such as stopover points and breeding grounds where concentrations of birds are dependent on the conservation of the habitat at these areas. Considering the airspace in a CHA is more challenging.

Birds utilizing important terrestrial areas will naturally also use the airspace above and around it. Under certain circumstances, this airspace should be considered as part of the habitat and part of the EAAA of a CHA.

Using this approach, a CHA would not be conducted with respect to the airspace where there is no associated important terrestrial area used by birds (or concentrations of them) and no intersection with the Project footprint, which will often be the case for long-distance migrants using high altitude airspace between continents or countries. In this scenario, it would be difficult or impossible to delineate the airspace EAAA at this large scale, recalling that "critical habitat boundaries should be equivalent in scale to areas mapped for practical site-based conservation management activities" PS6 GN59). Without an EAAA, the Critical Habitats thresholds cannot be applied. It is also important to note that the location of a project within a recognized bird migratory corridor (flyway) does not automatically generate high collision risk, not trigger CH determination, because most bird migration activity occurs in a diffuse "broad front" pattern, and recognized bird migration corridors are as ubiquitous as bird migration activity itself, and collectively covers most terrestrial land areas. The migratory/congregatory species criterion described in the CHA sections of IFC PS6 and EBRD PR6 is intended to trigger CH determination only in areas that

host continentally significant concentrations of migratory activity. In many cases, these sites have already been designated as IBAs based on the KBA criteria and thresholds¹⁵.

(iv) Outcome of Critical Habitat Assessment

The Critical Habitats Screening and, where relevant, subsequent Assessment has been completed for all species returned on the IBAT Search as being listed by the IUCN as Critically Endangered, Endangered or Vulnerable within 50km of the Project Aol as well as on other species identified as being present within the Aol as a result of on-site surveys.

The CHA was completed for both the windfarm and OHTL combined. Critical Habitat was triggered for three species as a result of the OHTL Aol supporting significant populations of the CH triggering species (see below). These species are not present in significant numbers in the windfarm Aol. The windfarm, as a result of the OHTL being an Associated Facility, is inherently within CH for these species. The results of the combined projects CHA are shown below along with recommendations for further action.

Range-restricted species that are not of international conservation concern have been discounted from the Critical Habitats Assessment, as they are considered to be very unlikely present within the Aol or the habitats in which they are found will not be impacted by the proposals.

Critical Habitat has been triggered for White-headed Duck as a result of the EAAA supporting a significant proportion of the global population of this IUCN Endangered species and for Red-crested Pochard (significant wintering populations of IUCN LC species in the EAAA) and whilst the Project will not affect any areas of terrestrial habitats (e.g. lakes) it is considered likely that both species will regularly move across the Project Aol. Critical Habitat has also been determined for MacQueen's Bustard as a significant proportion of the global population of this species are likely to be utilizing the airspace occupied by the Project (OHTL).

There are also a number of other species that are considered to be PBF species within the windfarm Aol, and these are detailed in further in this ESIA.

The Project will therefore need to develop a Biodiversity Action Plan which will include all relevant species mitigation included within the ESIA to ensure No Net Loss to these valued ecological receptors as well as Net Gain for White-headed Duck, Red-crested Pochard and MacQueen's Bustard. All mitigation and monitoring, included in the ESIA will also be included in the Biodiversity Action Plan which will include a robust Adaptive Management Strategy should the results of monitoring indicate a significant impact on species of conservation concern.

With appropriate mitigation it is highly unlikely that the Project will result in impacts on White-headed Duck or Red-crested Pochard and therefore, at this stage off-sets for this species may not be required. The final Operational BAP will however include potential off-set measures to be undertaken if any impacts are identified in order that the Project results in a Net Gain for these CH triggering species. It is however likely that even with mitigations applied off-sets will be required to achieve No Net Loss, and then Net Gain, of MacQueen's Bustard as industry standard mitigations have been shown to be largely ineffective for this species and significant residual negative impacts will remain. Off-setting will be undertaken in the form of identification and removal of deadlines and undergrounding of existing or newly (2025 onwards) constructed distribution lines within the core areas for breeding MacQueen's Bustard (e.g. Bukhara region). The location and extent of undergrounding will be determined through detailed post-construction

¹⁵ *Memorandum Determining Biodiversity Management Requirements Related to Airspace around Wind Energy Facilities (EBRD, June 2023)*

fatality monitoring which will be completed along the OHTL as well as the wider distribution network. Undergrounding of distribution lines will also ensure that other significant residual negative impacts (e.g. collision mortality over accepted PBR thresholds) on bird (raptor) species of conservation concern (e.g. Steppe Eagle) are off-set.

In addition to the mitigation measures defined in this ESIA, the Project will implement offset measures during construction and operations to address residual impacts and thus achieve no net loss for priority biodiversity features, and for Natural and Critical Habitat. In particular, the Project will – in collaboration with the relevant stakeholders – support undergrounding of current or proposed Low Voltage Distribution Lines (LVDL), or removal of any such lines which are no longer necessary, within a priority area for MacQueen's Bustard in Bukhara Province. The detailed location, scale and schedule of this offset will be agreed in consultation with key stakeholders. While this offset is primarily targeted at MacQueen's Bustard, removal of LVDL in this area is likely to also have significant benefits to birds of prey by removing electrocution risks. Monitoring of current electrocution risks in the area would allow removal of LVDL to also function as an offset towards any unforeseen collisions of birds of prey with wind turbines. These offset measures are further detailed in the Project's Biodiversity Offset Plan (BOP).

The scale of offsets necessary has currently been estimated on a precautionary basis, using existing data on bustard collisions with powerlines near part of the Project OHTL route. This estimate will be refined during Project implementation via a program of Post Construction Fatality Monitoring (PCFM). That Program will not only enable refinement of offsets for MacQueen's Bustard but also identify the need for any other adaptive management of mitigation or offsets owing to unforeseen impacts. It will be developed for both turbines and powerlines following good international industry practice and carried out for an initial minimum 3-year period, but the actual timeframe will depend on fatality results. If PCFM indicates collisions of other Critical Habitat-qualifying bird or bat species with turbines to levels that exceed PBR-based fatality thresholds, additional mitigation or offset actions will be implemented as part of adaptive measurement as contained in the ESIA. Those may include operational controls (such as turbine curtailment or shut-down-on-demand during high-risk periods) or the enhancement of mitigation and offset measures.

The Operational Biodiversity Action Plan will also include a robust Biodiversity Monitoring Evaluation Plan (BMEP), and this will include details of Post Construction Fatality Monitoring, which will be based on the latest IFC, EBRD, KfW Handbook for such post-construction studies (or updated guidance as appropriate).

No habitats, plant, reptile or invertebrate species were recorded that are of significant international or national conservation concern (CR or EN) nor are they considered to be present within the Project Aol. IUCN Vulnerable species are present (e.g. Central Asian Tortoise) however predicted impacts are not such that unmitigated they would result in a change of conservation status to IUCN CR or EN.

Of the mammals recorded two species are listed on the UzRDB as Critically Endangered (Caracal and Honey Badger) however both are listed by the IUCN of being Least Concern globally. In addition, the thresholds for conservation status for species included in the UzRDB are not aligned with the IUCN criteria and as such neither species was screened within the CHA.

Critical Habitat Assessment was undertaken in line with GIIP and relevant guidance notes.

10.2 Ecological Impact Assessment Methodology

10.2.1 Area of Impact

The Area of Impact was determined to include the areas directly and permanently affected by the Project and areas which will be temporarily affected during construction as follows:

- Project Area of Interest encompasses the route of the OHTL and the proposed switching stations (outside of those within the wind farm area) and 500m buffer around them.
- It is anticipated, based on current design, that a total of 4,632 transmission towers and 221 angle towers will be required. This would require the total footprint for all towers to be 1.475 km². Each switching station will have a maximum footprint of around 0.3 km² and only 3 new stations are required (whereas the other 2 are existing stations) and therefore total footprint is 0.9 km².
- Any required access roads (although unlikely) to the transmission tower locations, construction areas and laydown areas, site offices, batching plants, worker accommodation, etc. However, those areas and their location are not identified at this point and will be determined as part of the detailed design. As a worst-case scenario and for the purpose of this analysis, it is anticipated that this would require a total footprint of around 31.66 km².
- The total area of impact is 34 km².

The sensitivity of the identified valued ecological receptors has been determined by the parameters as set out in the table below.

Table 37: Criteria for Determining the Sensitivity of Valued Ecological Receptors

Conservation Value (Sensitivity)	Species Criteria	Habitat or Site Criteria
High	IUCN Critically Endangered, Endangered and Vulnerable species. UzRDB Critically Endangered or Endangered species. Nationally protected species of significant population size and importance. Local endemic species.	Internationally designated sites (or equal status). Nationally designated sites (or equal status). Critical habitats of significant international or national ecological importance.
Medium	IUCN Near Threatened species. Nationally protected species or rare species, but not a significant population size and not of national importance. Regional endemic species.	Regionally important natural habitats. Priority habitats listed under Annex I of the Habitats Directive. Modified habitats with high biodiversity or under significant threat of loss within the region.
Low	IUCN Least Concern. Widespread species. Non-breeding and non-resident species.	Undesignated sites and habitats of natural habitats of some local biodiversity and cultural heritage interest. Modified habitats with limited ecological value.

Conservation Value (Sensitivity)	Species Criteria	Habitat or Site Criteria
		Other sites with little or no local biodiversity and cultural interest. Modified habitats with limited biodiversity value.
Negligible	Species of no national importance / no relevance to the site.	Highly modified habitats of no biodiversity value.

10.2.2 Baseline Conditions

(i) Desktop Review

For the biological environment, an initial desk-top screening of the site and surrounding areas was carried out based on a detailed desk study of available information, including in-country databases and supporting literature including for example A Guide to the Plants of Central Asia, the Flora of Uzbekistan and numerous other scientific papers. This exercise was undertaken for habitats and botany, mammals, reptiles and invertebrates, to highlight areas of more important habitats or where species of conservation concern could be present along the route of the OHTL.

Additional information regarding species conservation status was taken from the Uzbekistan Red Data Books and IUCN Red List. Information pertaining to protected sites was sourced from in-country databases and supplemented by information contained on the Birdlife Datazone (<http://datazone.birdlife.org/home>). A PS6 IBAT report was downloaded for the AoI which identified all legally protected sites and Key Biodiversity Areas (KBAs) as well as all possible IUCN Critically Endangered, Endangered, Vulnerable and Near-threatened species and range restricted species from a search area of 50 km from the OHTL (including a 5 km buffer of the original proposed route).

Protected Areas

The location of Protected Areas within 50 km from the OHTL (including a 5 km buffer of the original proposed route) are as follows and are shown in figures below:

- 12 Protected Areas, with two within 1 km, one within 10 km and a further 9 within 50 km. Within 1 and 10 km are:
 - Khorazm National Nature Park
 - Lower-Amudarya State Biosphere Reserve
 - Paykent Natural Monument
- 8 KBAs, with four within 10 km and a further four within 50 km. Within 10 km are:
 - Karakyr Lakes IBA
 - Gorelde IBA (Turkmenistan)
 - Muskinata IBA (Turkmenistan)
 - Soltansanjar – Duyeboye IBA (Turkmenistan)

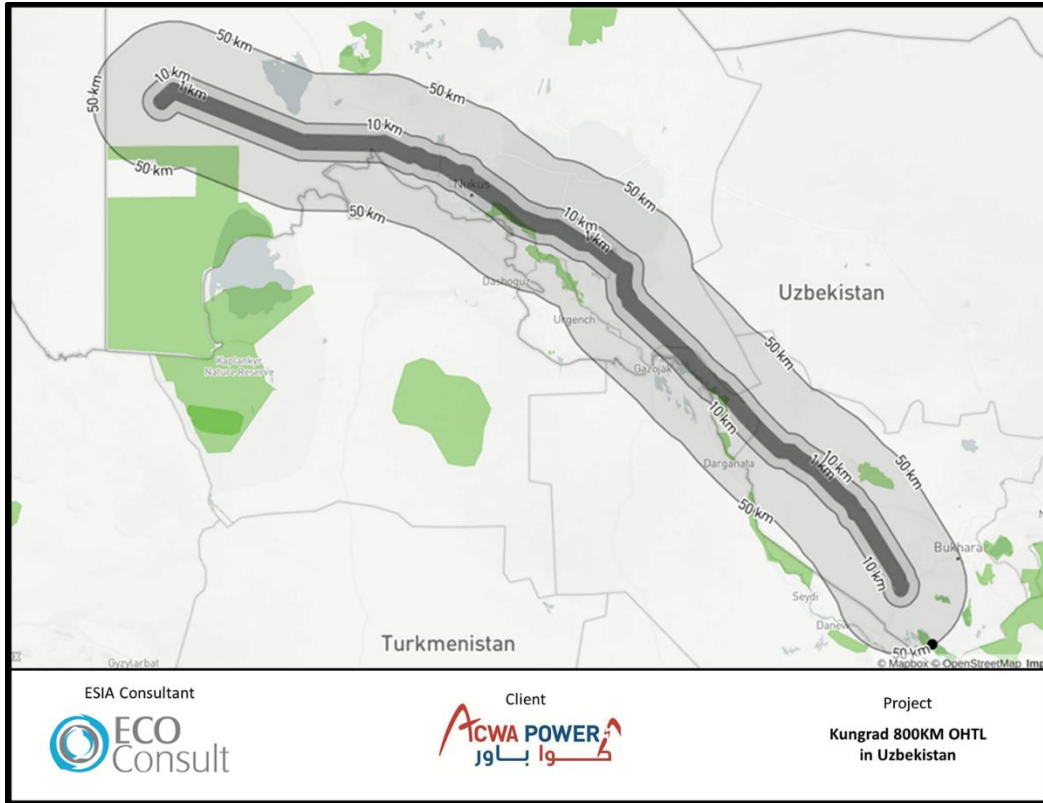


Figure 52: IBAT results protected areas within 50 km

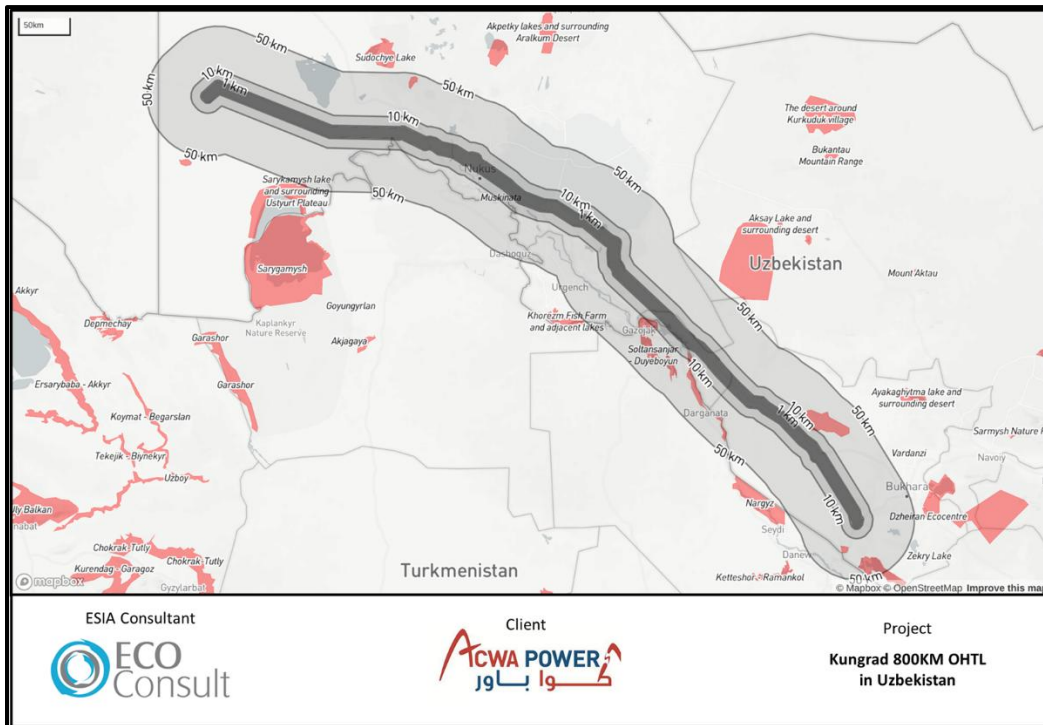


Figure 53: IBAT results key biodiversity areas within 50 km

Khorazm National Nature Park

This protected area is within 2 km south of the OHTL. The National Nature Park (NNP) is legally protected by the Law of the Republic of Uzbekistan on Protected National Territories. The Khorazm National Park was created for protection of the Tugai forest natural resources in the Amudarya delta. The Tugai forests are formed by willow (*Salix*) and comb (*Tamarix*) plant species.

Lower-Amudarya State Biosphere Reserve

This protected area is within 2 km south of the OHTL route and is designated for:

- Lower Amudarya State Biosphere Reserve (LABR) in Uzbekistan is located in the northern part of the lower reaches of the Amu Darya, southeast of the former coast of the Aral Sea. The site is one of the largest areas of natural Tugai in Central Asia which, from a global perspective, is a unique and threatened ecosystem.
- The reserve provides an important habitat for plant and animal life and contains the highest biodiversity in the desert regions of Central Asia. The natural vegetation is composed of Tugai, a form of riparian forest or woodland, endemic to Central Asia. It is also the natural and protected environment of the threatened Bukhara Deer (*Cervus hangul bactrianus*) included in the Red List of IUCN.

Paykent Natural Monument

Although it is noted to have some ecological interest, it is not of particular significance. In the area of the monument species listed in the Red Book of the Republic of Uzbekistan that have been recorded are MacQueen's Bustard (*Chlamydotis macqueenii*), Desert Monitor (*Varanus griseus*), Central Asian Tortoise (*Testudo horsfieldi*), Desert Sand Boa (*Eryx miliaris*), and Tatar Sand Boa (*Eryx tataricus*).

Karakyr Lakes¹⁶

This site is included as an Important Bird Area and is approximately 9 km north-west of the OHTL route at its closest point. Karakyr was created in the 1970s and consists of two large wastewater lakes and a large area of floodplain located along the collector channel supplying the lakes. The lakes have open water areas surrounded by reed. Seepage and flooding of the sandy desert surrounding the lakes and floods is resulting in the growth of grassy vegetation and the sands are becoming fixed. The main period of inflows is in March-April. Karakyr lakes system consists of three separate lakes: Big Karakyr, Small Karakyr and Aquarium. The general area (with a buffer zone) is about 50,000 ha. In summer due to the high rate of evaporation and a reduction of water inflows most of the reservoir (40-50 %) dries up and there is eutrophication.

The avifauna of Karakyr is typical of similar ecosystems of the region. According to literature data and observations made about 200 species of birds have been recorded at the site. Of these 122 species are waterfowl and waterbirds, with numerous overwintering waterfowl and nesting waterbirds. In 2006 White-headed Duck (*Oxyura leucocephala*) was confirmed to have nested on site and in 1987 just in one area a large nesting colony was confirmed consisting of 1,000 nests of Great Cormorant (*Phalacrocorax carbo*) and 400 pairs of Black-crowned Night Heron (*Nycticorax nycticorax*) as well as small numbers of other cormorants and herons. Winter counts of the lakes have recorded 43 species of bird.

¹⁶ BirdLife International (2023) Important Bird Area factsheet: Karakyr Lakes. Downloaded from <http://datazone.birdlife.org/site/factsheet/karakyr-lakes-iba-uzbekistan> on 19/07/2023.

Table 38: Populations of IBA Trigger Species

Species		IUCN Category	Season	Year(s) of Estimate	Population at Site	IBA Criteria Triggered
Common Name	Scientific Name					
White-headed Duck	<i>Oxyura leucocephala</i>	EN	winter	2004-2006	30-5,000 adults	A1, A4i
Greylag Goose	<i>Anser anser</i>	LC	winter	2000-2005	115-27,695 adults	A4i
Lesser White-fronted Goose	<i>Anser erythropus</i>	VU	winter	2005	30 adults	A1
Common Goldeneye	<i>Bucephala clangula</i>	LC	winter	2000-2004	1-790 adults	A4i
Smew	<i>Mergellus albellus</i>	LC	winter	2000-2005	2-491 adults	A4i
Red-crested Pochard	<i>Netta rufina</i>	LC	winter	2000-2005	1,102-41,700 adults	A4i
Common Pochard	<i>Aythya ferina</i>	VU	winter	2000-2005	184-34,050 adults	A4i
Ferruginous Duck	<i>Aythya nyroca</i>	NT	winter	2004	50 adults	A1
Mallard	<i>Anas platyrhynchos</i>	LC	winter	2000-2005	917-12,332 adults	A4i
Red-necked Grebe	<i>Podiceps grisegena</i>	LC	winter	2004-2005	1-300 adults	A4i
Egyptian Nightjar	<i>Caprimulgus aegyptius</i>	LC	breeding	1998-2006	2-14 individuals	A3
Common Coot	<i>Fulica atra</i>	LC	winter	2000-2005	5,206-46,000 adults	A4i
MacQueen's Bustard	<i>Chlamydotis macqueenii</i>	VU	breeding	1998-2000	2-14 individuals	A3
Dalmatian Pelican	<i>Pelecanus crispus</i>	NT	winter	2004	44 adults	A1
Pygmy Cormorant	<i>Microcarbo pygmaeus</i>	LC	winter	2000-2005	23-5,560 adults	A4i
Great Cormorant	<i>Phalacrocorax carbo</i>	LC	winter	2000-2005	3-2,040 adults	A4i
Turkestan Ground-jay	<i>Podoces panderi</i>	LC	resident	1998-2006	1 individuals	A3
Sykes's Warbler	<i>Iduna rama</i>	LC	breeding	1998-2006	3-20 individuals	A3
Streaked Scrub-warbler	<i>Scotocerca inquieta</i>	LC	breeding	1998-2006	1-5 individuals	A3
Desert Finch	<i>Rhodospiza obsoleta</i>	LC	resident	1998-2006	2-6 individuals	A3
Red-headed Bunting	<i>Emberiza bruniceps</i>	LC	breeding	1998-2006	1-7 individuals	A3
A4iii Species group - waterbirds		n/a	winter	2000-2004	85,070-144,173 individuals	A4iii

Non-bird biodiversity includes various mammals in the adjacent desert including Goitered Gazelle (*Gazella subgutturosa*) and reptiles including Desert Monitor (*Varanus griseus*).

During the 2023 site survey completed by Turnstone Ecology, a visit to the Karakyr Lakes was undertaken to the south-western edge of the area on the 1 May 2023. During the site visit it was noted that the viewable area of the lake/s was a large open area of water, however, it was surrounded by tall and thick reedbed vegetation meaning viewing the open water is very difficult. As a result, only a small number of wildfowl was observed but there were numerous Western Marsh Harriers (*Circus aeruginosus*), cormorants and ciconiiformes present in the area, species that could be at greater risk of impacts from the OHTL.

Gorelde¹⁷

This site is included as an Important Bird Area and is in Turkmenistan approximately 8 km south-west of the OHTL route at its closest point. The IBA covers the Amu Darya valley and adjoining sites to the west and extends from Lebab to Uchkersen. The eastern border follows the course of the Amu Darya, and the western border, includes small tugai sites, flood areas, and lakes. The small tugai sites - Borli, Jigerbent, Karaygyr, Harrat, Birata, Gerelde and Dayahatyn - are located along the course of the Amu Darya. Part of the former Tugai forest is now occupied by agricultural fields and settlements. In the valley there are meadows and flood lands on alluvial soils, and extensive salt marshes. The dominant vegetative cover is psammophyte with ephemeral herbs. Bushes include Haloxylon, Calligonum, Ephemera and Salsola richteri, with Artemisia and Salsola thickets in places. The woody-shrubby Tugai vegetation comprises Populus, Elaeagnus, Tamarix, Halimodendron and Halostachys. In unflooded Tugai sites there is reed, licorice, shortear and dogbane.

The avifauna includes 160 species have been recorded from the IBA, but this number is not definitive. Passerines are the most numerous (more than 60 species), followed by birds of prey (20), Anseriformes (16) and Charadrii (14). Waterbirds comprise 58 species. The site is part of the major migratory flyway of waterbirds and waterfowl along the Amu Darya valley. Confirmed or possible breeding species: Eagle Owl (*Bubo bubo*), Stone Curlew (*Burhinus oedicnemus*), and Short-toed Snake Eagle (*Circaetus gallicus*). Migrating and wintering species: Great White Pelican (*Pelecanus onocrotalus*), Dalmatian Pelican (*Pelecanus crispus*), Eurasian Spoonbill (*Platalea leucorodia*), Black Stork (*Ciconia nigra*), Marbled Duck (*Marmaronetta angustirostris*), Osprey (*Pandion haliaetus*), Pallas's Fish Eagle (*Haliaeetus leucoryphus*), Imperial Eagle (*Aquila heliaca*), Golden Eagle (*Aquila chrysaetos*), and Peregrine Falcon (*Falco peregrinus*). Passage Common Crane (*Grus grus*) use the islands.

Table 39: Populations of IBA Trigger Species

Species		IUCN Category	Season	Year(s) of Estimate	Population at Site	IBA Criteria Triggered
Common Name	Scientific Name					
Great White Egret	<i>Ardea alba</i>	LC	passage	2004-2007	28-549 individuals	A4i
Dalmatian Pelican	<i>Pelecanus crispus</i>	NT	passage	2004-2007	1-220 individuals	A1, A4i
Great Cormorant	<i>Phalacrocorax carbo</i>	LC	breeding	1998-2007	40-1,600 individuals	A4i
White-winged Woodpecker	<i>Dendrocopos leucopterus</i>	LC	resident	1998-2007	8-12 breeding pairs	A3
Saker Falcon	<i>Falco cherrug</i>	EN	breeding	2004-2007	1 individual	A1

¹⁷ BirdLife International (2023) Important Bird Area factsheet: Gorelde. Downloaded from <http://datazone.birdlife.org/site/factsheet/gorelde-iba-turkmenistan> on 19/07/2023.

Species		IUCN Category	Season	Year(s) of Estimate	Population at Site	IBA Criteria Triggered
Common Name	Scientific Name					
Great Tit	<i>Parus major</i>	LC	resident	1998-2007	200-300 individuals	A3

Muskinata¹⁸

This site is included as an Important Bird Area and is in Turkmenistan approximately 10 km south-west of the OHTL route at its closest point. The IBA is situated on the border between Turkmenistan and Uzbekistan 25 km to the north-east of Boldumsaz and 50 km from Dashoguz. The site is a small Tugai forest "Muskinata" (901 ha) on the left bank of the Amudarya river. There is also Tugai forest on the right bank of the Amudarya but this lies within Uzbekistan. The majority of the IBA are floodplain ecosystems. More than 80 species of plant have been recorded in the Tugai forest, with 12 species being common.

The avifauna includes more than 200 species: resident - 16, nesting - 63, wintering - 30, passage - 113. The dominant groups are passerines, birds of prey, Anseriformes and Charadrii. Resident, passage, and wintering species include Eurasian Spoonbill, Osprey, Short-toed Snake Eagle, Lesser Kestrel (*Falco naumanni*), Stone Curlew, Eagle Owl, and European Roller (*Coracias garrulus*).

Table 40: Populations of IBA Trigger Species

Species		IUCN Category	Season	Year(s) of Estimate	Population at Site	IBA Criteria Triggered
Common Name	Scientific Name					
Pygmy Cormorant	<i>Microcarbo pygmaeus</i>	LC	breeding	2007	1,000 individuals	A4i
Pallid Scops-owl	<i>Otus brucei</i>	LC	breeding	2007	2 individuals	A3
White-winged Woodpecker	<i>Dendrocopos leucopterus</i>	LC	resident	2007	1 individual	A3
Great Tit	<i>Parus major</i>	LC	resident	2007	20-40 individuals	A3
Sykes's Warbler	<i>Iduna rama</i>	LC	breeding	2007	6-8 individuals	A3
Streaked Scrub-warbler	<i>Scotocerca inquieta</i>	LC	resident	2007	6 individuals	A3
Desert Finch	<i>Rhodospiza obsoleta</i>	LC	breeding	2007	14 individuals	A3
Red-headed Bunting	<i>Emberiza bruniceps</i>	LC	breeding	2007	4 individuals	A3

Soltansanjar - Duyeboyun¹⁹

This site is included as an Important Bird Area and is in Turkmenistan approximately 10 km north-west of the OHTL route at its closest point. The IBA is located in the north-eastern part of Turkmenistan in the Birata district of the Lebap region. The site includes lakes, a system of water reservoirs (Duyeboyun,

¹⁸ BirdLife International (2023) Important Bird Area factsheet: Muskinata. Downloaded from <http://datazone.birdlife.org/site/factsheet/muskinata-iba-turkmenistan> on 19/07/2023.

¹⁹ BirdLife International (2023) Important Bird Area factsheet: Soltansanjar - Duyeboyun. Downloaded from <http://datazone.birdlife.org/site/factsheet/soltansanjar-duyeboyun-iba-turkmenistan> on 19/07/2023.

Soltansanjar and Koshbulak), part of the Amudarya river (68 km in length), the Duyeboyun reservoir floods and lakes, and adjoining parts of the Pitnyakskaya uplands with patches of sandy and stony-clayey desert and saline depressions. Young Tugai forests are present along the Amu Darya at Syuduktugay, Saduar and Hanyan and appeared after filling of the Duyeboyun reservoir. Meadows, alluvial soils, and saline depressions occur in the Amu Darya valley. The reservoirs and floods freeze if winters are unusually cold. There are no settlements in the site, but there are huts for fishmen and shepherds. Biratinsky district is a border zone and the river Amu Darya is the border between Turkmenistan and Uzbekistan.

180 species of birds have been recorded in the IBA, but this number is not definitive. The most diverse are Passeriformes, Falconiformes, Anseriformes and Chardriidae. There are many waterbirds. The cliffs and outlying parts of the Pitnyakskaya upland is a nesting place for raptors and Ruddy Shelduck (*Tadorna ferruginea*) (23 pairs in 2007). The variety of waterbodies provide favorable conditions for the stopover of many species, with more than 20,000 individual waterbirds during migration and in winter. Eagle Owl, MacQueen's Bustard, Stone Curlew, Golden Eagle, Saker Falcon (*Falco cherrug*) and Short-toed Snake Eagle breed or possibly breed. Great White Pelican, Dalmatian Pelican, Eurasian Spoonbill, Greater Flamingo (*Phoenicopterus roseus*), Pallas's Fish Eagle and Cinereous Vulture (*Aegypius monachus*) are migrants and winter visitors. Flocks of Common Crane (up to 200 individuals) make stopovers in the desert part of the site.

Table 41: Populations of IBA Trigger Species

Species		IUCN Category	Season	Year(s) of Estimate	Population at Site	IBA Criteria Triggered
Common Name	Scientific Name					
Red-crested Pochard	<i>Netta rufina</i>	LC	passage	2007	5,000 individuals	A4i
Great Crested Grebe	<i>Podiceps cristatus</i>	LC	passage	2007	900 individuals	A4i
Dalmatian Pelican	<i>Pelecanus crispus</i>	NT	passage	1986-1993	120 individuals	A1, A4i
Saker Falcon	<i>Falco cherrug</i>	EN	resident	2007	2 individuals	A1
A4iii Species group - waterbirds		n/a	passage	2007	min 20,000 individuals	A4iii

Species of Conservation Concern

The table below shows the species of global conservation concern (IUCN Critically Endangered, Endangered and Vulnerable) considered to be present within the 50 km IBAT search area.

Table 42: Species of Global Conservation Concern

Species		IUCN Category
Common Name	Scientific Name	
Small Amu-Darya Shovelnose Sturgeon	<i>Pseudoscaphirhynchus hermanni</i>	CR
Amu Darya Shovelnose Sturgeon	<i>Pseudoscaphirhynchus kaufmanni</i>	CR
Sociable Lapwing	<i>Vanellus gregarius</i>	CR
Saiga**	<i>Saiga tatarica</i>	NT
Pike Asp	<i>Aspiolucius esocinus</i>	EN
Chu Sharpray	<i>Capoetobrama kuschakewitschi</i>	EN
White-headed Duck	<i>Oxyura leucocephala</i>	EN

Species		IUCN Category
Common Name	Scientific Name	
Pallas's Fish-eagle	<i>Haliaeetus leucoryphus</i>	EN
Egyptian Vulture	<i>Neophron percnopterus</i>	EN
Saker Falcon	<i>Falco cherrug</i>	EN
Steppe Eagle	<i>Aquila nipalensis</i>	EN
Tiger***	<i>Panthera tigris</i>	EN
Uzbekistan Toadhead Agama	<i>Phrynocephalus rossikowi</i>	EN
Eurasian Carp	<i>Cyprinus carpio</i>	VU
Aral Barbel	<i>Luciobarbus brachycephalus</i>	VU
Bulatmai Barbel	<i>Luciobarbus capito</i>	VU
Swan Goose	<i>Anser cygnoid</i>	VU
Lesser White-fronted Goose	<i>Anser erythropus</i>	VU
Common Pochard	<i>Aythya ferina</i>	VU
Yellow-eyed Pigeon	<i>Columba eversmanni</i>	VU
Greater Spotted Eagle	<i>Clanga clanga</i>	VU
Eastern Imperial Eagle	<i>Aquila heliaca</i>	VU
European Turtle Dove	<i>Streptopelia turtur</i>	VU
Great Bustard*	<i>Otis tarda</i>	EN
MacQueen's Bustard	<i>Chlamydotis macqueenii</i>	VU
Cheetah***	<i>Acinonyx jubatus</i>	VU
Goitered Gazelle	<i>Gazella subgutturosa</i>	VU
Marbled Polecat	<i>Vormela peregusna</i>	VU
Urial	<i>Ovis vignei</i>	VU
Szczerbak's Even-fingered Gecko	<i>Alsophylax szczerbaki</i>	VU

* Great Bustard has been reassessed as Endangered (IUCN 2023 updated list)

** Saiga has been reassessed as Near-threatened (IUCN 2023 updated list)

*** Tiger and Cheetah are extinct in Uzbekistan and are not discussed further in this assessment.

Range Restricted Species

The table below shows the range restricted (endemic or near-endemic) species considered to be present within the 50 km IBAT search area.

Table 29: Range Restricted Species

Species		IUCN Category	Biome
Common Name	Scientific Name		
Sattar Snowtrout	<i>Schizothorax fedtschenkoi</i>	LC OR LR/LC	Freshwater
A species of ray-finned fish	<i>Dzhunzia ilan</i>	LC OR LR/LC	Freshwater
A mollusc	<i>Bithynia oxiana</i>	DD	Freshwater
Uzbekistan Toadhead Agama	<i>Phrynocephalus rossikowi</i>	EN	Terrestrial
Heptner's Pygmy Jerboa	<i>Salpingotus heptneri</i>	DD	Terrestrial

Three of the species inhabit freshwater habitats, with *Schizothorax fedtschenkoi* and *Dzhunzia ilan* found in the Zarafshan river area and *Dzhunzia ilan* found in a very small area of the Amu Darya. These habitats will not be impacted by the proposed project.

The Uzbekistan Toadhead Agama has only been found in a small area along the south bank of the Amu Darya near the Turkmenistan border. The Reptile specialists working on the project have confirmed that this species would not be found along the route of the OHTL, due to its very restricted range and habitat

requirements. Further to this, it should be noted that as a result of recent studies and numerous field trips in recent years, specialists of the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan have not found a single individual of Uzbekistan Toadhead Agama, even in places where it was previously observed and, in their vicinity, which confirms that unfortunately this species is probably extirpated on the territory of Uzbekistan.

Heptner's Pygmy Jerboa is found in isolated areas of the Kyzylkum desert in Uzbekistan and Kazakhstan. The range of this species shown on the IUCN Red List website is approximately 25 km to the north, however the mammal specialists working on the project have confirmed that this species is actually only found further north than that. Additionally, the habitat in this area where the OHTL is proposed is different to the area to the north, and this species would not be found along the route of the OHTL.

With the exception of the Uzbekistan Toadhead Agama (as it is also IUCN EN), whilst all of the above are range-restricted they were discounted from the Critical Habitats Assessment, as they will not be present within the Aol.

During the scoping stage of the project the potential presence of and potential impact on two range restricted (and IUCN EN) plant species, *Calligonum mattheianum* and *C. mole*, was raised by ADB. These species were not identified through the IBAT search but the known range is around Lake Dinguzkul to the southeast near the Turkmenistan border which is approximately 40km away from the Karakul substation. The range of these species is further evidenced in a recent CHA for the Nur Bukhara Solar Project²⁰ which indicates presence in habitats to the east of Bukhara, which is outside of the Project Aol. Additionally, the botanical specialists working on the project have confirmed that they have been involved in survey for these species in recent years and are aware of the species range and habitat requirements and that these species were not found during the survey for the OHTL and are not present in the area or habitats where the OHTL is proposed. Therefore, both are considered very likely absent from the Aol.

(ii) Turnstone Ecology Scoping Site Visit

In 2023 Turnstone Ecology completed a three-day rapid Scoping Visit from 29 April to 1 May to the Project Aol as well as visiting some parts of the adjacent wetlands where possible.

During the Scoping Survey all bird Vantage Points (VPs) were visited and viewsheds verified. Any baseline survey data collected as part of the Scoping Visit has been used within this assessment.

(iii) Biodiversity Surveys

Surveys for biodiversity have been undertaken at the site between April 2023 and July 2024.

Due to the scale of the project the OHTL route was divided into four survey sections (figure below), defined where appropriate by geological features or obvious changes in broad habitat type. These sections were considered for the herpetofauna, mammal and invertebrate surveys as discussed in further details below.

²⁰ Critical Habitat Assessment Nur Bukhara Solar PV and BESS, UZB-MAS ESIA for Solar PV Bukhara – CHA v 2.0 (final draft), Juru Energy, August 2023

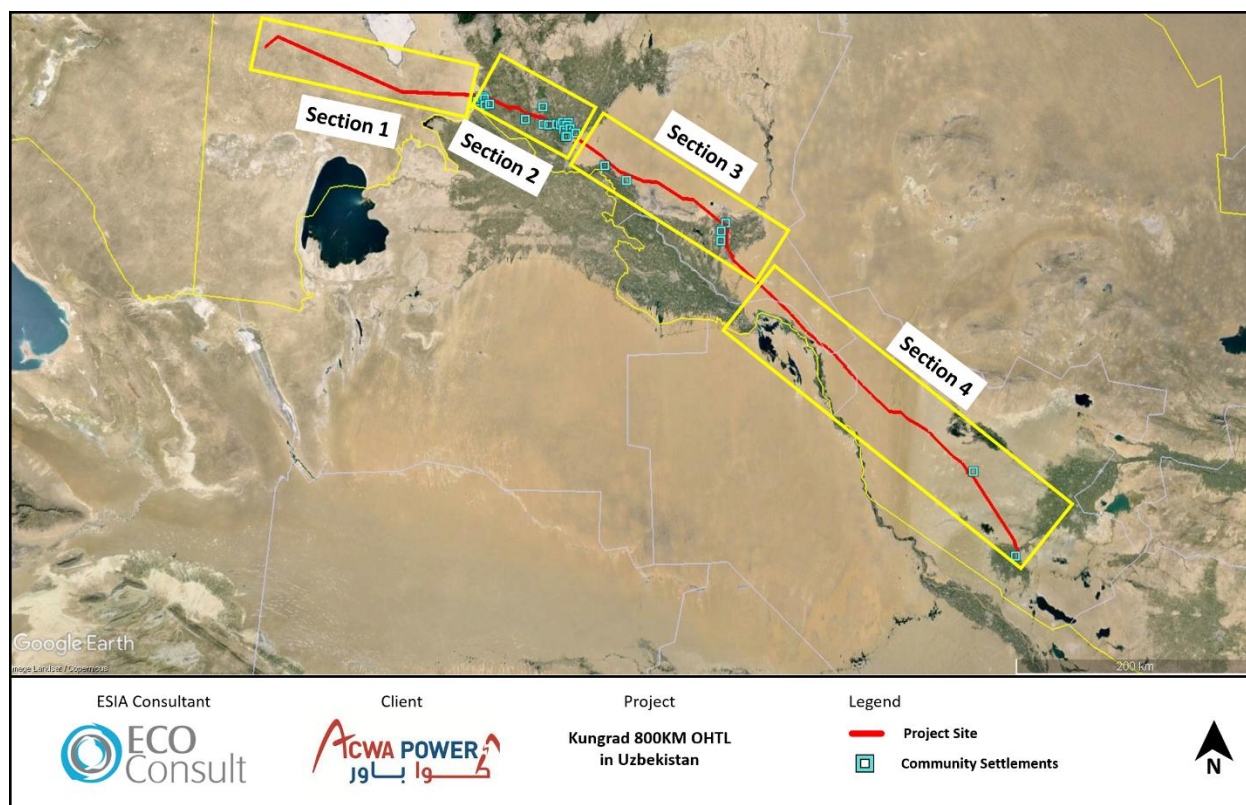


Figure 54: Sections for Biodiversity Assessments

Table 43: Description of Sections

Section	Description
Section 1	Ustyurt Substation to the western edge of Agriculture Area. Section length approximately 170 km. Section is within the Ustyurt Plateau, from the start of the OHTL (near the wind farm area) to the edge of the Agricultural Area.
Section 2	Agriculture Area to Nukus Substation. Section length approximately 80 km. Section is entirely through the Agricultural Area and urbanized habitats (Kanlikul, Shumanay, Akmangit and Nukus).
Section 3	Nukus Substation to Land to the north-east of Taza-Kel'teminar. Section length approximately 175 km. Section is mostly through desert habitats with some agricultural areas. The section is heavily urbanized, being close to main roads and numerous settlements.
Section 4	Land to the north-east of Taza-Kel'teminar to Karakul Substation. Section length approximately 320 km. Section is almost entirely desert habitats (including the Kyzylkum) but in parts is close to main roads and settlements.

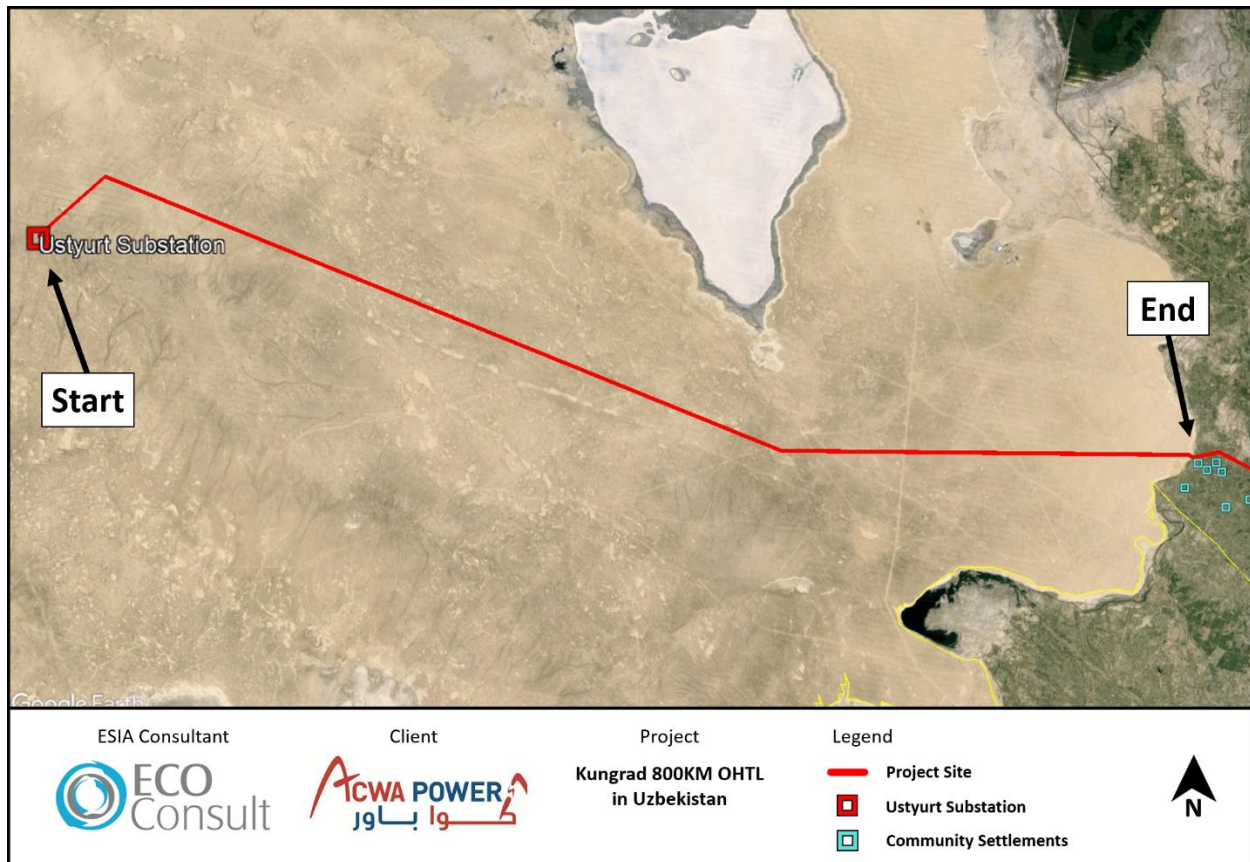


Figure 55: Section 1 – Ustyurt Substation to the western edge of the Agriculture Area



Figure 56: Section 2 – Agriculture Area to Nukus Substation

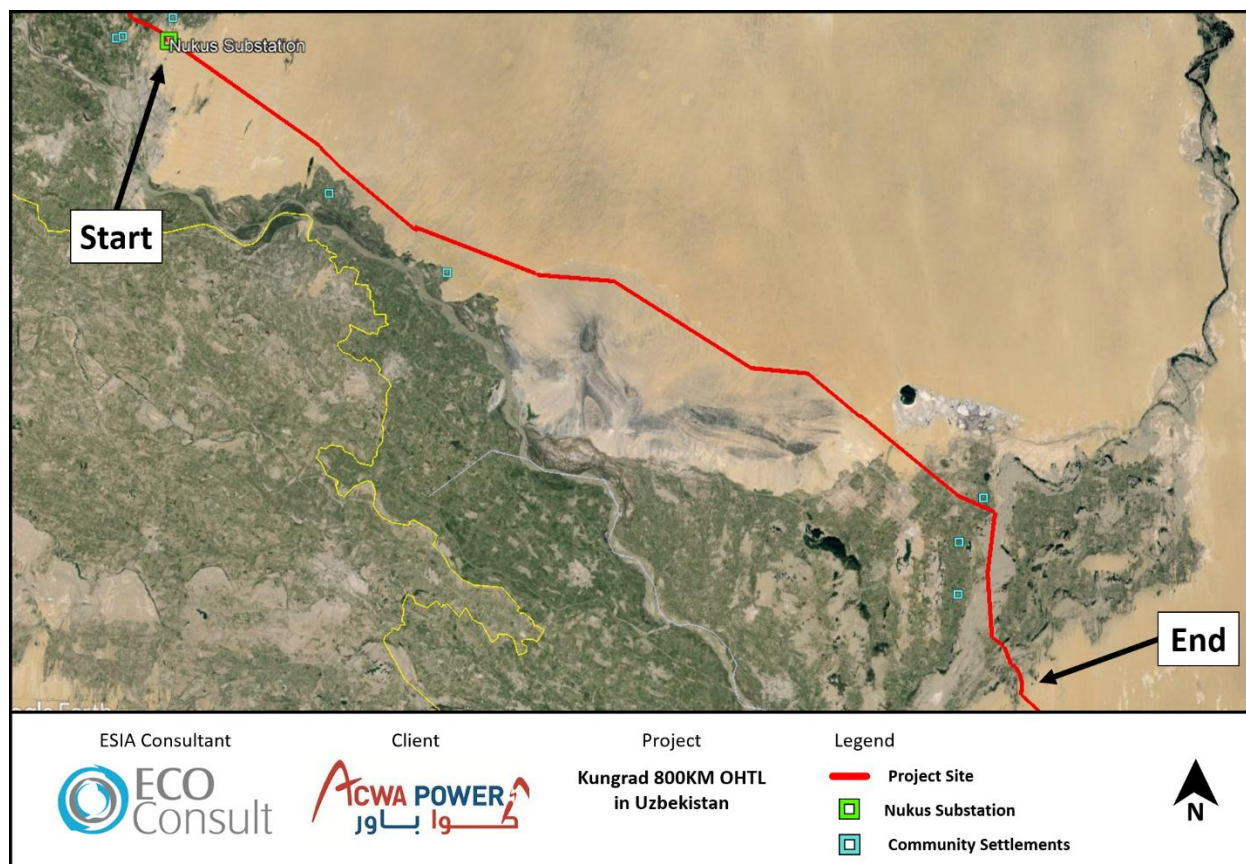


Figure 57: Section 3 – Nukus Substation to Land to the north-east of Taza-Kel'teminar

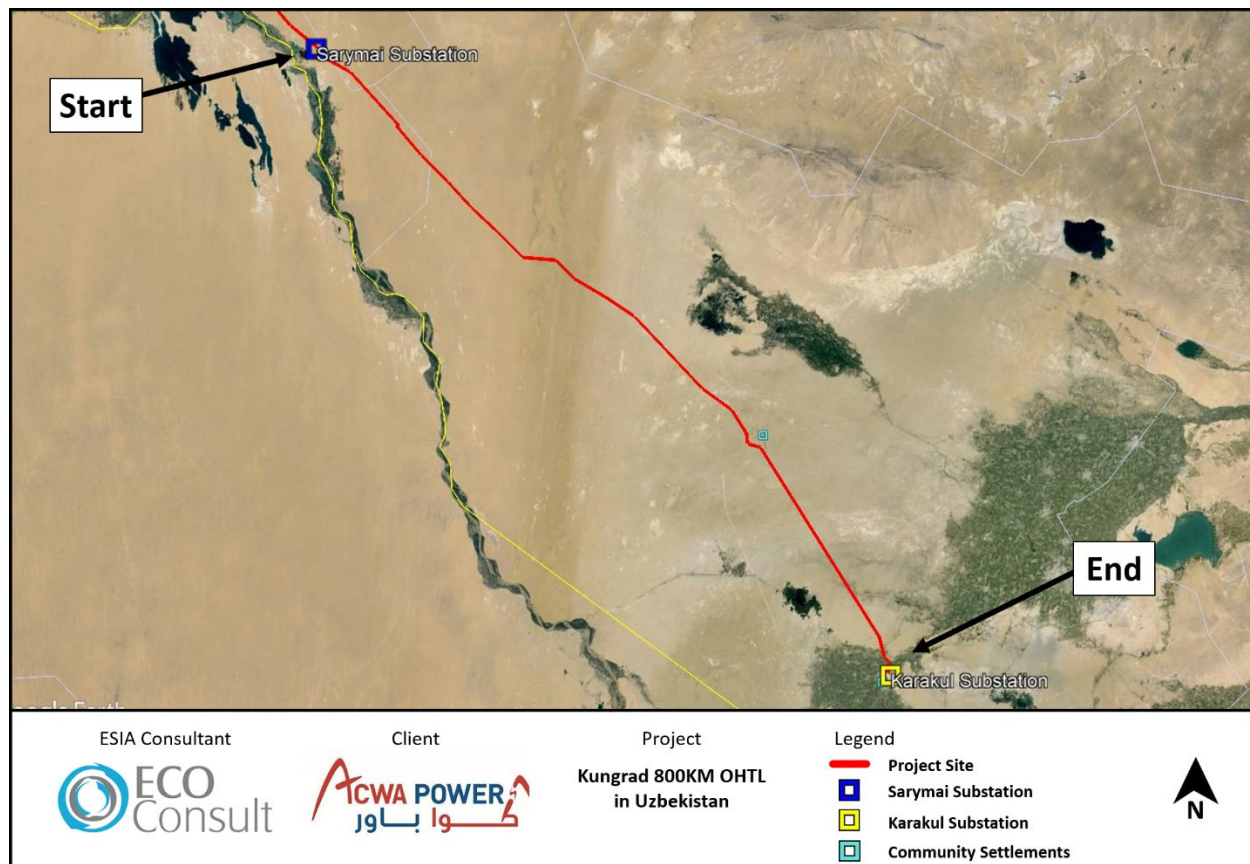


Figure 58: Section 4 – Land to the north-east of Taza-Kel'teminar to Karakul Substation

10.2.3 Habitats and Flora

Methods

The field surveys to record habitats, flora and vegetation were undertaken 9 to 13 June 2023 by experienced in-country botanists. A survey protocol was devised by Turnstone Ecology and the surveys consisted of a full drive/walkthrough of the whole OHTL route and 85 2x2 m sample plots (quadrats) at representative habitats through Sections 1 to 4. All plant species present within each quadrat were recorded (including their abundance and % of cover), in particular, threatened species, weeds and invasive species. The results of the survey were used to categorize the habitats present as Modified or Natural.

Identification of species was based on literature such as 'Определитель растений Средней Азии' - A Guide to the Plants of Central Asia, 'Флора Узбекистан' - The Flora of Uzbekistan and others. Herbarium specimens of each plant species present within the Project area were collected and identified in the National Herbarium of Uzbekistan (TASH) using special literature, including Nikitin, 1983; CABI: Invasive Species Compendium, 2017; Sennikov et al., 2018 and the herbarium collections of TASH, and a summary check-list of the flora was compiled.

The above methods were used for the baseline biodiversity surveys and subsequent assessment of likely ecological impacts of the Project.

Extensive work has been completed to update the survey methodology, including a habitat condition assessment metric, for the pre-construction surveys being undertaken in Q2 2024, 2025, 2026. The revised methods and metric and these are fully detailed in the Project BMP when discussing pre-construction surveys which will be completed in May / June each year. The results of these pre-construction surveys will be used to update the Project BMP and BAP and will be used to inform the no-net-loss calculations for natural habitats that are impacted.

It is acknowledged that the survey effort undertaken is limited, but within habitats that are broadly large contiguous areas it is considered that the survey effort was sufficient to be able to characterize the habitats present within the Project Aol.. Whilst all species present may not have been recorded the surveys have provided enough information for assessment and where there are limitations a precautionary approach has been taken. More detailed pre-construction surveys will be undertaken including detailed habitat condition assessments, habitat mapping and specifically classifying the extent of Natural Habitat for No Net Loss requirements, that will allow full assessment and implementation of mitigation to be undertaken. This is detailed in the project BMP and BAP documents and further plans (such as the Flora Conservation Plan (FCP) and Habitat Restoration Management Plan (HRMP) will ensure this is completed within lender agreed parameters.

Results

General

Uzbekistan is characterized by diverse landscapes, including vast plains, desert regions, and mountain ranges. Nearly four-fifths of Uzbekistan's territory, the sun-dried western area, has the appearance of a wasteland. In the north-west the Turan Plain rises 60 to 90 meters above sea level around the Aral Sea in Karakalpakstan. This terrain merges to the south with the KyzylKum (Uzbek: Qizilqum) Desert and farther west becomes the Ustyurt Plateau, a region of low ridges, salt marshes, sinkholes, and caverns. Southeast of the Aral Sea, small hills break the flatness of the low-lying KyzylKum Desert, and, much farther east, a series of mountain ridges partition Uzbekistan's territory. The central part of Uzbekistan is occupied by the KyzylKum desert, covering the area between the largest rivers of Central Asia, Amu Darya, and Syr Darya. This area, usually designated on maps as "KyzylKum sands," actually represents a complicated and diverse mosaic of stony and clayey plateaus, hilly sands, undrained hollows, isolated mountain heights, salt-marshes and takyr.

The OHTL begins from the area of the proposed Kungrad 1.5GW Wind Farm and continues to the Karakul district of the Bukhara region.

As a result of the botanical-geographical zoning, the territory of Uzbekistan was divided into 2 provinces, 16 districts and 38 botanical geographical regions (Figure 59). The OHTL route passes through several of these regions as follows:

- II-8-a North Ustyurt botanical-geographical district of II-8 Ustyurt district of Turan province,
- II-6 South Orololdi district; II-6-b botanical geographical region of Amudarya delta,
- II-3-a Kyzylkum botanical geographical region of II-3 Kyzylkum district,
- II-4-b passing through the botanical-geographical regions of Kyzylkum remains II-4 of Bukhara district and it ends in II-4-c the lower Zarafshan botanical geographical region.

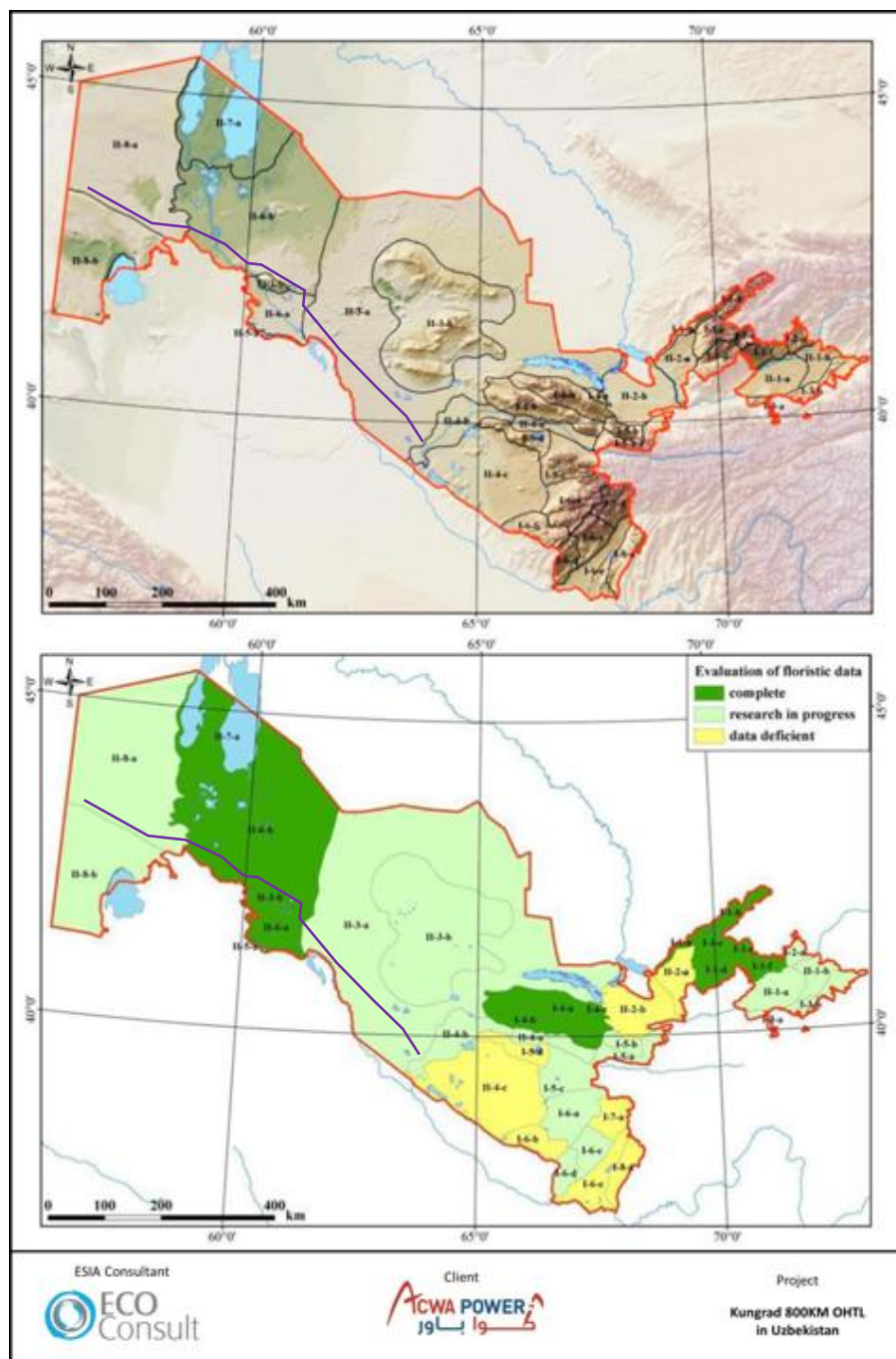


Figure 59: Scheme of Uzbekistan's botanical and geographical regions (by Tojiboyev. K., Sh. Beshko. N.Yu., Popov. V.A.) with approximate route of OHTL as purple line

The OHTL is long and passes through variety of habitats, including desert, agricultural and other areas. The habitats are broadly natural habitats and belong to the Type 8 (Desert) and Sub-type 8.2 (Temperate Desert) according to IUCN Habitats Classification Scheme, with smaller areas of Type 14 (Artificial – Terrestrial) and Sub-type 14.1 (Arable Land), Type 4 (Grassland) and Sub-type 4.5 (Subtropical/tropical dry), and Type 3 (Shrubland) and Sub-type 3.5 (Subtropical/tropical dry).

Based on the literature review of the OHTL route, the complete flora of habitats along the OHTL is composed of 295 species of vascular plants from 23 families.

During the survey 40 species were recorded during the surveys. Details of the species recorded in the different sections and therefore different habitat conditions are given below.

Note that the habitats in Section 2 are almost entirely modified and therefore the results below are less detailed than the other sections (Sections 1, 3 and 4).

Section 1

Landscape Characteristics

Section 1 covers geographical point of Karabaur Uval, Karakalpak Ustyurt. Karabaur is a discontinuous chain of sloping hills often almost merging with one another with gravel-loamy undulating plain desert, stretched from west-north-west to east-south-east. The surface is mostly flat, almost plateau like. Outcrops of bedrock are rare, and on the surface of the hills there is more or less developed soil cover, characterized by high gypsum content.

Vegetation

According to botanical and geographical zoning, the territory belongs to the South Ustyurt district of the Ustyurt district of the Turan province. According to geobotanical zoning, it is part of the Karabaur-Muzbel region.

The territories are characterized by an abundance of ravines, hollows, and valley-like depressions with shrub (*Atraphaxis spinosa*, *Caragana grandiflora*, *Convolvulus fruticosus*) thickets, small areas of *Stipa caspia*, *S. richteriana*, *S. hohenackeriana* and fragments of *Alhagi pseudalhagi* thickets indicating the presence of perennials in the gully sediments. On the gentle slopes of ridges that form watersheds between ravines, a typical combination of communities of habitat-forming species of territories, such as *Anabasis salsa*, *Artemisia terrae-albae*, *Salsola arbusculaformis* on heavily gravelly thin grey-brown soils. Large, well-defined turtkul with a typical set of extreme gypsophytes are rare and only in the axial part of the ridges. There are very numerous small bosity spots on the slopes of the ridges, occupied by communities of *Anabasis brachiata* and which are the results of the local accumulation of gypsum carried out from large tyurtkuls. In the axial part of the ridges, pseudo-takyr are quite common, i.e., outcrops of limestone and marl layers, imitating the physiognomic appearance of takyr. *Anabasis brachiata*, *Nanophyton erinaceum*, *Zygophyllum fabago*, *Zygophyllum turcomanicum* grow along cracks on them: the arrangement of specimens of these plants in the form of chains makes it possible to recognize the location of cracks (usually masked by rubble). Only the eastern outskirts of Karabaur and especially its southeastern spurs represent a certain originality. Here, along the hills, zaisan saxaul (*Haloxylon ammodendron*) appears in large numbers, forming small dews.

Survey Results

OHTL section-1 territory located parallel to the Wind Project and included quadrats 1-12. Survey results along Kungrad part of OHTL reflected the existing botanical description in literature. The survey showed that the vegetation is mainly similar to the wind farm project site. It has large vegetation complex of white-earth wormwood-biyurgun (*Anabasis salsa*, *Artemisia terrae-albae*) communities, the association of white earth sagebrush-biyurgun (*Anabasis salsa*, *Artemisia terrae-albae* with the participation of keireuk (*Salsola orientalis*)) on saline solonetzic soils; *Anabasis brachiata*, *Nanophyton erinaceum*, *Atraphaxis spinosa* on rubble flat elevations; and association of white earth wormwood (*Anabasis salsa*, *Salsola orientalis*, *Artemisia terrae-albae*) with shrubs (*Atraphaxis spinosa*, *Convolvulus fruticosus*, *Salsola arbusculiformis*) and kermek (*Limonium suffruticosum*) on bedrock outcrops of gentle slopes dissected by dry ravines and,

in places, pure thickets of *Artemisia terrae-albae* on alluvial fans, with spots of takyr (dried crust with fissures forms on the surface). Mainly *Anabasis eriopoda* and *Artemisia terrae-albae*.

Based on the literature the UzRDB listed species *Euphorbia sclerocyathium* (UzRDB 2 – Rare species) and *Salsola chiwensis* (UzRDB 3 – Reducing species) should be present in Section 1. These species are not listed on the IUCN Red List.

The habitats of the OHTL route through Section 1, the Ustyurt Plateau, are mostly Natural and currently infrequently used. However, there are areas of very degraded habitats across the Ustyurt Plateau and in these areas the habitats would be assessed as being in very poor or poor condition. These habitat areas are associated with existing vehicle tracks and areas where blasting has been completed for geological exploration. In addition, the habitats within the Ustyurt are very dry and under pressure from degradation from the drying of the Aral Sea resulting in salt and other airborne deposits settling over the whole of the Ustyurt²¹. The upper soil layer is very fragile and once lost the likelihood of habitat recovery is very low and the modification of the habitat and poor condition is further exacerbated by continuous erosion both natural (wind and rain) and unnatural (repeated) vehicle movements. There are regularly used vehicle tracks crossing the Project AoI and, in these areas, habitat has been lost as well as in areas of previous geological exploration or areas of compacted soil.

Section 2

Landscape Characteristics

Section 2 of the OHTL route passes through the cities of Kanlikul, Shumanay, Akmangit and Nukus of Karakalpakstan.

This territory is well studied by scientists and occupied by agricultural landscapes and urbanized areas. Typical tugai vegetation is partially conserved in the floodplain of the Amu Darya River.

Vegetation

The Vegetation is characterized by a large concentration of tugai stands growing in the area of the modern and ancient Amu Darya delta. Representatives of tree-shrub and herbaceous vegetation such as poplars (*Populus alba*, *P. pruinosa*), Tamarisk (*Tamarix ramosissima*), Common Reed (*Phragmites australis*), Licorice (*Glycyrrhiza glabra*), and Cattail (*Typha angustifolia*) formations are common at the studied area. Other vegetation of the Amu Darya River is represented by Common Reed, fodder, medicinal, dye and essential oil plants.

Survey Results

The territory of Section 2 consists mainly of agricultural crops, including farmlands. The area is highly saline and there are almost no ephemeral plants. Mainly *Haloxylon persicum* and bushes (saxaul belyy, white saxovul, *Haloxylon*); *Alhagi pseudalhagi* and *Tamarix laxa* grows.

Section 2 of the OHTL route goes through the Kungrad, Khojaly and Nukus city regions, where anthropogenic activities have changed the landscape and these areas are predominantly Modified.

²¹ Transformation of vegetative cover on the Ustyurt Plateau of Central Asia as a consequence of the Aral Sea shrinkage. Adilov Bekzod, 2021

Section 3

Landscape Characteristics

Section 3 of the OHTL route begins from Nukus and ends in Boston District, Khorazm Region. Part of the route runs parallel to the A380 road (Guzor – Beyneu road) and this section mostly corresponds to the desert habitat and another section runs parallel to the Karatog (Sultan Uwais mountains).

Section 3 is located in an area of ancient alluvial deposits; however, the main part crosses the plumes of the Sultanuizdak landscape region. The area of ancient alluvial deposits is a low plain. It is composed of alluvial sandy-argillaceous sediments associated with the activity of former channels that connected with the Amu Darya. For the most part, the alluvial plain of the territory is a takyr-like surface, on which there are individual mounds of loose steel-gray micaceous sand, and near the outskirts of the region - yellow "Kyzylkum" sand. The area has been heavily urbanized. Closer to the border of the cultural zone, near settlements and roads, takyrs are replaced by areas of gray dunes, and also takyr surfaces are interrupted by low hollows with tugai areas.

The plumes of Sultanuizdag are a wide strip located at the foot of the northern slope of the Sultanuizdag mountains, representing a flat, slightly sloping area to the north. Its surface is covered with lush saltwort vegetation, confined to the ancient soil that comes to the surface. In some places there are areas covered with small gravel of crystalline rocks taken out of the mountains.

Vegetation

The vegetation of ancient alluvial deposits is poor and sparse due to anthropogenic activities. Near buildings, on plots of irrigated land, sometimes *Alhagi pseudalhagi* develops in masses. Tugai areas with reed-comb (*Tamarix hispida*, *T. ramosissima*, *Phragmites australis*) thickets with abundant development of *Karelinia capsica* are developed in the territory. A significant role in the landscape of the territory is played by hillocks and small ridges of sands with Kuyansuyak-saxaul-rank (*Carex physodes*, *Haloxylon persicum*, *Ammodendron conollyi*) vegetation, occupying 30-40% of the surface. Here, *Tamarix ramosissima* and a number of semishrubs like *Convolvulus karelinii*, *C. divaricatus*, *Astragalus unifolius*, *Artemisia santolina* are present.

The proluvial plumes of Sultanuizdag are dense rubble deposits with rubble of crystalline rocks. A sparse keireuk-wormwood group (*Artemisia terrae-albae*, *Salsola orientalis*) usually develops here, with a significant admixture of saltworts, among which *Halomonemis* species stand out especially and sometimes with various ephemera. On pebble-rubbly trails in the immediate vicinity of the mountains, against the background of *Artemisia terrae-albae* and *Salsola orientalis*, *Atraphaxis spinosa*, *Salsola arbuscula*, *Calligonum aphyllum* are abundant with a mixture of a number of other species, such as *Anabasis salsa*, *Stipa barbata*, *Ferula foetida*. On the northern border, where plumes merge with the sandy deposits of Kyzylkum, there are communities of wormwood (*Artemisia terrae-albae*), keireuk, in places with saxaul (*Salsola orientalis*, *Artemisia terrae-albae*, *Haloxylon persicum*), sagebrush-saxaul (*Artemisia terrae-albae*, *Haloxylon persicum*); Red Data Book species are not localized on the proluvial trails of Sultanuizdag. The territory is actively used for pasture cattle breeding and camel breeding is developed. In this regard, local areas of vegetation degradation with the dominance of *Peganum harmala*, *Alhagi pseudalhagi*, *Cousinia dichotoma* are widespread.

Survey Results

The sand of khududud is white partially mixed with saline sand, the sand migrates because it is very light and contains salt, and in this desert, it is mainly White Saxaul (*Haloxylon persicum* Bunge ex Boiss. &

Bohse.); *Ammodendron* (*Ammodendron conollyi* Bunge ex Boiss.); *Heliotropium argusioides* Carr. & Dirt.) *Convolvulus erinaceus* Ledeb.) have been found to grow well.

Section 4

Landscape Characteristics

Section 4 of the OHTL route is located in the landscapes of the eolian plains of Uzbekistan - South-Western Kyzylkum. This section starts from Turtkul District of the Republic of Karakalpakstan going through to Karakul District of Bukhara region.

This section has a complex landscape structure, including landscapes of sandy and gravelly deserts, and closed solonchak depressions. The landscapes of large ridge-cellular sands on ancient alluvial deposits, small-hilly sands with outcrops of Paleogene deposits, and dune hilly sands stand out in particular.

Vegetation

According to the botanical and geographical zoning, Section 4 is located in the Kyzylkum district of the Turan provinces. The majority of section 4 is occupied by hilly and ridge sands with their characteristic psammophilous tree and shrub vegetation (*Ammodendron conollyi*, *Calligonum aphyllum*, *C. arborescens*, *C. caput-medusae*, *C. eriopodum*, *C. leucocladum*, *C. macrocarpum*, *C. microcarpum*, *Ephedra strobilacea*, *Haloxylon persicum*, *H. aphyllum*, *Salsola richteri*, *S. paletzkiana*). Rubble deserts with wormwood (*Artemisia diffusa*, *A. terrae-albae*, *A. turanica*) and perennial saltwort vegetation are found mainly in the southwestern part of the territories. Large and small drainless depressions scattered throughout the region are occupied by groups of halophytes (*Salicornia europaea*, *Suaeda* sp., *Halocnemum strobilaceum*, *Halostachys belangerianus*, *Tamarix hispida*). The area has a peculiar flora with a large number of stenotopic psammophilic species (genus *Ammodendron* Fisch., *astragalus* of the section *Eremophysa*).

The vegetation cover is dominated by associations of jungun (*Calligonum* sp.sp.) formations, such as partheca-singren-jungun (*Calligonum microcarpum* + *C. microcarpum* - *Astragalus vilosissimus* + *Convolvulus divaricatus*), sagebrush-boylyshevo-jungun (*Calligonum microcarpum* + *C. eriopodum* + *Salsola arbuscula* - *Artemisia diffusa*); association of formations of white saxaul (*Haloxylon persicum*) - seline-ilac-dzhungun-saxaul (*Haloxylon persicum* + *Calligonum setosum* + *C. eriopodum* - *Carex physodes* - *Aristida pennata*); associations of singren formations (*Astragalus vilosissimus*), as parthec-syngraine (*Astragalus vilosissimus* - *Convolvulus hammadae*), parthec-iris-syngrin (*Astragalus vilosissimus* - *Iris songorica* - *Convolvulus hammadae*), jungun-ephemeral-syngrin (*Astragalus vilosissimus* - *ephemeretum* - *Artemisia diffusa*) ; association of formations of the white boletus (*Salsola arbuscula*) - seline-saxaul-boylysh (*Salsola arbuscula* - *Haloxylon persicum* - *Aristida pennata*).

Survey Results

There are species listed in the UzRDB in Kyzylkum, but during the surveys none of these species were found. The main reason for this is that the following listed Red Book species are distributed mainly in the northern part of the Kyzylkum near the Zarafshan and Uchkuduq districts, and one of the other reasons is that these Red Book-listed species are mainly visible in early spring.

Survey of OHTL section 4 recorded of *Astragalus centralis* E. Sheld., *Astragalus holargyreus* Bunge., *Astragalus adylovii* F. O. Khass., Ergashev et Kadyrov. *Onobrychis tavernierifolia* Stocks ex Boiss., *Eremosparton flaccidum* Litv., *Stipa aktauensis* Roshev., *Ferula kyzylkumica* Korovin., *Tulipa lehmanniana* Mercklin ex Bunge., *Calligonum zakirovii* (Khalk.) F.O. Khass., *Silene tomentella* Schischk., *Acanthophyllum cyrtostegium* Vved., *Climacoptera amblyostegia* (Botsch.) Botsch., *Climacoptera merkulowiczii* (Zakirov)

Botsch., *Lagochilus vevedenskyi* Kamelin et Zuckerw., *Phlomisoides transoxana* (Bunge) Salmaki., *Eremostachys eriolarynx* Pazij et Vved., *Cousinia umbilicata* Juz., *Jurinea psammophila* Iljin. and *Lappula aktaviensis* Popov et Zakirov.

The UzRDB listed species *Eremosparton flaccidum* (UzRDB 2 – Rare species) and *Tulipa lehmanniana* (UzRDB 3 – Reducing species) were present in Section 4. On the IUCN Red List *Eremosparton flaccidum* is listed as Data Deficient and *Tulipa lehmanniana* is listed as Near Threatened.

Table 44: List of Plant Species Recorded along OHTL Corridor Quadrats (2x2) During June Survey 2023

Number	Scientific Name	Common Name	Endemism	Conservation status		Confirmed Presence/Section			
				UzRDB	IUCN	1	2	3	4
1	<i>Acanthophyllum borszczowii</i>	Acanthophyllum borszczowii	-	-	-				X
2	<i>Alhagi pseudalhagi</i>	Alhagi	-	-	-		X	X	
3	<i>Ammodendron conollyi</i>	Ammodendron	-	-	-			X	X
4	<i>Anabasis eriopoda</i>	Anabasis	-	-	-	X			
5	<i>Artemisia terrae-albae</i>	Mugwort	-	-	-	X	X	X	X
6	<i>Asparagus breslerianus</i>	Asparagus	-	-	-			X	
7	<i>Astragalus turcomanicus</i>	Astragalus	-	-	-	X	X		
8	<i>Atraphaxis spinosa</i>	Atraphaxis spinosa	-	-	-	X			
9	<i>Calligonum caput-medusae</i>	Calligonum	-	-	-			X	X
10	<i>Caragana grandiflora</i>	Caragana grandiflora	-	-	-	X			
11	<i>Carex physodes</i>	Carex physodes	-	-	-	X		X	X
12	<i>Convolvulus erinaceus</i>	Convolvulus erinaceus	-	-	-			X	
13	<i>Convolvulus fruticosus</i>	Convolvulus fruticosus	-	-	-	X			
14	<i>Convolvulus hamadae</i>	Convolvulus hamadae	-	-	-				X
15	<i>Cuscuta epithymum</i>	Clover Dodder	-	-	-	X			
16	<i>Ephedra lomatolepis</i>	Ephedra	-	-	-				X
17	<i>Eremopyrum bonaepartis</i>	Eremopyrum	-	-	-	X	X	X	X
18	<i>Erodium oxyrrhynchum</i>	Erodium	-	-	-				X
19	<i>Euphorbia chamaesyce</i>	Euphorbia chamaesyce	-	-	-			X	
20	<i>Ferula foetida</i>	Ferula foetida	UZ, KZ, TM	-	-			X	X
21	<i>Haloxylon persicum</i>	Haloxylon	-	-	-	X	X	X	X

22	<i>Heliotropium argusioides</i>	Heliotropium argusioides	-	-	-			X	X
23	<i>Lagochilus acutilobus</i>	Lagochilus	-	-	-			X	
24	<i>Lappula spinocarpos</i>	Lappula spinocarpos	-	-	-	X		X	
25	<i>Leontice incerta</i>	Leontice incerta	-	-	-	X			
26	<i>Peganum harmala</i>	Peganum	-	-	-	X		X	
27	<i>Poa bulbosa</i>	Bulbous Bluegrass	-	-	-		X	X	X
28	<i>Ranunculus platyspermus</i>	Ranunculus platyspermus	-	-	-	X			
29	<i>Rheum tataricum</i>	Rheum	-	-	-	X			
30	<i>Rhinopetalum karelinii</i>	Rhinopetalum karelinii	-	-	-	X			
31	<i>Salix alba</i>	Salix	-	-	-			X	
32	<i>Sisymbrium subspinescens</i>	Sisymbrium	-	-	-	X			
33	<i>Sphaerophysa salsula</i>	Austrian Peaweed	-	-	-			X	
34	<i>Takhtajaniantha pusilla</i>	Takhtajaniantha pusilla	-	-	-	X			
35	<i>Tamarix laxa</i>	Tamarix	-	-	-		X	X	
36	<i>Tanacetum santolina</i>	Tanacetum santolina	-	-	-	X			
37	<i>Triticum durum</i>	Durum Wheat	-	-	-			X	
38	<i>Zygophyllum oxianum</i>	Zygophyllum oxianum	-	-	-			X	
39	<i>Zygophyllum pinnatum</i>	Zygophyllum pinnatum	-	-	-	X			
40	<i>Zygophyllum turcomanicum</i>	Zygophyllum turcomanicum	-	-	-	X			

10.2.4 Invertebrates

Methods

A desk-based literature review has been undertaken to identify species likely to be present, in particular identifying sensitive species (conservation concern or range restricted) that may be present.

Results

The literature review identified 106 species from 59 families that are potentially present along the OHTL route. Based on the information available none of the species likely to occur are IUCN red list species or range restricted. Two species are listed in the Uzbekistan Red Data Book as Vulnerable (*Catocala optima* - a species of moth) and Near-threatened (*Hypermnestra helios* – a species of Swallowtail butterfly).

10.2.5 Reptiles and Amphibians

Methods

A desk-based literature review was completed to identify species likely to be present along the route of the OHTL based on the habitats present and known records.

Surveys were completed in April and June 2023 where 11 survey locations were selected in representative habitats along the route of the OHTL through Sections 1 to 4. From each survey location three transects of between 1 km to 2.3 km were completed, resulting in a total of 33 transects and 39 km being completed.

The following methodological guidelines were used in the survey: L. G. Dinesman, M. L. Kaletskaya (1978), V. M. Makeev, A. T. Bozhansky (1988) and N. N. Shcherbak (1989), D. A. Bondarenko, Chelintsev, (1996). Discussion of Methods included in the detailed report of in country expert.



Figure 60: Locations of the three most representative transects along OHTL route – Section 1

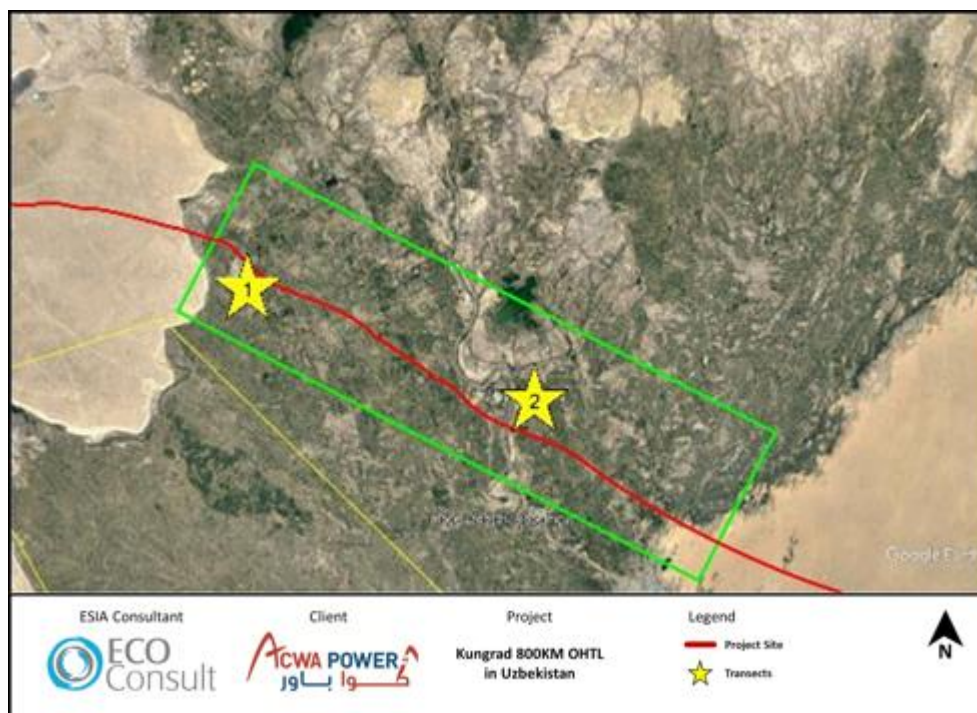


Figure 61: Locations of the transects along OHTL route – Section 2

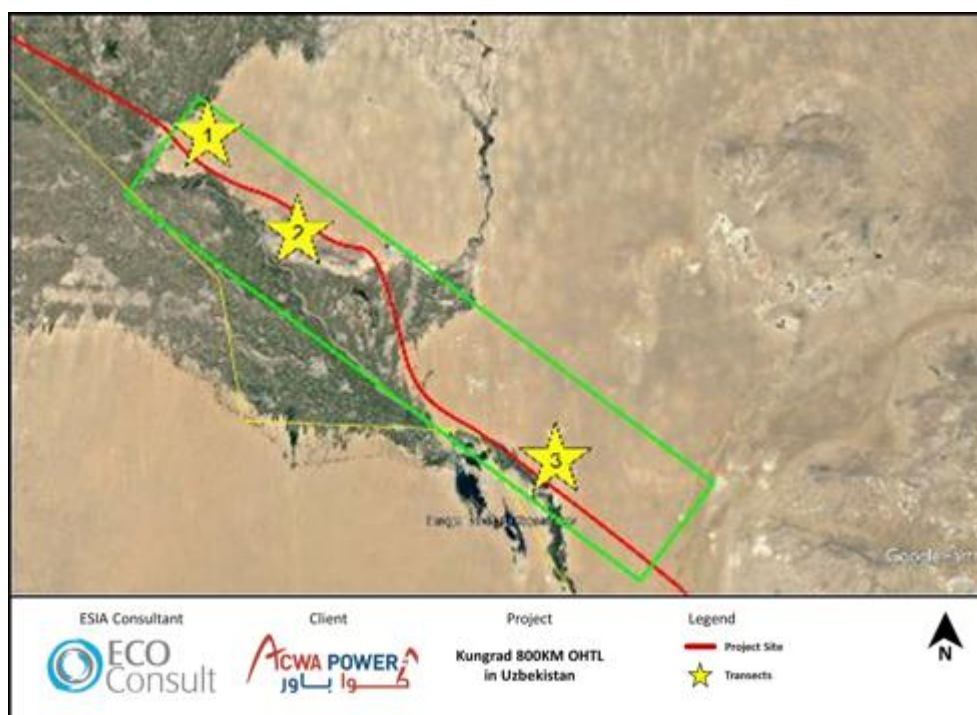


Figure 62: Locations of the transects along OHTL route – Section 3

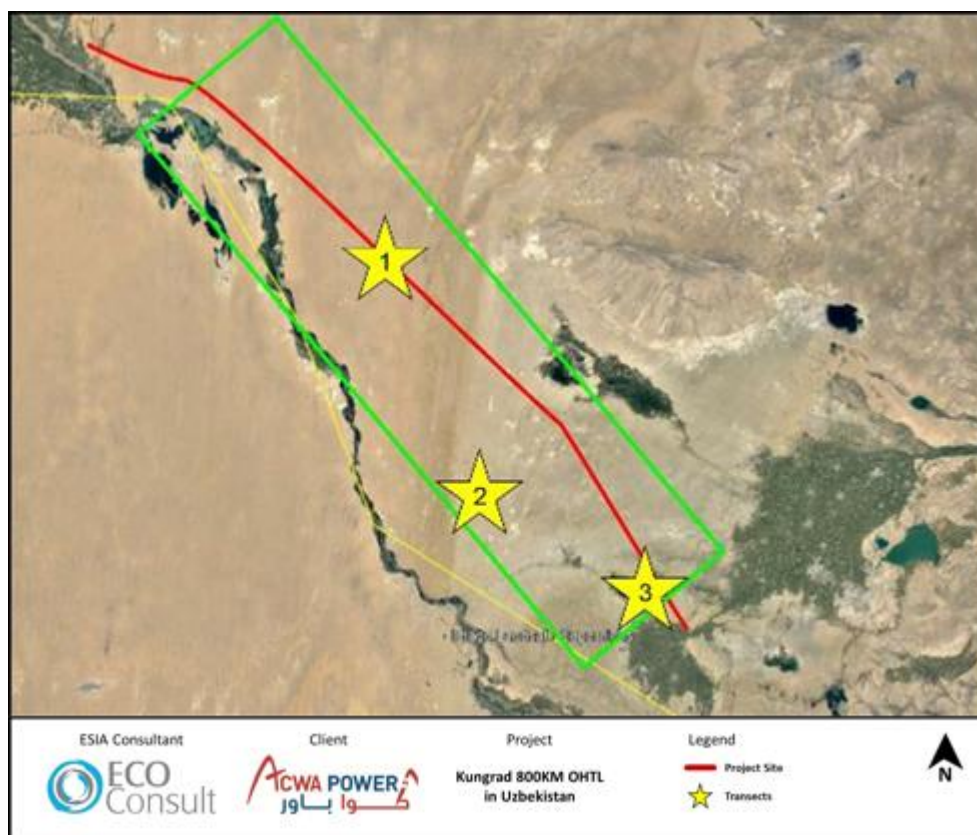


Figure 63: Locations of the transects along OHTL route – Section 4

In addition to the above, driven transects across the entire sections were undertaken as follows:

- Section 1 was subject to a driven transect across the entire length of Section 1.
- Section 2. This area was largely excluded from driven transect across the entire length due to it being highly modified by agriculture and anthropogenic factors and access constraints.
- Section 3 was subject to a driven transect across the entire length of Section 3.
- Section 4 was subject to a driven transect across the entire length of Section 4.

The switching station locations at Nukus, Sarymay and Karakul were subject to full walkovers, where access allows. All reptiles and amphibian species observed were recorded in full and an assessment of habitats made. The station at Ustyurt is within the proposed Kungrad Wind Farm site and as such will also be subject to full walkover survey.

The reptile's population density (D) was calculated using the following formula (Bondarenko, Chelintsev, 1996):

$$D = \frac{n}{2LB}$$

where n – number of animal individuals recorded on the transect; L – length of the transect; B – formula to calculate an effective width of the survey strip:

$$B = W(0,79F + 0,21F^4)$$

where **W** – width of the limited strip on both sides of the transect axis; **F**:

$$F = \frac{2y}{W}$$

The recording of the distance of animals recorded and the transect excludes underestimation of the population density of the reptiles caused by a decrease in their detectability in remote parts of the survey strip, regardless of the degree of its limitation (Bondarenko and Chelintsev, 1996).

The abundance of the reptiles in habitats was estimated using the following population density scale for one/ha (Kuzynin, 1962): 0.1 – 0.9 – rare, 1.0 – 9.9 – common, 10.0 and higher – abundant.

Results

Based on the literature and archival materials of the reptile specialists, it is possible 30 species of reptiles can be found along the proposed OHTL route. A list of potential reptile and amphibian species that could occur is shown in the table below. The purpose of the field surveys completed was to ascertain which of these species are present in the Project area. Nineteen species were encountered and are shown in **bold** and which sections they were recorded in.

The most vulnerable species with the highest conservation status (VU) of IUCN is the Central Asian Tortoise (*Testudo horsfieldii*). The highest tortoise densities were found in the area opposite Sultan Uwais Range (Section 3) – 5.4 ind/ha, nevertheless, compared to the Central Kyzylkum, these are rather low densities for tortoises.

In the central part of Section 1 the OHTL runs close to the Barsa Kelmes Depression, where the biotope is quite distinctive and different from other sites. In this habitat the rare and endemic for Ustyurt subspecies of Spotted Toadhead Agama (*Phrynocephalus guttatus salsatus* Gorelov, Dunayev et Kotenko, 1995, IUCN Least Concern) can be potentially found.

None of the species of reptile recorded on the site are considered endemic or range-restricted.

No amphibians were recorded on the site but there are waterbodies suitable for these species.

Further species present or site-specific information may come from incidental sightings during the bird VP and transect surveys 2023 to 2024.

Table 45: List of Potential and confirmed Reptile and Amphibian Species. X = presence confirmed per survey section

Species	Species presence acc. to literary sources	Expert's earlier personal data	Conservation status			Confirmed Presence/Section			
			UzRDB	IUCN	CITES	1	2	3	4
Turan Toad <i>Bufo taurus</i>	+	+	-	LC	-				
Eurasian Marsh Frog <i>Pelophylax ridibundus</i>	+	+	-	LC	-				
Central Asian Tortoise <i>Testudo horsfieldii</i>	+	+	2 (VU)	VU	II	X		X	X

Species	Species presence acc. to literary sources	Expert's earlier personal data	Conservation status			Confirmed Presence/Section			
			UzRDB	IUCN	CITES	1	2	3	4
Caspian Even-fingered Gecko <i>Alsophylax pipiens</i>	+	+	-	LC	-	X			
Transcaspian Bent-toed Gecko <i>Mediodactylus russowi</i>	+	+	-	LC	-				
Caspian Bent-Toed Gecko <i>Tenuidactylus caspius</i>	+	+	-	LC	-	X			
Bogdanov's Thin-toed Gecko <i>Tenuidactylus bogdanovi</i>	+	+	-	LC	-				
Comb-toed Gecko <i>Crossobamon eversmanni</i>	+		-	LC	-			X	X
Common Wonder Gecko <i>Teratoscincus scincus</i>	+	+	-	LC	-			X	X
Steppe Agama <i>Trapelus sanguinolentus</i>	+	+	-	LC	-	X	X	X	X
Sunwatcher Toad-headed Agama <i>Phrynocephalus helioscopus</i>	+	+	EN	LC	-	X			
Secret Toadhead Agama <i>Phrynocephalus mystaceus</i>	+	+		LC	-			X	X
Lichtenstein's Toadhead Agama <i>Phrynocephalus interscapularis</i>	+	+	-	LC	-			X	
Spotted Toad –head Agama <i>Phrynocephalus guttatus salsatus</i>	+		-	LC	-				
Steppe Racerunner <i>Eremias arguta arguta</i>	+		-	LC	-				
Sand Racerunner <i>Eremias scripta</i>	+	+	EN	LC	-				X
Reticulate Racerunner <i>Eremias grammica</i>	+	+	-	LC	-			X	X
Rapid Lizard	+	+	-	LC	-	X	X		

Species	Species presence acc. to literary sources	Expert's earlier personal data	Conservation status			Confirmed Presence/Section			
			UzRDB	IUCN	CITES	1	2	3	4
<i>Eremias velox</i>									
Striped Racerunner <i>Eremias lineolata</i>	+	+	-	LC	-		X	X	X
Aralo-Caspian Racerunner <i>Eremias intermedia</i>	+	+	-	LC	-	X		X	
Caspian Monitor <i>Varanus griseus caspius</i>	+	+	2 (VU:D)	LC	I			X	X
Desert Sand Boa <i>Eryx miliaris</i>	+	+	3 (NT)	LC	II		X	X	
Sand Racer <i>Psammophis lineolatus</i>	+	+	-	LC	-	X	X		X
Spotted Whip Snake <i>Hemorrhois ravergieri</i>	+		-	LC	-				
Spotted Desert Racer <i>Platycephalus karelinii</i>	+		-	LC	-				X
Diadem Snake <i>Spalerosophis diadema</i>	+	+	-	LC	-				X
Dice Snake <i>Natrix tessellata</i>	+	+	-	LC	-				
Blotched Rat-snake <i>Elaphe sauromates</i>	+	+	2 (VU:R)	LC	-				
Karaganda Pitviper <i>Gloydius caraganus</i>	+	+	-	LC	-				
Saw-scaled Viper <i>Echis carinatus</i>	+	+	-	LC	-				

Notes: UzRDB – species/subspecies listed in the Red Data Book of Uzbekistan (2019) (2 (VU) – vulnerable; 2 (VU:D) – vulnerable, declining; 3 (NT) – near-threatened); IUCN – species included in the Red List of the International Union for Conservation of Nature (EN – endangered; VU – vulnerable); CITES I, II – species listed in the appendices (I, II) to the Convention on International Trade in Endangered Species of Wild Fauna and Flora

List of reptiles and density which were found along OHTL.

No	Species	The number of recorded animals	Population density on the site inds/ha	Biotope	Transect length	Date and time	Latitude	Longitude	Air temperature C°
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Sector_1_site_1				Rubbly-clayey plain with cliffs and elevations, Artemisia-Ferula association	3 km	20.06.23	43.10 1506°	57.060 594°	25
1	<i>Testudo horsfieldii</i>	2	0,3						
2	<i>Trapelus sanguinolentus</i>	1	0,4						
3	<i>Phrynocephalus helioscopus</i>	2	1.3						
4	<i>Eremias velox</i>	4	2,8						
5	<i>Alsophylax pipens</i>	6	3,4						
6	<i>Tenuidactylus caspius</i>	1	0,3						
Sector_1_site_2				Rubbly-clay depressions Artemisia association	3,5 km	24.06.2023	42.92 7602°	57.657 977°	21
1	<i>Testudo horsfieldii</i>	4	1,8						
2	<i>Eremias velox</i>	4	7.1						
3	<i>Eremias intermedia</i>	2	1						
4	<i>Phrynocephalus helioscopus</i>	2	0,9						
5	<i>Psammophis lineolatus</i>	1	0,1						

Sector_1_site_3				Rubbly-clay plain Artemisia association	3 km	24.06.202 3	42.83 6784°	58.534 513°	23
1	<i>Eremias velox</i>	2	0,6						
2	<i>Trapelus sanguinolentus</i>	1	0,2						
Sector_2_site_1				Lowland with Tamarix association	4 km	25.06.202 3	42.74 8289°	58.992 007°	28
1	<i>Eremias velox</i>	3	0,8						
2	<i>Eryx miliaris</i>	1	0,4						
Sector_2_site_2				Hilly sandy foothills, kandim association	3 km	25.06.202 3	42.54 9084°	59.641 179°	34
1	<i>Eremias velox</i>	2	1,4						
2	<i>Trapelus sanguinolentus</i>	2	0,9						
3	<i>Eremias lineolata</i>	2	0,7						
4	<i>Psammophis lineolatus</i>	1	1						
Sector_3_site_1				Hilly sandy foothills, kandim association	3,2 km	12.04.202 3	42.23 4509°	60.234 491°	24
1	<i>Testudo horsfieldii</i>	6	4,6						
2	<i>Trapelus sanguinolentus</i>	2	0,8						
3	<i>Eremias lineolata</i>	2	1,1						

Sector_3_site_2				Hilly sandy foothills, kandim association	3,4 km	12.04.2023	42.12 8363°	60.757 230°	26
1	<i>Testudo horsfieldii</i>	8	5,4						
2	<i>Phrynocephalus interscapularis</i>	4	3,2						
3	<i>Eremias intermedia</i>	2	0,8						
4	<i>Eremias grammica</i>	3	1.2						
5	<i>Eremias lineolata</i>	2	2,0						
6	<i>Teratoscincus scincus</i>	12	9,6						
7	<i>Crossobamon eversmanni</i>	4	2,1						
8	<i>Eryx milliaris</i>	2	2,4						
9	<i>Varanus griseus</i>	footprints							
Sector_3_site_3				Hilly sandy foothills, sarzagan association	3,5 km	15.04.2023	41.34 8417°	61.432 133°	23
1	<i>Testudo horsfieldii</i>	2	0,6						
2	<i>Phrynocephalus interscapularis</i>	3	5,2						
3	<i>Eremias grammica</i>	3	3,8						

4	<i>Phrynocephalus mystaceus</i>	3	2,2						
5	<i>Trapelus sanguinolentus</i>	2	0,9						
6	<i>Teratoscincus scincus</i>	6	2,3						
7	<i>Crossobamon eversmanni</i>	3	1,4						
Sector_4_site_1				Hilly sandy foothills, sarzagan association	3 km	22.04.2023	40.84 0985°	62.319 679°	30
1	<i>Testudo horsfieldii</i>	2	1,1						
2	<i>Eremias lineolata</i>	2	3,2						
3	<i>Eremias scripta</i>	1	1						
4	<i>Trapelus sanguinolentus</i>	2	1,2						
5	<i>Phrynocephalus mystaceus</i>	3	3,8						
6	<i>Eremias grammica</i>	1	0,9						
7	<i>Crossobamon eversmanni</i>	4	5,6						
8	<i>Teratoscincus scincus</i>	6	4,2						
9	<i>Spalerosophis diadema</i>	1	0,8						

Sector_4_site_2				Hilly sandy foothills, kandim association	3,6 km	22.04.2023	40.13 3728°	62.810 280°	27
1	<i>Testudo horsfieldii</i>	1	1						
2	<i>Eremias lineolata</i>	2	1,3						
3	<i>Eremias grammica</i>	1	2,8						
4	<i>Trapelus sanguinolentus</i>	1	0,7						
5	<i>Eremias scripta</i>	3	5,4						
6	<i>Varanus griseus</i>	1	0,6						
7	<i>Teratoscincus scincus</i>	7	5,6						
Sector_4_site_3				Hilly sandy foothills, kandim association	3,3	23.04.2023	39.76 7633°	63.705 850°	34
1	<i>Trapelus sanguinolentus</i>	1	1,2						
2	<i>Eremias scripta</i>	3	4,7						
3	<i>Eremias grammica</i>	2	2,8						
4	<i>Psammophis lineolatus</i>	1	0,6						
5	<i>Platycephalus karelini</i>	1	0,8						

10.2.6 Mammals

Methods

A desk-based literature review was completed to identify species likely to be present along the route of the OHTL based on the habitats present and known records.

Surveys were undertaken in June 2023 (10 days) and July 2023 (3 days) and consisted of visits where the whole OHTL route was subject to a visual survey (driven transect) during which time all mammals seen were recorded in full.

Walked transects were also completed in representative habitats along the route of the OHTL. In total 55 transects of between 1 and 2.4 km (totaling 95.5 km) were completed in Sections 1-4 of the OHTL route. Again, where encountered mammals were recorded in full in addition to which any field sign (e.g., physical remains, burrows, scats or pug marks) were also recorded. Surveys were undertaken at an appropriate time of year and day to be able to record species that may be present.



Figure 64: Locations of the transects along OHTL route – Section 1



Figure 65: Locations of the transects along OHTL route – Section 2

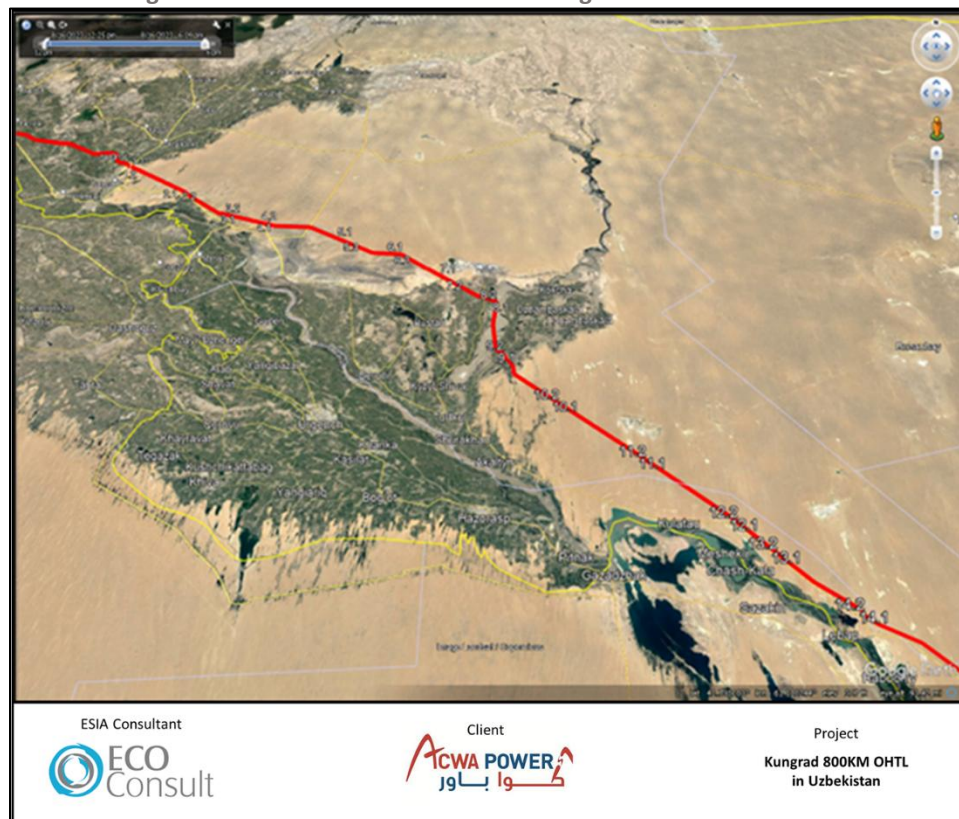


Figure 66: Locations of the transects along OHTL route – Section 3

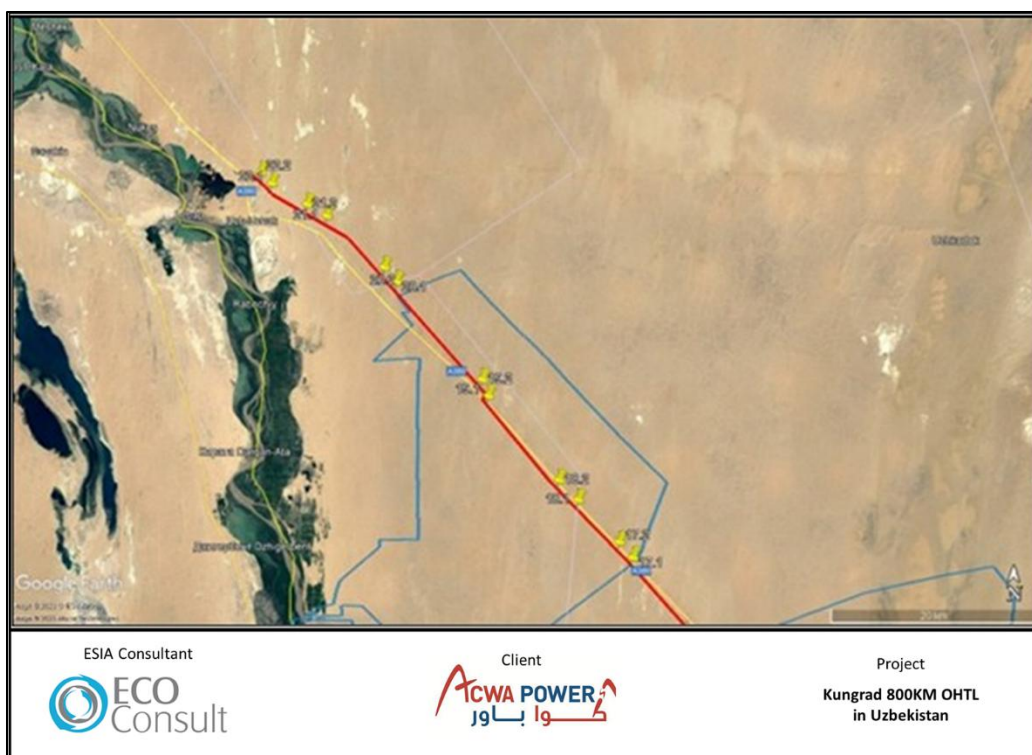


Figure 67: Locations of the transects along OHTL route – Section 4 part 1

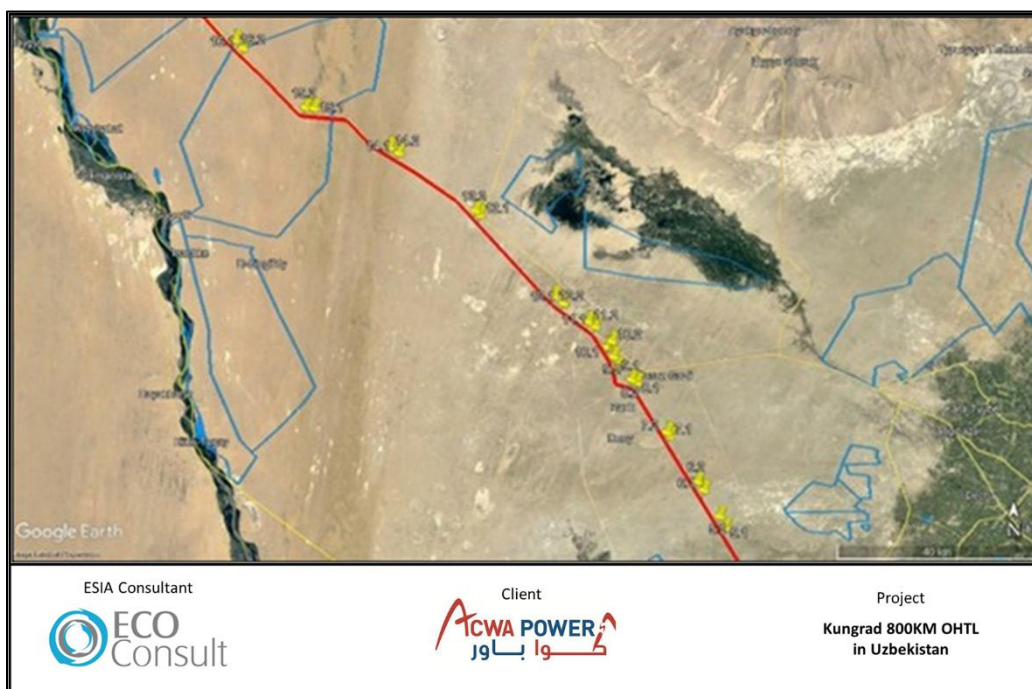


Figure 68: Locations of the transects along OHTL route – Section 4 part 2

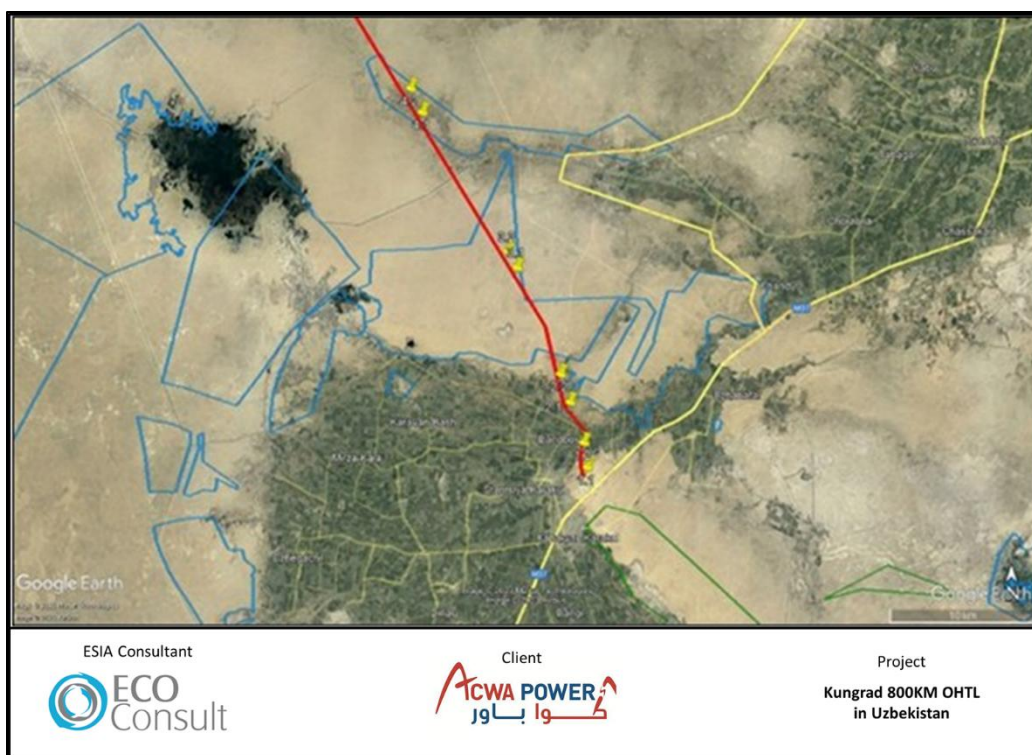


Figure 69: Locations of the transects along OHTL route – Section 4 part 3

Results

In zoogeographical terms, the study area belongs to the faunistic complex of the Iranian-Turanian community of the Palearctic province (Kostin, 1961) with a set of species typical for sandy dry deserts (Long-eared Hedgehog (*Hemiechinus auritus*), Marbled Polecat (*Vormela peregusna*), ground squirrels, jerboas, gerbils, Red Fox (*Vulpes vulpes*), Steppe Cat (*Felis manul*), Dune Cat (*Felis margarita*) and Goitered Gazelle). The presence of surface waters, waste channels, waste lakes and lakes from self-flowing wells expands the fauna with hydrophilic species (shrew, Zaisan Mole-vole (*Ellobius tancrei*), Golden Jackal (*Canis aureus*) and Asian Badger (*Meles leucurus*)).

Based on literature review of the mammalian fauna and archival materials of the author, the total number of species likely to occur along the route of the OHTL is 43 species and is shown in the table below. The purpose of the field surveys completed was to ascertain which of these species are present in the Project area. Thirty-one species or signs of those species were encountered and are shown in **bold** and which sections they were recorded in.

Additionally, the presence of Honey Badger and Caracal has been confirmed in the Ustyurt Plateau from surveys of the Wind Project and could be present along the OHTL within the Ustyurt Plateau area. During the bird surveys evidence of Honey Badger (bones and claws) have been found near to OHTL VP1.

Further species present or site-specific information may come from incidental sightings during the bird VP and transect surveys 2023 to 2024.

None of the species recorded on the site are considered endemic or range-restricted.

Table 46: List of Potential and confirmed Mammal Species. X = presence confirmed per survey section

Scientific Name	Common Name	IUCN	UzRDB	Confirmed Presence/Section			
				1	2	3	4
<i>Hemiechinus auritus</i>	Long-eared Hedgehog	LC	-	X	X	X	X
<i>Hemiechinus hypomelas</i>	Brandt's Hedgehog	LC	3 (NT)				X
<i>Suncus etruscus</i>	Etruscan Shrew	-	-				
<i>Crocidura suaveolens</i>	Lesser White-toothed Shrew	LC	-				
<i>Diplomesodon pulchellum</i>	Piebald Shrew	-	-				X
<i>Tadarida teniotis</i>	European free - tailed Bat	-	2 (VU:R)				
<i>Myotis mystacinus</i>	Whiskered Bat	-	-				
<i>Nyctalus lasiopterus</i>	Giant Noctule	-	-				
<i>Nyctalus noctula</i>	Noctule	-	-				
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	LC	-		X		
<i>Pipistrellus kuhli</i>	Kuhl's Pipistrelle	-	-				
<i>Eptesicus serotinus</i>	Serotine Bat	LC	-				
<i>Vespertilio murinus</i>	Particolored Bat	-	-				
<i>Lepus tolai</i>	Tolai Hare	LC	-	X	X	X	X
<i>Spermophilopsis leptodactylus</i>	Long-clawed Ground Squirrel	LC	-			X	X
<i>Spermophilus fulvus</i>	Yellow Ground Squirrel	LC	-	X	X	X	X
<i>Allactaga major</i>	Great Jerboa	LC	-	X		X	
<i>Allactaga elater</i>	Small Five-toed jerboa	-	-			X	X
<i>Allactaga severtzovi</i>	Severtzov's jerboa	-	-	X	X	X	X
<i>Allactaga bobrinsky</i>	Bobrinski's jerboa	-	-				
<i>Paradipus ctenodactylus</i>	Comb-toed jerboa	-	-				
<i>Dipus sagitta</i>	Northern three-toed jerboa	-	-				X
<i>Jaculus turkmenicus</i>	Turkmen jerboa	-	-				
<i>Cricetulus migratorius</i>	Gray Hamster	LC	-	X	X	X	X
<i>Ellobius talpinus</i>	Northern Mole Vole	LC	-	X	X		
<i>Ellobius tancrei</i>	Zaisan Mole Vole	-	-		X	X	X
<i>Ondatra zibethica</i>	Muskrat	-	-		X	X	
<i>Microtus bucharensis</i>	Bucharian Vole	-	-				X
<i>Meriones tamariscinus</i>	Tamarisk Gerbil	-	-				X
<i>Meriones libycus</i>	Libyan Gerbil	-	-		X	X	X
<i>Meriones meridianus</i>	Midday Gerbil	-	-	X	X	X	X
<i>Rhombomys opimus</i>	Giant Day Jird	-	-	X	X	X	X
<i>Mus musculus</i>	House Mouse	-	-				X
<i>Nesokia indica</i>	Short-tailed Bandicoot Rat	-	-		X	X	X
<i>Canis aureus</i>	Golden or Indian Jackal	-	-		X		X
<i>Vulpes corsac</i>	Corsac Fox	LC	2 (VU:D)			X	
<i>Vulpes vulpes</i>	Red Fox	-	-	X	X	X	X
<i>Mustela nivalis</i>	Common Weasel	-	-		X		
<i>Mustela eversmanni</i>	Steppe Polecat	LC	2 (VU:D)				
<i>Vormela peregusna</i>	Marbled Polecat	VU	2 (VU:D)				X
<i>Millivora capensis</i>	Honey Badger	LC	1 (CR)	X			
<i>Meles leucurus</i>	Asian Badger	LC	-		X		

Scientific Name	Common Name	IUCN	UzRDB	Confirmed Presence/Section			
				1	2	3	4
<i>Lutra lutra</i>	Central Asian Otter	NT	EN				
<i>Felis chaus</i>	Jungle Cat	LC	-		X		
<i>Felis libyca</i>	Steppe Cat	-	-			X	X
<i>Felis margarita</i>	Sand Cat	-	-				X
<i>Caracal caracal</i> <i>michaelis</i>	Turkmenian Caracal	LC	CR				
<i>Cervus hanglu</i>	Tarim Red Deer	LC	EN				
<i>Gazella subgutturosa</i>	Goitered Gazelle	VU	2 (VU:D)	X			X

Notes: UzRDB – species/subspecies listed in the Red Data Book of Uzbekistan (2019) (2 (VU) – vulnerable; 2 (VU:D) – vulnerable, declining; 3 (NT) – near-threatened); IUCN – species included in the Red List of the International Union for Conservation of Nature (EN – endangered; VU – vulnerable); CITES I, II – species listed in the appendices (I, II) to the Convention on International Trade in Endangered Species of Wild Fauna and Flora

Discussion of Notable Records

Brandt's Hedgehog (*Hemiechinus hypomelas*) – IUCN LC, UzRDB NT

It is a rare, mosaically common species. In the latest edition of the Red Data Book, it is not indicated for the project area, however, according to the surveyor's archival data (2021-2023), there are sightings in the Karakul oasis. Evidence of this species (skins) were found at four locations along the OHTL all in Section 4.

Corsac Fox (*Vulpes corsac*) – IUCN LC, UzRDB VU:D

A mosaically distributed subspecies. It is spread at the delta of the Amudarya River, the Kyzylkum desert, the Karshi steppe, the Sundukli sands and adyrs of the Pamir-Alay. Evidence of this species (footprints) was found at one location along the OHTL in Section 3.

Marbled Polecat (*Vormela peregusna*) – IUCN VU, UzRDB VU:D

It sporadically inhabits sandy massifs with a high number of ground squirrels, which it actively feeds on. Evidence of this species (footprints) were found at three locations along the OHTL all in Section 4.

Goitered Gazelle (*Gazella subgutturosa*) – IUCN VU, UzRDB VU:D

Widely inhabits the desert zone of the Southern Kyzyl Kum. Encounters are quite regular, but most often on slings and droppings. Evidence of this species (footprints) were found at six locations along the OHTL all in Sections 1 and 4.

10.2.7 Bat Roost Search

Methods

A search for structures/features suitable for use by roosting bats along the route of the OHTL and a 100m buffer was undertaken in summer/autumn 2023.

Results

The route of the OHTL largely passes through open desert or agricultural areas. There are no built (man-made) structures within 100m of the OHTL route, but there are some areas where a building or small number of buildings are within 100-300m of the route.

Some natural features that have the potential to be suitable for use by roosting bats are present along the OHTL route, which includes a cliff (c.70m) at the western edge of the Nukus/agricultural area and areas with trees, e.g., around the Amu Darya. No features have been confirmed as bat roosts along the route.

10.2.8 Avifauna

Methods

Vantage Point (VP) Surveys were completed, from August 2023 and to May 2024. These comprised of surveys split into three seasons with 12 hours of VP survey, at all VPs, in each season.

- Autumn Migration VP Surveys – August 2023 to October 2023
- Winter Bird VP Surveys – November 2023 to February 2024
- Spring Migration VP Surveys – March 2024 to May 2024
- No summer VP surveys were undertaken. This is not considered a constraint as there is very unlikely to be any significant bird movement during the summer due to the general ecology of migratory birds expected in the region and because of the extreme heat and harsh conditions in Uzbekistan during the summer. This is true of the Kungrad WF surveys which recorded very few movements of birds during the summer season, even of resident and breeding species. Although MacQueen's Bustard may be nesting in the area of the OHTL, particularly towards the southern end, breeding birds are unlikely to be very mobile during this season and there would be no significant movement from migratory populations from further north until Autumn migration starts from mid-August at the earliest.
- 19 VP locations were selected based on likely attractants for birds as well as likely bird movement corridors based on landscape features, presence of waterbodies etc. and these locations were visited during the Turnstone Ecology site visit.
- VP locations were also targeted to provide better coverage near to where IBAs and other features are present. VP locations were, where possible, selected where roads intersect with the OHTL corridor. The purpose of the VP surveys is to record bird movements across the OHTL corridor as well as produce a list of species observed, the number of birds recorded and an estimate of flight heights.
- VPs surveys lasted no longer than three hours, so at least four visits of 3 hours will be completed in each season.

It is acknowledged that the survey effort (in particular VP survey) undertaken is limited, however actual impacts of OHTL are inherently difficult to predict from surveys with any degree of confidence. The surveys completed have however provided enough information to understand the species likely to be affected by the OHTL and where there are limitations in actual impact assessment a precautionary approach has been taken. More detailed pre-construction surveys will be undertaken for example for nesting raptors and MacQueen's Bustard, that will allow full assessment and implementation of mitigation to be undertaken and the actual impacts will be informed from PCFM studies during monitoring. This is detailed in the project BMP and BAP documents and further plans (such as the Breeding Birds Protection Program (BBPP), post

construction fatality monitoring (PCFM) and Collision Risk Management Plan (CRMP)) will ensure this is completed within lender agreed parameters.

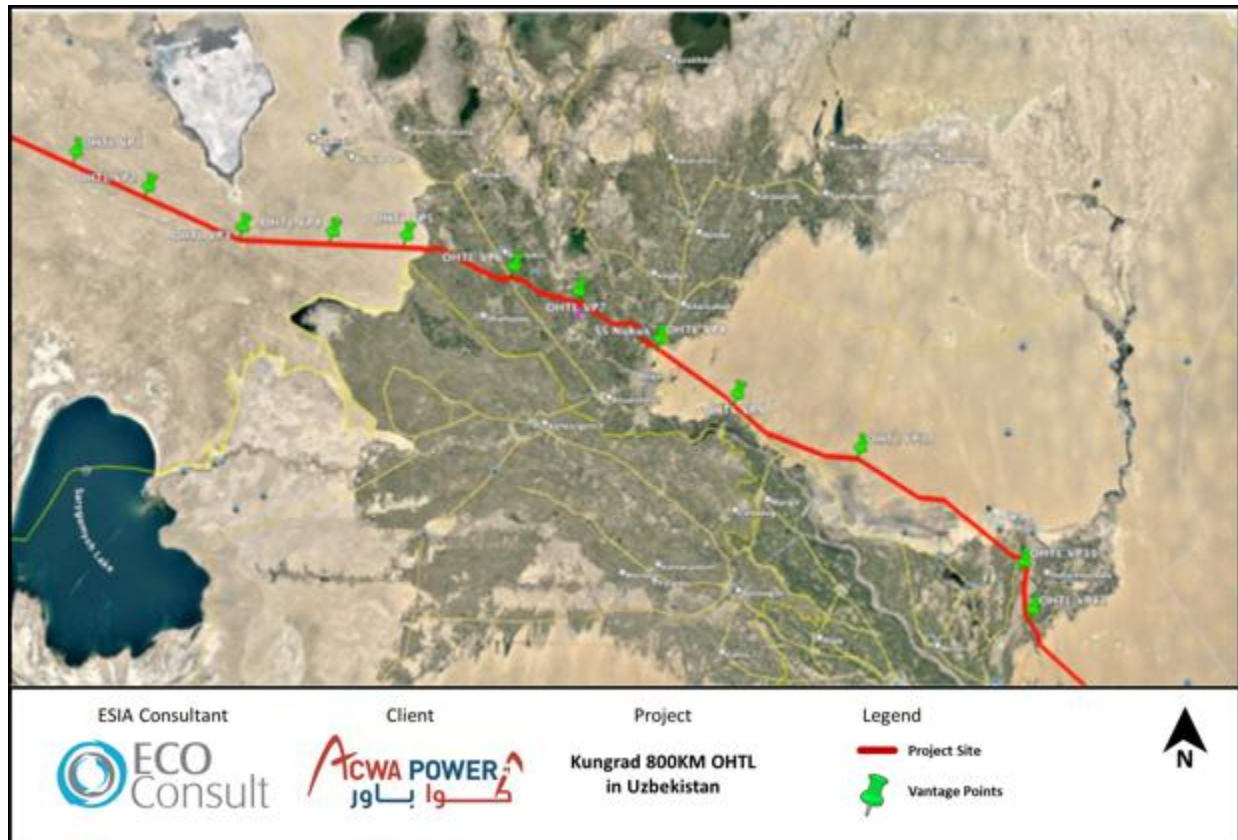


Figure 70: Location of OHTL Vantage Points (northern and central section)

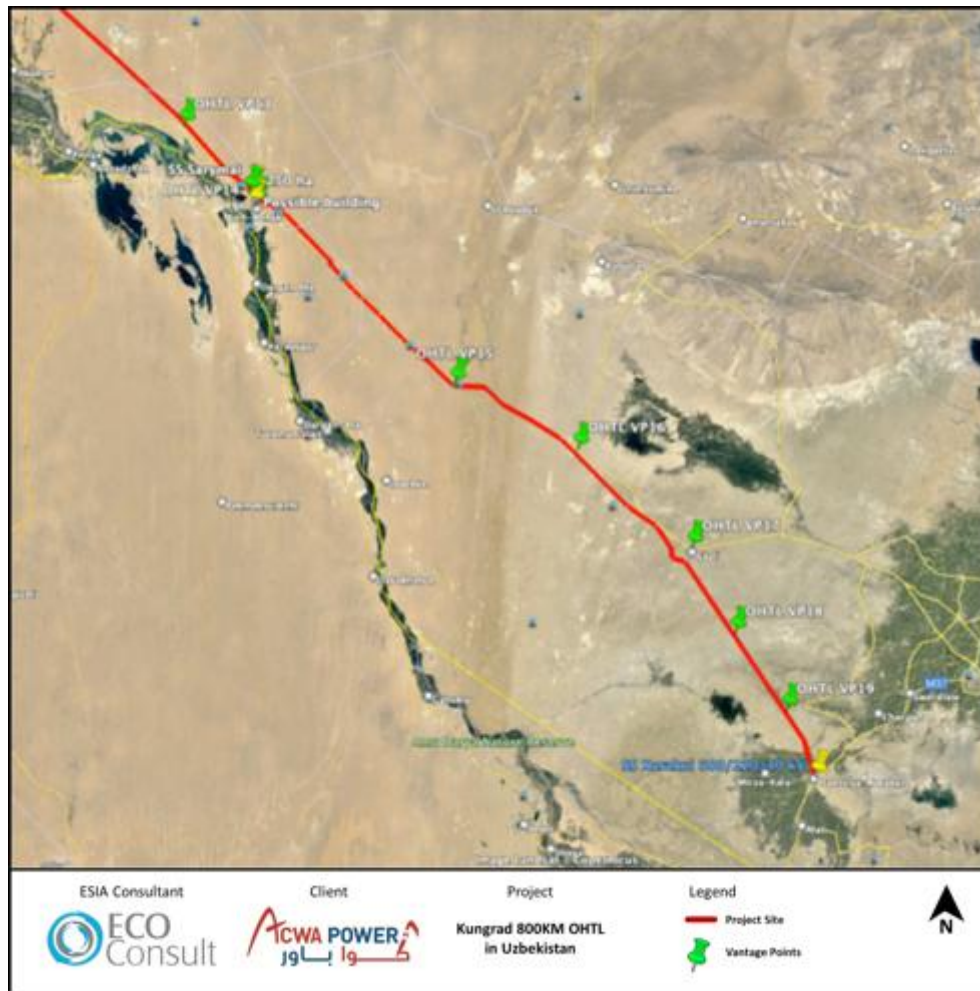


Figure 71: Location of OHTL Vantage Points (southern section)

Bird transect surveys were also undertaken along the OHTL route between the VPs, at the same time as the VP surveys. The transect surveys were also be undertaken in June and July 2024. Transects will be driven at a maximum of 50kph with stops in areas of higher bird activity or where target species are present (e.g., bustards) and counts of all the birds present will be made. During the VP surveys and transects any Bustard species, Sociable Lapwing and other target species which will be recorded in full.

If MacQueen's Bustards are identified during any of the surveys in suitable breeding habitat, additional survey effort will be undertaken to identify any lekking sites/behavior and breeding activity.

Waterbird Survey

- In addition to the VP and Transect surveys, surveys of selected waterbodies were completed during the autumn and spring migration seasons and during the winter bird season (November 2023 to February 2024). The surveys comprised one count in August 2023 and May 2024 and two counts per month for the rest of the Autumn, Winter and Spring seasons (September through to April). If temperatures were sufficiently cold enough that the selected freshwater and saline lagoons are frozen then surveys were not undertaken during these periods.
- The waterbodies that have been selected for additional surveys are as follows and shown on the map below:

- Section 1 – Sudochye Lake IBA approximately 55 km north at the closest point (43.58808, 58.58949) and Barsakelmes approximately 40 km north at the closest point (43.41250, 57.23600). Although at Barsakelmes the only waterbirds recorded were one Water Rail and two and five Mallard and therefore the full data for this site is not included in the results below.
- Section 3 - Nukus Lakes North approximately 1 km north at the closest point (42.55985, 59.66284), Nukus Lakes South approximately 3.5 km south at the closest point (42.50610, 59.62968) and Nukus Water Treatment Plant approximately 6.5 km north-east at the closest point (42.52313, 59.87269)
- Section 4 - Lake at Sarymay approximately 2 km north-east at the closest point (41.08677, 61.92001), Karakyr Lakes IBA approximately 12 km north-east at the closest point (40.40818, 63.25490) and Lake NW of Karakul approximately 9.5 km south-west at the closest point (39.74977;63.57149)

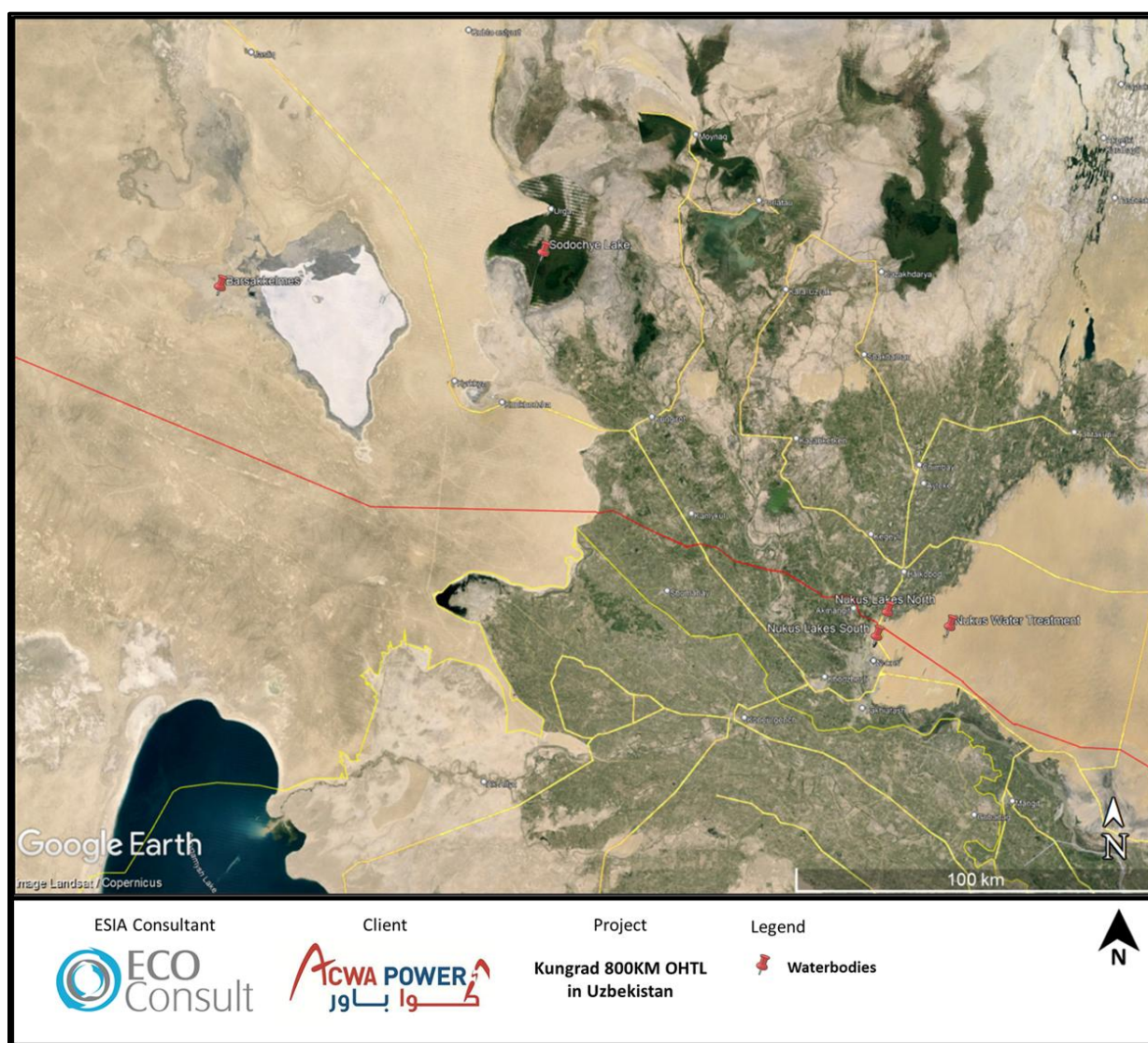


Figure 72: Location of Waterbodies in Section 1 and 3

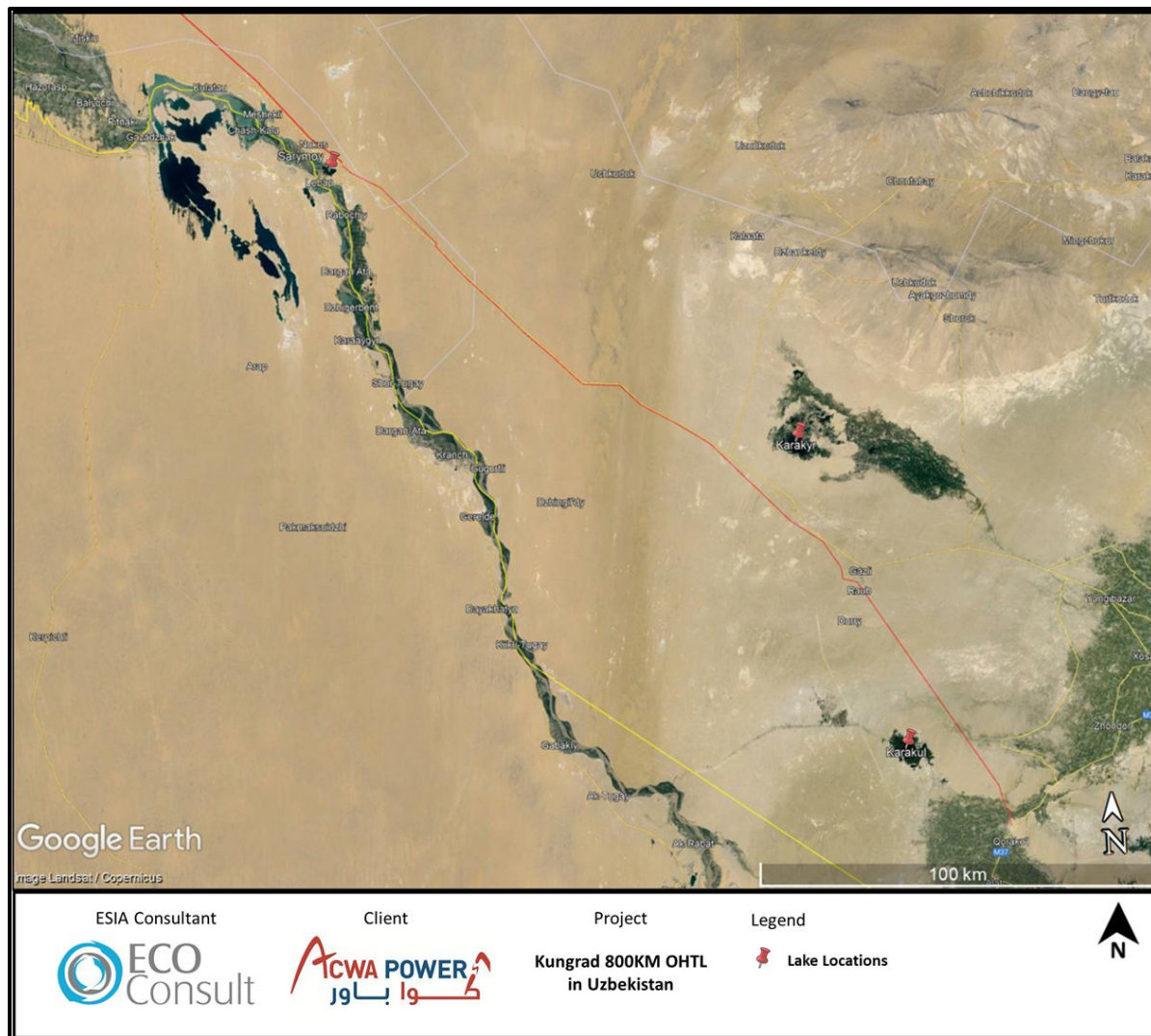


Figure 73: Location of Lakes in Section 4

Results

General

The route of the OHTL, being 843km, is considerable and spans half the width of Uzbekistan. The desktop study has identified that it is located on the broad East Asia / East Africa and the Central Asia / South Asia migratory flyways. There is no refined migration corridor or ‘bottleneck’ along any part of the route, so birds, other than waterbirds, are most likely to be moving through a broad front generally moving north or south along the flyway. Although, it has been identified that the route runs close to several IBAs designated for migratory birds and crosses a known migratory corridor, the Amu Darya corridor. These areas are likely to have a higher volume of migratory birds as local movements between water bodies and during migration along river corridor. The expected bird migratory flyways are shown in the figures below.

During the site scoping visit (Apr-May 2023) to the OHTL route and nearby IBAs and other waterbodies a lot of species of birds, that are considered to be at greater risk from the OHTLs, were recorded in these habitats. Notably, these were numerous waterfowl (including White-headed Duck), waders and

Ciconiiformes, Greater Flamingo, MacQueen's Bustard, Common Crane, Great White and Dalmatian Pelicans, Osprey and Short-toed Snake Eagle.

Location of International Flyways in Relation to the Project Area (WPP - red star)

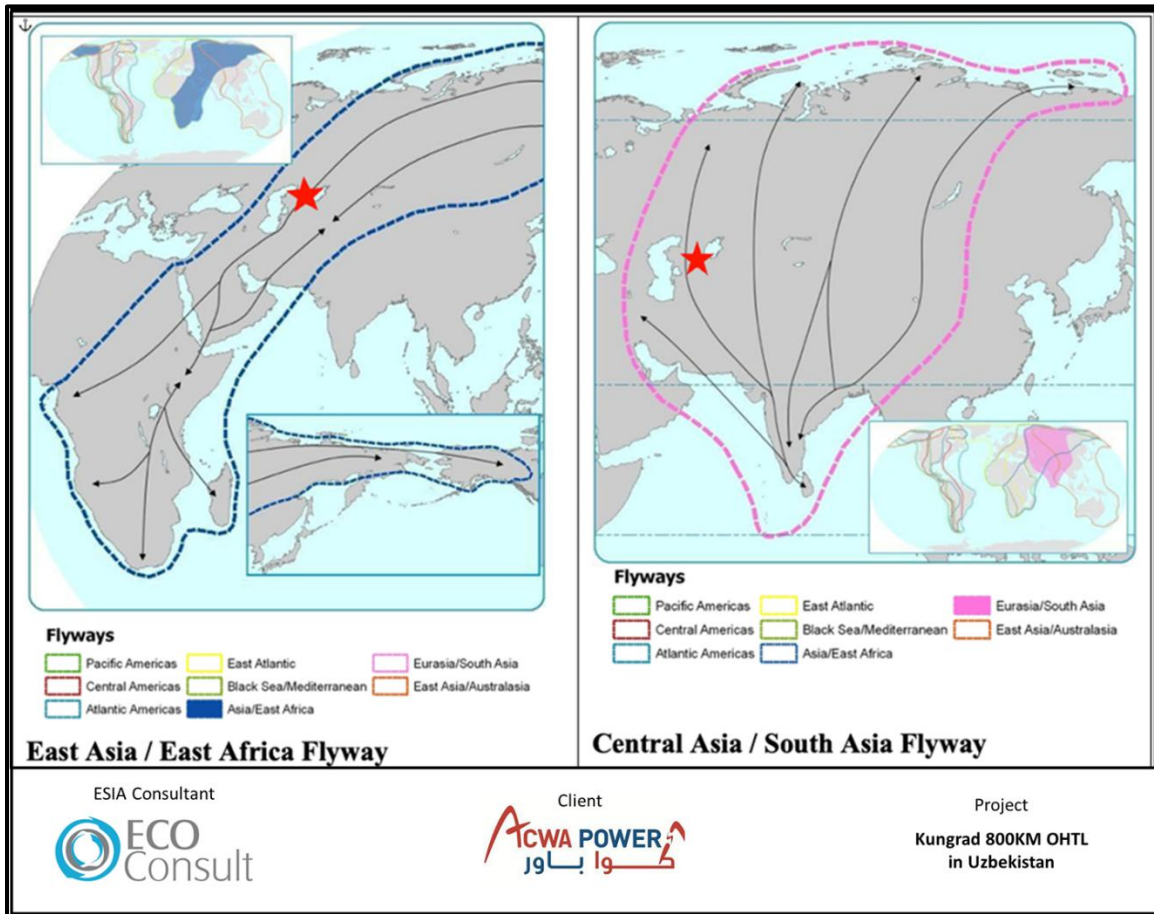


Figure 74: Location of International and Local Flyways in Relation to the Project Area

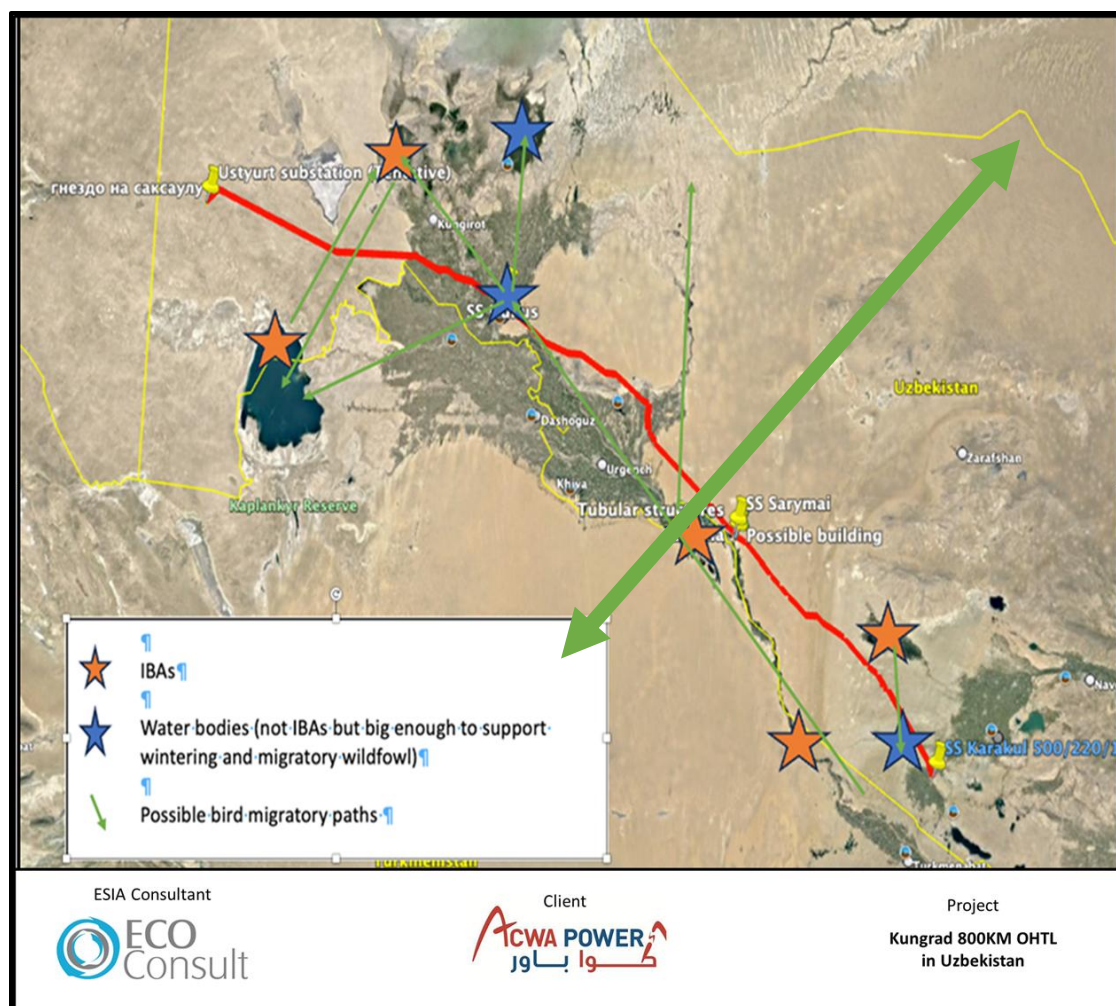


Figure 75: Possible Bird Migratory Paths

Vantage Points

Vantage Point surveys have been completed in Autumn, Winter and Spring, with 12 hours of observation at each VP per season. A total of 107 flightlines of target species have been recorded. Eighteen target bird species have been recorded totaling 472 individuals. The table below details the target species recorded and for each species the number of flightlines, number of individuals, average flight height and number of flightlines at risk of collision with the OHTL. Any birds recorded flying at 15m to 35m were considered to be at risk of collision with the OHTL, based on towers being approximately 30m in height and the lines between the towers being slightly lower. The graph below also shows the number of flightlines of target species recorded at each VP.

Table 47: VP Results

Common Name	Scientific name	IUCN status	UzRDB status	Number of flightlines	Total number of individuals	Average flight height	Number of flightlines recorded at risk height 15-30m
Eurasian Sparrowhawk	<i>Accipiter nisus</i>	LC	LC	4	4	20	4

Cinereous Vulture	<i>Aegypius monachus</i>	NT	NT	1	2	150	0
Golden Eagle	<i>Aquila chrysaetos</i>	LC	VU	1	1	100	0
Eastern Imperial Eagle	<i>Aquila heliaca</i>	VU	VU	6	48	492	0
Steppe Eagle	<i>Aquila nipalensis</i>	EN	VU	11	51	464	0
Eurasian Buzzard	<i>Buteo buteo</i>	LC	LC	2	2	75	0
Long-legged Buzzard	<i>Buteo rufinus</i>	LC	LC	11	11	94	0
Western Marsh-harrier	<i>Circus aeruginosus</i>	LC	LC	31	31	27	25
Hen Harrier	<i>Circus cyaneus</i>	LC	LC	3	4	50	2
Mute Swan	<i>Cygnus olor</i>	LC	NT	1	12	800	0
Pallid Harrier	<i>Circus macrourus</i>	NT	NT	3	3	38	1
Common Kestrel	<i>Falco tinnunculus</i>	LC	LC	17	19	29	12
White-tailed Sea-eagle	<i>Haliaeetus albicilla</i>	LC	VU	5	5	88	0
Pallas's Gull	<i>Ichthyaeetus ichthyaeetus</i>	LC	VU	1	4	200	0
Black Kite	<i>Milvus migrans</i>	LC	LC	4	10	51	1
Dalmatian Pelican	<i>Pelecanus crispus</i>	NT	EN	1	60	200	0
Glossy Ibis	<i>Plegadis falcinellus</i>	LC	VU	1	1	15	1
Pin-tailed Sandgrouse	<i>Pterocles alchata</i>	LC	VU	4	204	13	4
Grand Total				107	472	122	50

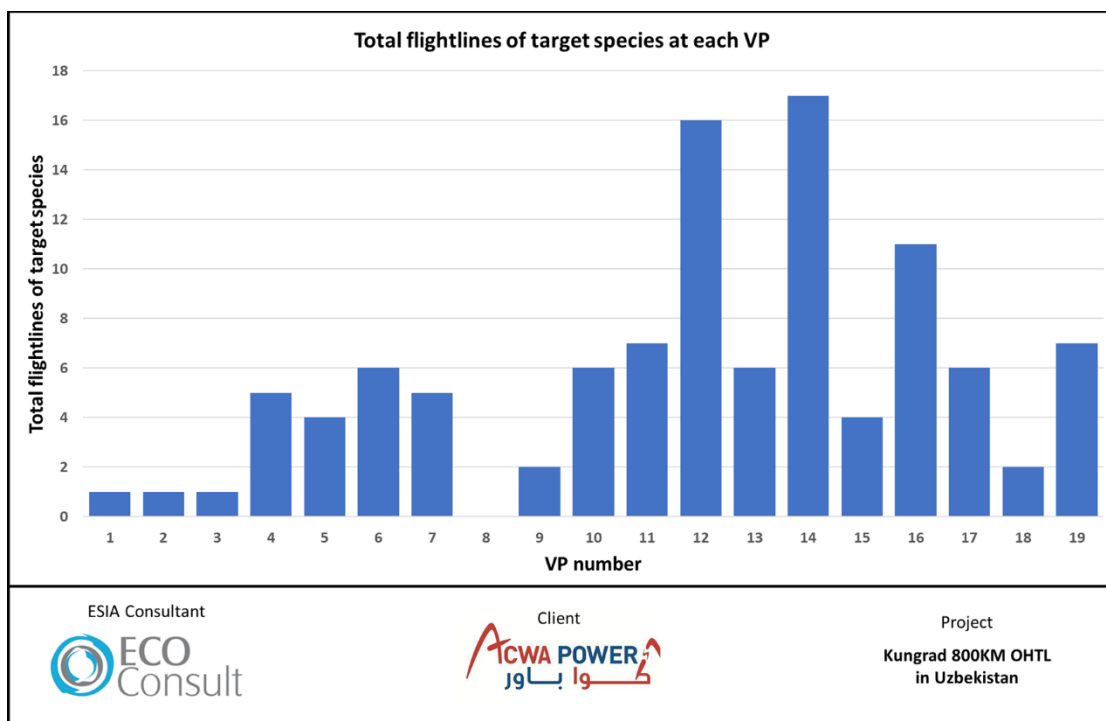


Figure 76: Total Flightlines of Target Species

Additionally, there were three records of Common Crane during the VP surveys where birds were seen on the ground during the survey but not recorded flying. These were all in October during Autumn migration with 117 seen near VP 7 early October, 50 seen near VP 18 in early October and 75 near VP 18 in late October.

Transects

During the transect surveys there were 240 records of 23 target species, these are shown in the table below. The most notable recorded being of MacQueen's Bustards (2 and 4) in July on transects 1 and 4 and a Little Bustard in October on the transect from VP 2 to VP3.

Table 48: Transect Survey Results

Common Name	Scientific name	IUCN status	UzRDB status	Count
Eurasian Sparrowhawk	<i>Accipiter nisus</i>	LC	LC	1
Eastern Imperial Eagle	<i>Aquila heliaca</i>	VU	VU	8
Steppe Eagle	<i>Aquila nipalensis</i>	EN	VU	13
Little Owl	<i>Athene noctua</i>	LC	-	4
Eurasian Buzzard	<i>Buteo buteo</i>	LC	LC	4
Rough-legged Buzzard	<i>Buteo lagopus</i>	LC	-	5
Long-legged Buzzard	<i>Buteo rufinus</i>	LC	LC	11
Caspian Plover	<i>Charadrius asiaticus</i>	LC	-	4

Greater Sandplover	<i>Charadrius leschenaultii</i>	LC	-	3
MacQueen's Bustard	<i>Chlamydotis macqueenii</i>	VU	VU:D-	6
Western Marsh-harrier	<i>Circus aeruginosus</i>	LC	LC	51
Hen Harrier	<i>Circus cyaneus</i>	LC	LC	4
Mute Swan	<i>Cygnus olor</i>	LC	NT	25
Merlin	<i>Falco columbarius</i>	LC	-	2
Common Kestrel	<i>Falco tinnunculus</i>	LC	LC	13
Common Crane	<i>Grus grus</i>	LC	-	2
White-tailed Sea-eagle	<i>Haliaeetus albicilla</i>	LC	VU	10
Black Kite	<i>Milvus migrans</i>	LC	LC	10
Pin-tailed Sandgrouse	<i>Pterocles alchata</i>	LC	VU	49
Black-bellied Sandgrouse	<i>Pterocles orientalis</i>	LC	-	1
Pallas's Sandgrouse	<i>Syrrhaptes paradoxus</i>	LC	-	8
Common Shelduck	<i>Tadorna tadorna</i>	LC	-	5
Little Bustard	<i>Tetrax tetrax</i>	NT	VU:D	1
Grand Total				240

Waterbird counts

Results of the waterbird counts are given for each waterbody in the tables below, with the total of each waterbird (and target) species recorded per survey. The most notable species recorded being White-headed Duck, mostly in the Nukus area, mostly from the Autumn and early Winter period and with a peak of 170 birds.

Table 49: Waterbird Counts - Sodochy Lake

Scientific name	28/08/2023	06/09/2023	23/09/2023	04/10/2023	28/10/2023	03/11/2023	23/11/2023	26/12/2023	21/01/2024	05/02/2024	21/02/2024	03/03/2024	20/03/2024
<i>Accipiter nisus</i>				1									
<i>Alaudala rufescens</i>													12
<i>Alectoris chukar</i>					18		30			34		3	
<i>Anas acuta</i>				61								2	19
<i>Anas clypeata</i>		5					12						
<i>Anas crecca</i>				360	495	180							80
<i>Anas platyrhynchos</i>			219	380	6	15	204				18	85	19
<i>Aquila heliaca</i>							1						
<i>Ardea alba</i>	57	261	204	434	221	126							
<i>Ardea cinerea</i>	1	8											
<i>Athene noctua</i>	1	1					2		1				
<i>Aythya ferina</i>		80	86	17	254	75					20		945
<i>Aythya fuligula</i>			2									2	28
<i>Aythya nyroca</i>		45											
<i>Bucephala clangula</i>											17	2	8
<i>Buteo buteo</i>	1	1							1				
<i>Buteo rufinus</i>			1										
<i>Calandrella brachydactyla</i>		6											
<i>Calandrella rufescens</i>			49										
<i>Calidris alba</i>			3										

Scientific name	28/08/2023	06/09/2023	23/09/2023	04/10/2023	28/10/2023	03/11/2023	23/11/2023	26/12/2023	21/01/2024	05/02/2024	21/02/2024	03/03/2024	20/03/2024
<i>Calidris alpina</i>			30										
<i>Calidris minuta</i>			75	115	65								
<i>Calidris pugnax</i>			26	30									
<i>Chlidonias leucopterus</i>	24	60											
<i>Chroicocephalus genei</i>				1									
<i>Chroicocephalus ridibundus</i>	140	15		1	750	6	3						2
<i>Circus aeruginosus</i>	3	3	2		2	1					1		2
<i>Circus macrourus</i>	1												
<i>Corvus corax</i>		3											
<i>Corvus corone</i>	2		3	1			23		4	31	9	26	6
<i>Cygnus columbianus</i>													2
<i>Cygnus cygnus</i>												3	
<i>Cygnus olor</i>	652	376	301	172	107	78	14				751	851	691
<i>Egretta garzetta</i>	13	7	2	9									
<i>Emberiza schoeniclus</i>										75			
<i>Falco cherrug</i>													1
<i>Falco tinnunculus</i>	4	3	1	1						1			
<i>Fringilla coelebs</i>						1							
<i>Fulica atra</i>	45	1850	2290	5440	5090	2984	350						2680
<i>Haliaeetus albicilla</i>	1	1	1	2		2			1	1	3	4	
<i>Hirundo rustica</i>		2											
<i>Larus cachinnans</i>	8	210	2	46	44							13	5
<i>Larus fuscus</i>												3	1
<i>Larus genei</i>	1	1											
<i>Larus minutus</i>	34	1											
<i>Mareca penelope</i>				7			19						14

Scientific name	28/08/2023	06/09/2023	23/09/2023	04/10/2023	28/10/2023	03/11/2023	23/11/2023	26/12/2023	21/01/2024	05/02/2024	21/02/2024	03/03/2024	20/03/2024
<i>Mareca strepera</i>					6	38							20
<i>Mergellus albellus</i>												1	
<i>Mergus merganser</i>												1	
<i>Merops persicus</i>	9	14											
<i>Microcarbo pygmaeus</i>	37	19											8
<i>Motacilla alba</i>	3		1	1									
<i>Netta rufina</i>	840	2505	4086	675	264	31	224						2103
<i>Oenanthe deserti</i>	1	1											
<i>Oxyura leucocephala</i>												1	
<i>Pelecanus crispus</i>	12	4											
<i>Pelecanus onocrotalus</i>	5	43	59	7									
<i>Phalacrocorax carbo</i>	10	8	84	8	10	14							
<i>Phasianus colchicus</i>		1											
<i>Phoenicopterus roseus</i>	2830	4204	3001	1780	260	170							900
<i>Platalea leucorodia</i>	6												
<i>Podiceps cristatus</i>		4	3		15	1	3						
<i>Podiceps nigricollis</i>			1										
<i>Pterocles orientalis</i>			2										
<i>Riparia dulita</i>	6												
<i>Riparia riparia</i>	14	44											
<i>Spatula clypeata</i>													10
<i>Sturnus vulgaris</i>					55								
<i>Tachybaptus ruficollis</i>					1								
<i>Tadorna ferruginea</i>			27	4	140	170	87				112	197	2
<i>Tadorna tadorna</i>		58	13	40	9	260						47	79
<i>Tringa glareola</i>		2	2	1									

Scientific name	28/08/2023	06/09/2023	23/09/2023	04/10/2023	28/10/2023	03/11/2023	23/11/2023	26/12/2023	21/01/2024	05/02/2024	21/02/2024	03/03/2024	20/03/2024
<i>Tringa nebularia</i>		7	26	19									
<i>Tringa ochropus</i>	2												

Table 50: Waterbird Counts – Nukus Lakes North

Scientific name	31/08/2023	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	07/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Acridotheres tristis</i>											2								3
<i>Anas clypeata</i>					14														
<i>Anas crecca</i>															11	21	6		
<i>Anas platyrhynchos</i>	7	73		31	103		78	74				103	90		15	8			
<i>Apus apus</i>																		4	1
<i>Ardea alba</i>	3	2	1	1	3	2		3				1		1	1	1			
<i>Ardea cinerea</i>	4	2	3	1	4	3		7							2	5			
<i>Ardea purpurea</i>																		1	2
<i>Aythya ferina</i>				6									22						
<i>Calidris ferruginea</i>		2																	
<i>Calidris minuta</i>																3	1		
<i>Calidris pugnax</i>	2															1200	1607		
<i>Charadrius alexandrinus</i>		1																	
<i>Charadrius dubius</i>		2																	
<i>Chroicocephalus genei</i>																14	9		

Scientific name	31/08/2023	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	07/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Chroicocephalus ridibundus</i>	3	5	3	16	3	9	19												
<i>Circus aeruginosus</i>													2						
<i>Columba livia</i>		5							3										2
<i>Corvus cornix</i>						4		4	1			3	1	2	2				
<i>Corvus corone</i>		1	1	6	6	14	1	2					6						
<i>Corvus frugilegus</i>										3	3		47	3	3				
<i>Cygnus olor</i>												13	18	2		2	4		
<i>Gallinago gallinago</i>		2																	
<i>Gelochelidon nilotica</i>																18	48		3
<i>Grus grus</i>																33			
<i>Haematopus ostralegus</i>																4			
<i>Himantopus himantopus</i>	3	1	2													15	41	2	3
<i>Hirundo rustica</i>	32	13													5		4	13	15
<i>Iduna rama</i>																			3
<i>Larus cachinnans</i>							8	17		3		2			5	3			
<i>Larus ridibundus</i>								27											
<i>Mareca strepera</i>															2				
<i>Merops persicus</i>	9	20																3	
<i>Motacilla alba</i>	2	3		2	2														
<i>Netta rufina</i>		19			11								110	11	7	16	3	2	38
<i>Passer domesticus</i>																			4
<i>Pelecanus crispus</i>																	1		
<i>Phalacrocorax carbo</i>	9	2																	
<i>Phylloscopus collybita</i>				6															
<i>Pica pica</i>				1	3	1							8				2	1	
<i>Remiz coronatus</i>															2				

Scientific name	31/08/2023	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	07/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Spatula clypeata</i>															8	34			
<i>Spatula querquedula</i>																4			
<i>Sterna hirundo</i>																			5
<i>Streptopelia decaocto</i>	1																		
<i>Tadorna ferruginea</i>			2													4	2		41
<i>Tadorna tadorna</i>																2	3		2
<i>Tringa erythropus</i>	1																		
<i>Tringa totanus</i>		7		5															
<i>Upupa epops</i>																			1

Table 51: Waterbird Counts – Nukus Lakes South

Scientific name	31/08/2023	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	07/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Acridotheres tristis</i>	1			13								5							4
<i>Anas clypeata</i>		2																	
<i>Anas crecca</i>													80						
<i>Anas platyrhynchos</i>	15	27	35	61	50	50	12	31		20	71	95		68	8	9	5	2	3
<i>Anas querquedula</i>		3																	
<i>Apus apus</i>															6				4
<i>Aythya ferina</i>				8								12		124	13	4			
<i>Aythya nyroca</i>		2	5			11								13	4				6
<i>Bombycilla garrulus</i>							27	13											
<i>Calidris alpina</i>																	18		
<i>Calidris minuta</i>																30	16	42	23

Scientific name	31/08/2023	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	07/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Calidris pugnax</i>																104			
<i>Charadrius alexandrinus</i>																	6		3
<i>Chroicocephalus genei</i>																	76		
<i>Chroicocephalus ridibundus</i>	762	12	14	53	28	32									67				
<i>Circus aeruginosus</i>	2	2	1								2			2	3	3	2	2	2
<i>Columba livia</i>	5	7	4	9			10				37							9	7
<i>Corvus cornix</i>						6	6	11	3	7	3	5	2	7	3				
<i>Corvus corone</i>	6	15	2	3	7	7	80	2		12	2	10	7	3	2	3		1	2
<i>Corvus frugilegus</i>							34		2		9			12	6				
<i>Corvus monedula</i>							14				4								
<i>Curruca mystacea</i>																3			
<i>Cygnus olor</i>						5					1								
<i>Fulica atra</i>	6	43	43	8	56	80								85	16	42	3		24
<i>Galerida cristata</i>													3						
<i>Gelochelidon nilotica</i>																9			
<i>Haliaeetus albicilla</i>													1						
<i>Himantopus himantopus</i>			3													118	30	13	11
<i>Hirundo rustica</i>	1	183													34			31	8
<i>Larus cachinnans</i>	2	3	8				44	53			5	2		118	45	12			
<i>Larus fuscus</i>																8			
<i>Larus ridibundus</i>								19											
<i>Merops apiaster</i>																			2
<i>Merops persicus</i>	5	9																7	
<i>Motacilla alba</i>	1	12													2	2			
<i>Netta rufina</i>	17	17	55	10								64		209		18		5	29
<i>Oenanthe oenanthe</i>			1														1		
<i>Oxyura leucocephala</i>		32	10	140	170	156						6		135	95	17			9
<i>Passer domesticus</i>																		4	6
<i>Passer montanus</i>											3					4			
<i>Pelecanus onocrotalus</i>															297	13			

Scientific name	31/08/2023	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	07/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Phalacrocorax carbo</i>	2	2																	
<i>Phalaropus lobatus</i>		6															3		551
<i>Phylloscopus collybita</i>																1			
<i>Pica pica</i>	1	3	1	2	2	2		2			2	3				13		1	
<i>Pluvialis squatarola</i>				2															
<i>Podiceps cristatus</i>		10		3	4											6	4		6
<i>Podiceps grisegena</i>				2															
<i>Podiceps nigricollis</i>		2														4	6		
<i>Remiz pendulinus</i>													3						
<i>Spatula clypeata</i>														16					
<i>Spinus spinus</i>															7				
<i>Sterna hirundo</i>																			3
<i>Streptopelia decaocto</i>	3	2	2	4															
<i>Sturnus vulgaris</i>						84				8									
<i>Tachybaptus ruficollis</i>		3		5															
<i>Tadorna tadorna</i>			17	14							1			2					
<i>Tringa stagnatilis</i>																	12	3	
<i>Tringa totanus</i>		2	14	4	11														
<i>Upupa epops</i>															2				

Table 52: Waterbird Counts - Nukus Water Treatment Plant

Scientific name	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	06/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Acridotheres tristis</i>	14	9	13	16	14		2			20	1		7	19				6
<i>Anas crecca</i>															135	6		

Scientific name	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	06/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Anas platyrhynchos</i>	32	49	50	19	27	21	105						16	19		2	2	2
<i>Ardea cinerea</i>	8																	
<i>Aythya ferina</i>			21	17	24								12	16				
<i>Aythya nyroca</i>		6	23	10	14		12							9	4			
<i>Buteo lagopus</i>										1								
<i>Buteo rufinus</i>							1											
<i>Calidris pugnax</i>															3			
<i>Chroicocephalus ridibundus</i>			24	376	34	49												
<i>Circus aeruginosus</i>			1											1	1			
<i>Columba livia</i>	20	3		9	11					15			3		13		8	15
<i>Corvus cornix</i>					8	22	25	1	5	217	54	127	110	24				
<i>Corvus corone</i>	36	7	20	24	21	4			2		20	24	27		4	1		
<i>Corvus frugilegus</i>													82					
<i>Cygnus cygnus</i>							1											
<i>Cygnus olor</i>						5	5				1							
<i>Falco subbuteo</i>	1																	
<i>Fulica atra</i>		7													14			3
<i>Galerida cristata</i>	6	3				14				11		4	5	6	4			
<i>Grus grus</i>			143															
<i>Himantopus himantopus</i>		2													11	7	23	11
<i>Hirundo rustica</i>	25													11			11	
<i>Iduna rama</i>																7		5
<i>Larus cachinnans</i>						1					1							
<i>Larus ridibundus</i>							106											
<i>Merops persicus</i>	26	1													3		7	13

Scientific name	07/09/2023	22/09/2023	07/10/2023	26/10/2023	06/11/2023	22/11/2023	07/12/2023	25/12/2023	08/01/2024	21/01/2024	08/02/2024	23/02/2024	10/03/2024	22/03/2024	06/04/2024	21/04/2024	04/05/2024	22/05/2024
<i>Motacilla alba</i>															1		1	
<i>Netta rufina</i>	75	73	29	99	81								51	38	36	34	10	9
<i>Oxyura leucocephala</i>			1															
<i>Passer domesticus</i>																	3	
<i>Passer montanus</i>								5										
<i>Phalaropus lobatus</i>	22															43		74
<i>Phasianus colchicus</i>																		1
<i>Phylloscopus collybita</i>															4		4	
<i>Pica pica</i>	4	4	6	7	4	2	3	1	3				4		1	2		
<i>Podiceps grisegena</i>			1															
<i>Podoces panderi</i>	1						1			2	1							
<i>Pterocles orientalis</i>	4	11																
<i>Seicercus trochiloides</i>																	2	
<i>Spatula clypeata</i>														12	48	2		
<i>Sturnus vulgaris</i>						120	91		9	514	180	160	814	121				
<i>Tadorna ferruginea</i>		2	2			2	2				1		5	4	20	14	9	7
<i>Tadorna tadorna</i>																5		
<i>Tringa stagnatilis</i>															1		2	

Table 53: Waterbird Counts – Sarymoy

Scientific name	26/08/2023	03/09/2023	25/09/2023	09/10/2023	23/10/2023	05/11/2023	24/11/2023	04/12/2023	24/12/2023	06/01/2024	04/02/2024	24/02/2024	06/03/2024	24/03/2024	06/04/2024	26/04/2024	06/05/2024	26/05/2024
Accipiter nisus			2															
Anas crecca		20	25					2		25	33	7	9					
Anas platyrhynchos	3					20	150	29	1	20	57		5					
Anas strepera	1	20						44										
Anser anser	7					8	15	10			16		6	10	12		15	
Aquila heliaca													2					
Aquila nipalensis															11			
Ardea alba				17		12		21	1	44		3	1		4	1		
Ardea cinerea	1	6		12	12	4	8	2	1	3	7			2	45	4		1
Ardea purpurea	1																1	
Chlidonias hybrida																	8	
Chroicocephalus ridibundus				3		10								16	20			
Circus aeruginosus	2	5	1	2	2		2	2				1	3	2	2	4	1	2
Corvus cornix								40	9		9		6	10				
Corvus corone					20			20	22	30			4	7		1		
Curruca curruca			3															
Cygnus cygnus											5							
Cygnus olor					11	10	55		25		21			2	3			
Falco tinnunculus					2													
Glareola pratincola																2		
Haematopus ostralegus																	1	
Haliaeetus albicilla											2	1	5					
Haliaeetus leucoryphus												2						
Himantopus himantopus															30	56	50	30

Scientific name	26/08/2023	03/09/2023	25/09/2023	09/10/2023	23/10/2023	05/11/2023	24/11/2023	04/12/2023	24/12/2023	06/01/2024	04/02/2024	24/02/2024	06/03/2024	24/03/2024	06/04/2024	26/04/2024	06/05/2024	26/05/2024
Hirundo rustica	5		2													10		
Larus cachinnans	5	2	1	53	10	46	3	25	2	2	2	2		46	9	20	26	30
Larus fuscus																130		
Larus ichthyæus												1						
Larus ridibundus								9		1								
Limosa limosa																1		
Mergellus albellus											38							
Mergus merganser												20						
Merops apiaster		4																
Merops persicus	8																8	
Microcarbo pygmaeus	7	4		5	5	10	25	8										
Milvus milvus																6		
Motacilla alba														8				
Netta rufina								91	40		651			7				1
Pandion haliaetus														1				
Panurus biarmicus			2															
Passer indicus	20																	
Pelecanus crispus												20		35	44			
Phalacrocorax carbo		2	17		50	50	6	220				20	3	12		6		
Phylloscopus collybita			5											10				
Pica pica	4		2			2			1	4								
Platalea leucorodia				3														
Plegadis falcinellus															15			30
Pterocles orientalis						3												
Sterna hirundo																5	10	12

Scientific name	26/08/2023	03/09/2023	25/09/2023	09/10/2023	23/10/2023	05/11/2023	24/11/2023	04/12/2023	24/12/2023	06/01/2024	04/02/2024	24/02/2024	06/03/2024	24/03/2024	06/04/2024	26/04/2024	06/05/2024	26/05/2024
<i>Sternula albifrons</i>																	4	10
<i>Streptopelia decaocto</i>		11							1									
<i>Streptopelia orientalis</i>				1														
<i>Sturnus vulgaris</i>												50	20					
<i>Sylvia curruca</i>	1																	
<i>Tadorna ferruginea</i>																2		
<i>Tringa ochropus</i>	1															4	100	
<i>Upupa epops</i>														4				
<i>Vanellus leucurus</i>															5		2	

Table 54: Waterbird Counts – Karakyr

Scientific name	30/08/2023	05/09/2023	24/09/2023	10/10/2023	24/10/2023	06/11/2023	25/11/2023	05/12/2023	25/12/2023	07/01/2024	06/02/2024	23/02/2024	08/03/2024	24/03/2024	07/04/2024	25/04/2024	04/05/2024	05/05/2024	25/05/2024
<i>Accipiter nisus</i>																		1	
<i>Acrocephalus arundinaceus</i>																24		34	
<i>Acrocephalus stentoreus</i>																			11
<i>Anas crecca</i>				20	12														
<i>Anas platyrhynchos</i>			7			8	15		16	14	9	20							
<i>Anser anser</i>				1		10	6					350	44	5		2			2
<i>Ardea alba</i>	20	5	5	2				1			3	3	8	6	5	2	2	1	
<i>Ardea cinerea</i>		3	2			6	5		3	2			5						

Scientific name	30/08/2023	05/09/2023	24/09/2023	10/10/2023	24/10/2023	06/11/2023	25/11/2023	05/12/2023	25/12/2023	07/01/2024	06/02/2024	23/02/2024	08/03/2024	24/03/2024	07/04/2024	25/04/2024	04/05/2024	05/05/2024	25/05/2024
<i>Ardea purpurea</i>	2															2	1	3	2
<i>Aythya ferina</i>			84			20													
<i>Aythya fuligula</i>						40													
<i>Botaurus stellaris</i>									1										
<i>Buteo rufinus</i>													1						
<i>Calidris alpina</i>																	4		
<i>Calidris minuta</i>		5															10		
<i>Calidris pugnax</i>																	10		
<i>Caprimulgus aegyptius</i>	1																		
<i>Chlidonias hybrida</i>																		10	5
<i>Chroicocephalus ridibundus</i>	1		10		7	22	24						5	6	20			4	1
<i>Circus aeruginosus</i>	18	14	14	21	15	12	17	4	24	26	25	14	10	6	15	7	1	3	11
<i>Circus cyaneus</i>							1												
<i>Corvus cornix</i>					2	5		3	3		2	8	10						
<i>Cygnus olor</i>	2		40		12	37	5		8										
<i>Falco tinnunculus</i>				3															
<i>Fulica atra</i>	120 0	150 0	35 0	250 0	115 0	606 0	1000				200	120 0	60	49 4	27 0	76		20	10
<i>Galerida cristata</i>		2											1						
<i>Gallinago gallinago</i>		3			3														
<i>Gallinula chloropus</i>																2			
<i>Grus grus</i>					200														
<i>Haliaeetus albicilla</i>							1			2	2	3							
<i>Hirundo rustica</i>														4				10	2
<i>Lanius phoenicuroides</i>				4	1														

Scientific name	30/08/2023	05/09/2023	24/09/2023	10/10/2023	24/10/2023	06/11/2023	25/11/2023	05/12/2023	25/12/2023	07/01/2024	06/02/2024	23/02/2024	08/03/2024	24/03/2024	07/04/2024	25/04/2024	04/05/2024	05/05/2024	25/05/2024
<i>Larus cachinnans</i>	30	17	14	29	14	22	4	4	35	5	1			2		11			1
<i>Larus genei</i>	4																		
<i>Larus ridibundus</i>								3	6	7	5	6							
<i>Luscinia svecica</i>																		2	
<i>Mareca strepera</i>													8						
<i>Merops apiaster</i>																10			
<i>Merops persicus</i>		1	3	20														48	2
<i>Microcarbo pygmaeus</i>	7	2	4	30	24	13	500						13	16	16	32		14	15
<i>Motacilla alba</i>		6											2	22	10	6			
<i>Motacilla flava</i>	7	23																	1
<i>Muscicapa striata</i>		1																	
<i>Netta rufina</i>	500	500	18 1	203	500	520	1300 0			142 0	504 0	551 2			15 2	9		20	7
<i>Panurus biarmicus</i>			16		30	20	14						10						
<i>Passer domesticus</i>																	10 0		
<i>Pelecanus crispus</i>			14		2										2				
<i>Pelecanus onocrotalus</i>	1																		
<i>Phalacrocorax carbo</i>	16	4	80	10									1		15			1	
<i>Platalea leucorodia</i>	1		34																
<i>Plegadis falcinellus</i>	43	3														5			1
<i>Podiceps cristatus</i>	3	2	6											4	15	4		3	3
<i>Saxicola caprata</i>																	2	1	
<i>Schoeniclus schoeniclus</i>							2		1			2							
<i>Sterna hirundo</i>		1																	1

Scientific name	30/08/2023	05/09/2023	24/09/2023	10/10/2023	24/10/2023	06/11/2023	25/11/2023	05/12/2023	25/12/2023	07/01/2024	06/02/2024	23/02/2024	08/03/2024	24/03/2024	07/04/2024	25/04/2024	04/05/2024	05/05/2024	25/05/2024
<i>Sternula albifrons</i>																		4	
<i>Sturnus vulgaris</i>												50		3					
<i>Tadorna ferruginea</i>			2														2		
<i>Tringa ochropus</i>		7																	
<i>Tringa totanus</i>		28															20		
<i>Vanellus leucurus</i>														4		1		2	

Table 55: Waterbird Counts – Karakul

Scientific name	29/08/2023	01/09/2023	23/09/2023	07/10/2023	25/10/2023	03/11/2023	23/11/2023	02/12/2023	26/12/2023	04/01/2024	07/02/2024	25/02/2024	05/03/2024	25/03/2024	04/04/2024	24/04/2024	04/05/2024	24/05/2024
<i>Accipiter nisus</i>		1																
<i>Acrocephalus arundinaceus</i>																	20	
<i>Acrocephalus stentoreus</i>																		26
<i>Anas acuta</i>												2						
<i>Anas crecca</i>					80			70		50			32	300	50			
<i>Anas platyrhynchos</i>				4	3		222	30	50	43	32	60	6	50	8			
<i>Anser anser</i>							18	45	70		11	15		10				
<i>Anthus trivialis</i>							2											
<i>Aquila heliaca</i>							2						4					
<i>Aquila nipalensis</i>													6					
<i>Ardea alba</i>	1		4		8	4	6	4	6	8	8	11	7	6		3	2	2
<i>Ardea cinerea</i>	5	1	1	2	8	3	2		9	1		2	11	22	4	3	2	7
<i>Ardea purpurea</i>																		4

Scientific name	29/08/2023	01/09/2023	23/09/2023	07/10/2023	25/10/2023	03/11/2023	23/11/2023	02/12/2023	26/12/2023	04/01/2024	07/02/2024	25/02/2024	05/03/2024	25/03/2024	04/04/2024	24/04/2024	04/05/2024	24/05/2024
<i>Aythya ferina</i>				20														
<i>Aythya nyroca</i>															2			
<i>Bubo bubo</i>									2									
<i>Buteo rufinus</i>						1									1	1		
<i>Calandrella rufescens</i>						200	65	32	30	40								
<i>Calidris minuta</i>		10														5	50	20
<i>Calidris pugnax</i>																50		
<i>Charadrius dubius</i>															2	10	10	
<i>Charadrius hiaticula</i>																20		
<i>Chroicocephalus ridibundus</i>				2									15	100 35	102	100	12	
<i>Circus aeruginosus</i>	11	8	8	15	15	12	15	17	12	18	13	18	21	19	12	7	9	9
<i>Circus cyaneus</i>				1						1								
<i>Columba livia</i>					2													
<i>Corvus cornix</i>					4	1		3				8	2					
<i>Corvus corone</i>					5						4			5				
<i>Circus aeruginosus</i>		3																
<i>Cuculus canorus</i>	2																22	2
<i>Cygnus olor</i>							13	28	150	200	17	41	15	2	1			
<i>Egretta garzetta</i>																10	5	1
<i>Falco columbarius</i>										1								
<i>Falco tinnunculus</i>								1										
<i>Fulica atra</i>									80	188		500		600	200	200		
<i>Galerida cristata</i>	20																	
<i>Gallinago gallinago</i>					1													
<i>Glareola pratincola</i>																12		4

Scientific name	29/08/2023	01/09/2023	23/09/2023	07/10/2023	25/10/2023	03/11/2023	23/11/2023	02/12/2023	26/12/2023	04/01/2024	07/02/2024	25/02/2024	05/03/2024	25/03/2024	04/04/2024	24/04/2024	04/05/2024	24/05/2024
<i>Grus grus</i>				48										6				
<i>Haliaeetus albicilla</i>							3	1	3	1	2	10	4					
<i>Himantopus himantopus</i>		2													106	2	8	6
<i>Hirundo rustica</i>																	10	
<i>Lanius pallidirostris</i>	1				1				1									
<i>Larus cachinnans</i>			3		1	1	20	2	2		2	16	1	8	7	9	7	1
<i>Larus ichthyæetus</i>												1						
<i>Larus ridibundus</i>									8		13	10						
<i>Limosa limosa</i>																2		
<i>Mareca strepera</i>	2																	
<i>Merops persicus</i>		9	4	33												100	100	20
<i>Microcarbo pygmaeus</i>	58	30	8	28	260	37	82	21	40	10	27	8	37	180	4	20		9
<i>Motacilla alba</i>			5		6									102 50	120	80		
<i>Motacilla flava</i>		1												100				2
<i>Muscicapa striata</i>	1																	
<i>Netta rufina</i>	500	100	410		95	50	402	300 0	125 0	100	155 0	120	250 0	30	4	10	150	106
<i>Pandion haliaetus</i>															2			
<i>Panurus biarmicus</i>					20	10	25		20	20								
<i>Pelecanus crispus</i>													8	17				
<i>Phalacrocorax carbo</i>	51	11	1			10		2					22	10				50
<i>Phylloscopus collybita</i>														2				
<i>Pica pica</i>		2																
<i>Plegadis falcinellus</i>														50	305	60	26	
<i>Podiceps cristatus</i>																6		

Scientific name	29/08/2023	01/09/2023	23/09/2023	07/10/2023	25/10/2023	03/11/2023	23/11/2023	02/12/2023	26/12/2023	04/01/2024	07/02/2024	25/02/2024	05/03/2024	25/03/2024	04/04/2024	24/04/2024	04/05/2024	24/05/2024
<i>Pterocles orientalis</i>		5										1		9				
<i>Recurvirostra avosetta</i>														6		2		
<i>Saxicola maurus</i>																	4	
<i>Spatula clypeata</i>													50	95	6			
<i>Sterna hirundo</i>																13	20	2
<i>Sternula albifrons</i>																		3
<i>Streptopelia orientalis</i>				1														
<i>Sturnus vulgaris</i>					6					10	500	50	60					
<i>Tachybaptus ruficollis</i>	1							2										
<i>Tadorna ferruginea</i>													4	10	13	3	4	2
<i>Tetrax tetrax</i>					1													
<i>Tringa glareola</i>																5	7	
<i>Tringa ochropus</i>		4							4	2						2		4
<i>Tringa totanus</i>			3												50			
<i>Turdus atrogularis</i>					59	20												
<i>Upupa epops</i>														1				
<i>Vanellus leucurus</i>		1												15	60	12		4
<i>Vanellus vanellus</i>					33													

Data from the Wind Project – Kungrad 1, 2 and 3 VP surveys

Data from the Kungrad wind farm VP surveys (from a full year winter, spring, summer and autumn seasons) undertaken in 2023 were analyzed to help assess birds that migrate through the Aol of the OHTL, particularly the northern end in the Ustyurt Plateau, but also flight heights of the birds whilst on migration. Any birds recorded flying at 15m to 30m were considered to be at risk of collision with the OHTL, based on towers being approximately 30m in height and the lines between the towers being slightly lower. The data for all species recorded are included in the table below.

This shows that for most species they were not recorded at the height of the OHTL or only a small proportion were recorded at the height of the OHTL. 10% of Steppe Eagle (102 birds) and 8% of Golden Eagle (5 birds) were recorded flying at between 15 and 30m and 29% of MacQueen's Bustards (10 birds) were recorded flying at 15 to 30m. Other species of large migratory soaring raptors were recorded at risk height at lower percentages (and generally lower numbers) apart from 100% of Eurasian Eagle Owl and Booted Eagle but this accounts to only 2 birds and 1 bird, respectively.

Large numbers of Black-bellied and Pallas's Sandgrouse were recorded migrating through the wind farm area, with 17% of Black-bellied and 36% of Pallas's recorded flying between 15 and 30m height.

Table 56: Data for Wind Project

Common Name	Number of birds recorded at 15m to 30m flight height	Total number of birds recorded	Percentage of birds recorded at 15m to 30m flight height
Bimaculated Lark	0	1	0%
Black Kite	1	31	3%
Black Lark	1	1	100%
Black-bellied Sandgrouse	143	854	17%
Black-winged Pratincole	8	20	40%
Bluethroat	0	2	0%
Buzzard	0	2	0%
Citrine Wagtail	0	1	0%
Common Kestrel	36	123	29%
Crested Lark	4	11	36%
Desert Wheatear	3	10	30%
Eastern Imperial Eagle	6	165	4%
Egyptian Vulture	0	1	0%
Eurasian Hobby	2	4	50%
Golden Eagle	5	66	8%
Greater Sand Plover	7	13	54%
Greater Spotted Eagle	0	3	0%
Hen Harrier	5	29	17%
Hoopoe	0	8	0%
Imperial Eagle	0	10	0%
Isabelline Wheatear	15	39	38%
Lesser Kestrel	6	15	40%
Long-legged Buzzard	25	104	24%

Macqueen's Bustard	10	35	29%
Marsh Harrier	2	6	33%
Mediterranean Short-toed Lark	219	764	29%
Montagu's Harrier	5	8	63%
Pallas's Fish Eagle	0	1	0%
Pallid Harrier	5	39	13%
Robin	0	1	0%
Short-toed Eagle	0	1	0%
Short-toed Lark	122	361	34%
Skylark	2	13	15%
Steppe Eagle	102	1000	10%
Swallow	1	4	25%
Western Yellow Wagtail	0	1	0%
Wheatear	8	25	32%
White Wagtail	1	32	3%
White-tailed Lapwing	2	5	40%
White-tailed Sea-eagle	0	4	0%
European Honey Buzzard	1	6	17%
Eurasian Eagle-owl	2	2	100%
Goshawk	0	2	0%
Sparrowhawk	3	17	18%
Cinereous Vulture	0	20	0%
Booted Eagle	1	1	100%
Merlin	8	11	73%
Pallas's Sandgrouse	120	385	36%
Grand Total/average	881	4257	20.7%

MacQueen's Bustard

During the transect surveys there has been four records of MacQueen's Bustard totaling 11 birds, all in the Autumn. Two records totaling seven birds were towards the southern end nearer to Bukhara and two records totaling four birds were in the Ustyurt Plateau area near the wind farm. The two records near Bukhara are within an area known for regularly occurring MacQueen's Bustards and where most records of this species occur in Uzbekistan (see below). The latter two records involved birds that had red leg rings and are considered likely to involve birds that have been released from a captive breeding program for hunting (as per consultation with Uzbekistan Society for the Protection of Birds / Karakalpakstan Branch), this cannot be confirmed but there are currently no known ringing schemes for these birds (other than captive bred birds).

Records of MacQueen's Bustard from GBIF (with most of the data coming from eBird) are shown in the figure below. As per consultation with John Burnside this data is where there are known higher densities of MacQueen's Bustard nesting in Uzbekistan from the research that has been undertaken in the area. The records are also most likely concentrated in this area as it is the most easily accessible and likely location that local or visiting birdwatchers can see and record the species. There are likely to be birds nesting in

other areas too, although very likely at lower densities based on habitat preference but this is not definitely confirmed through research or records.

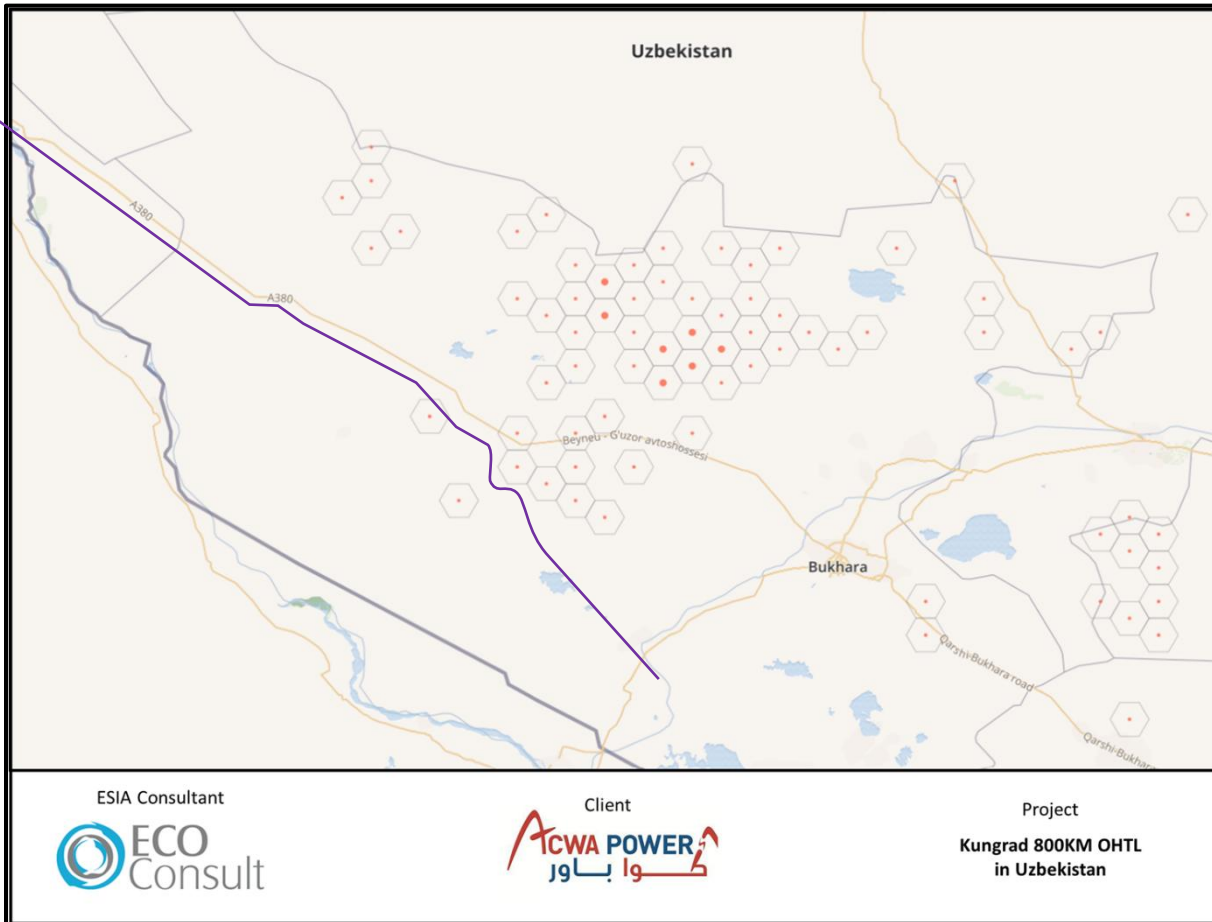


Figure 77: Records of MacQueen's Bustard from GBIF. Approximate route of the OHTL shown as purple line

Consultation with John Burnside also concluded that the Ustyurt Plateau, at the western end of the project, is unlikely to support nesting MacQueen's Bustard. This was based on habitat suitability, and that this species has not previously been recorded nesting within the area of the wind farm project (including visits by John but there is limited data). Nesting in north-western Uzbekistan is likely limited to areas of habitat to the west of the Aral Sea, where this species has been previously recorded nesting (J Burnside pers comm). Nesting is however still possible and cannot be ruled out entirely due to cryptic and secretive behaviors however should nesting occur in the Ustyurt Plateau it will be in very low densities (based on historical range and low habitat suitability).

10.2.9 Sensitive Receptors

A table is provided below which details the sensitivities of the receptors recorded within the Project Aol that may be impacted by the construction and operation of the proposed wind farm and will therefore be considered within the impact assessment.

Any species recorded during surveys, but which are not listed in the sensitive receptor table are considered to be of Low/lower value (as per Table 25).

- Impacts on Low/Lower value species are expected to be of low to moderate magnitude and are therefore not significant; and
- Mitigation for higher value receptors will also alleviate impacts on these lower value receptors.

Therefore, these Low/lower value species have not been listed out in detail and the impact assessment section will not include assessments on these receptors.

Species identified as Priority Biodiversity Features (PBFs) in the Critical Habitats Assessment (CHA) are also included in the table below.

Receptor	Conservation Status		Justification	PBF (Yes or No)	Sensitivity
	IUCN	UZBDB			
Natural Habitat	-	-	Mostly Type 8 (Desert) and Sub-type 8.2 (Temperate Desert) according to IUCN Habitats Classification Scheme, with smaller areas of Type 4 (Grassland) and Sub-type 4.5 (Subtropical/tropical dry) and Type 3 (Shrubland) and Sub-type 3.5 (Subtropical/tropical dry). Not listed in Annex I or included as a Priority Habitat. No plant species present of international or national conservation concern and no endemic or range-restricted species considered to be present (based on surveys completed to date and in-country expert opinion). CH screening did not identify IUCN plants within range of the Project Area; however it is possible that such species could be present given broad habitat / flora surveys completed to inform ESIA and should pre-clearance / pre-construction surveys find presence of IUCN VU/EN/CR or RR plant species, appropriate mitigations will be completed Large areas of modified (urbanized and arable land) or degraded natural habitat present across the site.	No – but no net loss required	Low to Medium
IUCN Plants	EN	2	Calligonum matteianum and Calligonum molle (both IUCN EN, UzRDB 2 – Rare species) possibly present (but very unlikely) in Section 4.	Yes	High
UzRDB Plants	-	2 or 3	Euphorbia sclerocyathium (UzRDB 2 – Rare species) and Salsola chiwensis (UzRDB 3 – Reducing species) possibly present in Section 1. Eremosparton flaccidum (UzRDB 2 – Rare species) and Tulipa lehmanniana (UzRDB 3 – Reducing species) present in Section 4.	No	Low
Central Asian Tortoise	VU	VU	Present across the Aol in low population density. Species is IUCN and UzRDB VU	Yes	High
Caspian Monitor	LC	VU	Present across the Aol in very low densities (southern end only). Species is IUCN LC and UzRDB VU	No	Medium
Desert Sand Boa	LC	VU	Present across the Aol in very low densities. Species is IUCN LC and UzRDB VU	No	Medium
Blotched Rat-snake	LC	VU	Possibly present across the Aol in very low densities. Species is IUCN LC and UzRDB VU	No	Medium
Brandt's Hedgehog	LC	NT	Evidence of this species (skins) were found at four locations along the OHTL all in Section 4, indicating presence in Aol in low density. Species is IUCN LC and UzRDB NT	No	Medium

Receptor	Conservation Status		Justification	PBF (Yes or No)	Sensitivity
	IUCN	UZBDB			
Corsac Fox	LC	VU	Evidence of this species (footprints) was found at one location along the OHTL in Section 3, indicating presence in very low densities. Species is IUCN LC and UzRDB VU	No	Medium
Marbled Polecat	VU	VU	Evidence of this species (footprints) were found at three locations along the OHTL all in Section 4. Presence confirmed in very low density in Aol. IUCN and UzRDB VU species	Yes	High
Honey Badger	LC	CR	Confirmed as being present in the Ustyurt Plateau at the WF site and evidence of this species was found along the OHTL in Section 1, indicating presence in the Aol in low density. UzRDB CR species	Yes	High
Caracal	LC	CR	Confirmed as being present in the Ustyurt Plateau at the WF site, indicating presence in the Aol in low density. IUCN LC but UzRDB CR.	Yes	High
Goitered Gazelle	VU	VU	Evidence of this species (footprints) were found at six locations along the OHTL all in Sections 1 and 4. Presence confirmed in very low density in Aol. A nationally rare species that is both IUCN and UzRDB VU	Yes	High
Sociable Lapwing	CR	VU	A widespread species within Uzbekistan during spring and autumn migration periods. Migration through the Aol is likely, discussed further in the CHA document.	Yes	High
White-headed Duck	EN	EN	Breeding, passage and wintering species in Uzbekistan and known to occur in adjacent IBA and non-IBA wetlands. Migration through the Aol is likely, discussed further in the CHA document.	No (CH)	High
Pallas's Fish Eagle	EN	-	A rare and infrequent passage bird. Possible migration through the Aol, discussed further in the CHA document.	Yes	High
Egyptian Vulture	EN	VU	Egyptian Vulture are a widely distributed breeding species within Uzbekistan and this species will also migrate through the country. Migration through the Aol is likely, discussed further in the CHA document.	Yes	High
Saker Falcon	EN	NT	Approximately 70 breeding pairs in Uzbekistan however breeding habitat is not present within the Project Aol (e.g., cliff faces, chinks). Migration through the Aol is likely, discussed further in the CHA document.	Yes	High
Steppe Eagle	EN	VU	Breeding and migratory species through Uzbekistan. Species has previously over-wintered within the Amu Darya River corridor. Migration through the Aol is likely, discussed further in the CHA document.	Yes	High
Lesser White-fronted Goose	VU	VU	Wintering and passage species within Uzbekistan within plainland water reservoirs of the Amu Darya and Syr Darya river basins including Lake Dengizkul. Wintering is irregular and populations fluctuate between 200 and	Yes	High

Receptor	Conservation Status		Justification	PBF (Yes or No)	Sensitivity
	IUCN	UZBDB			
			2,000 individuals. Migration through the Aol is likely, discussed further in the CHA document.		
Common Pochard	VU	-	Widely distributed species with large global population and known to occur in adjacent IBA and non-IBA wetlands. Migration through the Aol is likely, discussed further in the CHA document.	Yes	High
Yellow-eyed Pigeon	VU	VU	A nesting and migratory mosaically distributed species. Migration through the Aol is likely and breeding possible.	Yes	High
Greater-spotted Eagle	VU	VU	A non-breeding species and only occurs in low numbers on migration. Migration through the Aol is likely, discussed further in the CHA document.	Yes	High
Eastern Imperial Eagle	VU	VU	Breeding and migratory species within Uzbekistan. Breeding in very low density has been previously recorded within the Ustyurt Plateau and the Kyzylkum Desert. Migratory populations are also considered to be low (UzRDB). Migration through the Aol is likely, discussed further in the CHA document.	Yes	High
European Turtle Dove	VU	VU	Widely distributed species with large global population. Migration through the Aol is likely and breeding possible, discussed further in the CHA document.	Yes	High
Great Bustard	EN	CR	Formerly a breeding species within Uzbekistan, however current status is as a wintering species and usually in colder winters only. Migration through the Aol is likely and wintering possible, discussed further in the CHA document.	Yes	High
MacQueen's Bustard	VU	VU	Recorded in low numbers along OHTL so far (Autumn surveys) in the Ustyurt Plateau and Kyzylkum desert areas. Likely significant migration through the Project Aol, breeding likely and wintering possible. Discussed further in the CHA document.	No (CH)	High
Red-Crested Pochard	LC	-	Breeding, passage and wintering species in Uzbekistan and known to occur in adjacent IBA and non-IBA wetlands. Not recorded on the Wind Farm surveys however migration through the Aol is likely. Discussed further in the CHA document and CH is triggered for wintering / passage populations.	No (CH)	Low

10.3 Assessment of Impacts

This section identifies and assesses the anticipated impacts from the Project activities on identified ecological receptors 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.

All mitigation measures contained in this section will be included in a Project specific construction Biodiversity Management Plan (BMP) (and referenced in the Biodiversity Action Plan (BAP)) which will also include details of pre-clearance, pre-construction, and during-construction monitoring. **The BMP (and BAP) will be provided as a standalone document.** Both documents will be live documents however the BMP will initially include all of the below mitigation and monitoring requirements to be undertaken during the construction and operation of the Project.

In accordance with the BMP, the Developer will be required to appoint a full time Biodiversity Manager that will be responsible for oversight, audit, assessment and evaluation of data to ensure that the measures set out in the ESIA and BMP are completed in full during all phases of the Project implementation.

The EPC Contractor will be required to employ a full-time Biodiversity Manager to work on the Project and they will be responsible for the day-to-day monitoring, management and implementation of the measures specified in the ESIA / BMP throughout the construction phase of the Project. The EPC Biodiversity Manager will employ a team of appropriate specialists (to include but not limited to avifauna specialists, mammal specialists, etc.) to undertake the construction phase surveys and monitoring and will ensure timely reporting in line with the requirements set out in the ESIA and BMP.

10.3.1 Potential Impacts during the Construction Phase

Habitat Loss, Fragmentation and Degradation

Site clearance and subsequent construction activities will result in the direct loss of areas of natural habitats (in some places degraded) and modified habitat over the full construction footprint of the Project. This will be limited to the relatively small areas of the transmission tower bases and associated clearance around them and the five switching stations (one of which is within the wind farm footprint and two of which already exist but may need to be upgraded). There is also likely to be temporary habitat loss and degradation of habitats as a result of temporary access roads (although unlikely to be required) and work areas, temporary lay-down areas and other possible temporary facilities (e.g. batching plants, worker accommodation). The final design of the OHTL will be completed by the EPC Contractor and therefore the full details of required habitat loss is not currently known. However, it is anticipated based on current design that:

- A total of 4,632 transmission towers and 221 angle towers will be required. This would require the total footprint for all towers to be 1.475 km².
- Each switching station will have a maximum footprint of around 0.3km² and only 3 new stations are required (whereas the other 2 are existing stations) and therefore total footprint is 0.9 km².
- Any required access roads (although unlikely) to the transmission tower locations, construction areas and laydown areas, site offices, batching plants, worker accommodation, etc. However, those areas and their location are not identified at this point and will be determined as part of the detailed design.

As a worst-case scenario and for the purpose of this analysis, it is anticipated that this would require a total footprint of around 31.66 km².

- The EPC contractor will ensure that detailed consideration has been given to locating temporary works areas (laydown areas, workers camps, batching plants, access roads, etc.) are sited within areas that are already modified habitat or degraded, poor condition, natural habitat. The actual loss of natural habitat will therefore be very minor.

Rare Flora

Plant species that are listed on the IUCN Red List, in the UzRDB or that are range restricted that are either confirmed as present within the Aol or are within known or possible range and possibly present within the Aol. This includes the following:

- *Eremosparton flaccidum* (UzRDB 2 – Rare species) present in Section 4 under Figure 143
- *Tulipa lehmanniana* (UzRDB 3 – Reducing species) present in Section 4 under Figure 143;
- *Euphorbia sclerocyathium* (UzRDB 2 – Rare species) possibly present in Section 1 under Figure 143;
- *Salsola chiwensis* (UzRDB 3 – Reducing species) possibly in Section 1 under Figure 143;
- *Calligonum matteianum* (IUCN EN, UzRDB 2 – Rare species) possibly in Section 4 under Figure 143 (but very unlikely); and
- *Calligonum molle* (IUCN EN, UzRDB 2 – Rare species) possibly in Section 4 under Figure 143 (but very unlikely).

Construction Phase – Habitats		
Type	Negative	
Duration	Medium- term	Limited to construction which is 24 months
Magnitude	Low	Direct habitat loss will only impact those areas subject to construction activities with a minimal loss of habitat
Reversibility	Both	Permanent habitat loss is irreversible, temporary habitat loss is reversible
Sensitivity	Medium	Undesignated site supporting natural (and degraded natural and modified) habitat with some High Sensitivity Ecological Receptors
Likelihood	High	Habitat loss is certain
Frequency	Rare	Habitat loss will occur once in any area, once lost / impacted it can't be impacted again
Timing	Not Relevant	For the duration of construction phase
Extent	Low	Impact will occur in the Project footprint only
Significance	Minor	

Mitigation Measures

The following mitigation measures will be employed to reduce the significance of habitat loss, fragmentation, and degradation during the construction period. Mitigation measures are largely based on avoidance of impact through selection of the working areas to favor areas of degraded natural habitat or those areas where habitats have been modified. Where impacts cannot be avoided the following will be completed

- All site workers will undertake a Project induction before working on site. The induction will include a comprehensive biodiversity element where the baseline ecological value and sensitivity of the site will be discussed.
- Prior to construction works (habitat clearance, levelling or any other works), working areas will be clearly demarked so that site workers fully understand the working area. Encroachment into areas outside of agreed working areas will be prohibited and working areas will be subject to regular check by the EPC Contractor Biodiversity Manager to check enforcement of working areas.
- Prior to clearance of vegetation, pre-clearance surveys will be undertaken by a suitably qualified ecologist. Particular attention required to identify IUCN species listed in the UzRDB and non-native/invasive species. This will be undertaken by a botanical expert and at the appropriate time of year. Pre-clearance vegetation survey methods and habitat condition assessment metrics have been updated, and these are fully detailed in the Project BMP.
- On completion of construction works the EPC Contractor will be responsible for habitat rehabilitation works in all areas that have been subject to temporary disturbance. Habitat rehabilitation works will also be completed in areas adjacent to the substations and other temporary work areas where required. All habitat areas, including those subjects to rehabilitation, will be subject to Condition Score Assessments to calculate loss / gains of habitats across the Project Aol. The Project needs to demonstrate that there has been no net loss in natural habitat and additional habitat rehabilitation will need to be completed if habitat areas do not recover to a high enough condition. It is worth noting that due to the fragility of the soil in some areas (e.g., the Ustyurt Plateau), habitats are likely to recover slowly. It is also possible that habitat recovery is not successful and off-site compensation / off-setting may be required which will be identified within the BMP/BAP.
- Longer-term post-construction monitoring will be required annually in the first five years post construction and then in Years 10, 15, and 20. post-construction surveys will be fully detailed in the Project BMP.

Rare Flora

Areas where the rare plants are identified will be avoided if possible, with a minimum buffer of 200m around the location of the plant/s. If this is not possible mitigation must be in place to minimize loss of the habitat/species, transplant if required and manage/restore areas to support the species away from habitat that is lost.

Transplantation would only involve moving plants from the areas of tower bases and immediate working areas up to 1,200m from the works area, within suitable substrate and growing conditions to prevent the immediate loss of plants within the footprint.

The locations where plants are moved to will also be recorded in full, including a GPS location so that they can be checked in subsequent years monitoring (during construction and operation phase). The rate of vegetation establishment will be monitored in the first few years post-construction and additional seeding and habitat rehabilitation will be completed, if necessary.

Direct Impacts on Sensitive Receptors (Habitats and Flora) – Non-native Species and Introduced Flora

It is possible that non-native or introduced flora could be imported in to the Aol on vehicles or within any imported material. The impacts of non-native and introduced flora could potentially be significant in absence of any mitigation as these species could become established and out-compete native flora.

Three species listed on the national quarantine list were identified during the botanical assessment of the wind farm area and these are *Cuscuta campestris* (non-native), *Cuscuta epithymum* (probably native) and *Rhaponticum repens* (native). Construction works could improve conditions for these species and it is possible earth moving could increase the distribution and spread them along the route of the OHTL.

Impacts associated with non-native, invasive or introduced flora could result in long-term negative impacts, reversible (as invasive species can be controlled), and of medium magnitude and sensitivity and therefore of moderate significance.

Construction Phase – Direct Impacts on Sensitive Receptors (Habitats and Flora) – Non-native Species and Introduced Flora		
Type	Negative	
Duration	Short-to Long Term	If non-native species become established impacts could be longer term
Magnitude	Medium	Potential change to natural habitat and species composition across the Project Aol
Reversibility	Reversible	Invasive species can be controlled, if identified
Sensitivity	Medium	Areas of natural habitat are of medium sensitivity
Likelihood	Low to Medium	Introduction of invasive non-native species is possible, but not certain
Frequency	Periodic	During Construction
Timing	Not Relevant	For the duration of construction phase
Extent	Medium	If established within the Project footprint it is possible that invasive species could spread to wider areas
Significance	Moderate	

Mitigation Measures

- Each and every vehicle, prior to coming to the site will be subject to a full clean down at a storage / plant yard so that is effectively clean. On arrival at the Project area (i.e., from yard to area) vehicle will go into a wheel-cleaning facility that will be established before entering the area. Such facilities will be established at key locations throughout the OHTL sections (e.g., near Kirkkiz for OHTL works within Ustyurt). At the facility, the vehicle will run over a rumble strip to shake any loose debris from the tires. The vehicle will then be subject to a visual inspection and if necessary compressed air will be used to remove any other loose dirt debris.

Once on site most vehicles and equipment will be on site for the duration of the construction period. Should any vehicle leave the leave area, it should undergo the same procedure above before entry into the access road.

- Regular site walkover surveys throughout the construction period and post construction monitoring by a suitably qualified botanist to check for the presence and abundance of non-native or invasive species. In case such areas are identified, areas of non-native or invasive species will be mapped and a program of mechanical control will be completed in order to remove these species from the Aol. Chemical control will be avoided however, if necessary, will be used but in accordance with national and international guidelines as well as proper risk assessment and will only be used with prior approval of the Lenders.

- Extensive pre-construction surveys are being completed to update the baseline habitat information, including presence of non-native species.

Direct Impacts on Sensitive Receptors (Vertebrates) - Site Clearance and Earthworks

As well as impacts to habitats it is near-certain that site preparation works and construction activities will have negative impact on sensitive ecological receptors (e.g., reptiles, mammals, breeding birds) as a result of direct mortality.

Central Asian Tortoise (PBF, IUCN and UzRDB VU) are likely to be particularly exposed to impacts during construction as they are cryptic and slow-moving. In addition, their life cycle means that they will be particularly exposed to construction related mortality. Central Asian Tortoise are only typically active for 8 – 12 weeks per year, in the early Spring, after which they enter a period of summer aestivation followed, in most years, by winter hibernation. In some years, with warm autumn temperatures, there may be a second period of activity but this is sometime very short-lived and very hard to predict. Unmitigated impacts on Central Asian Tortoise could potentially be medium magnitude, high sensitivity (due to its status) and irreversible (e.g., loss of a generation of breeding animals or a period of lower recruitment due to loss of eggs).

Construction Phase – Direct Mortality Central Asian Tortoise		
Type	Negative	
Duration	Medium term	Impacts in localized areas during construction period which is 24 months
Magnitude	Medium	Potential mortality could reduce population size and viability within the Project footprint
Reversibility	Irreversible	Mortality of Central Asian Tortoise will be permanent
Sensitivity	High	IUCN VU species are of high sensitivity
Likelihood	High	Mortality is certain without mitigation
Frequency	Periodic	During Construction
Timing	Not Relevant	For the duration of construction phase and in all seasons
Extent	Low	Impact will occur in the Project footprint only
Significance	Moderate	

Three other species of reptile; Desert Monitor, Desert Sand Boa and Blotched Rat-snake (all UzRDB VU) are receptors of medium sensitivity and are also exposed to similar impacts during construction.

Construction Phase – Direct Mortality other Reptiles		
Type	Negative	
Duration	Medium-term	Impacts in localized areas during construction period which is 24 months
Magnitude	Medium	Potential mortality could reduce population size and viability within the Project footprint
Reversibility	Irreversible	Mortality of reptiles will be permanent
Sensitivity	Medium	UzRDB VU species are of medium sensitivity
Likelihood	High	Mortality is certain without mitigation
Frequency	Periodic	During Construction
Timing	Not Relevant	For the duration of construction phase and in all seasons
Extent	Low	Impact will occur in the Project footprint only
Significance	Moderate	

Terrestrial mammals could also be impacted as a result of habitat clearance works resulting in direct mortality of small mammals (e.g., rodents, ground-squirrel), as well Marbled Polecat (IUCN VU) which is a high sensitivity receptor, Honey Badger and Caracal (UzRDB CR) and Corsac Fox (UzRDB VU) which are medium sensitivity species. Impacts to high sensitivity receptors shown in the table below and significance of receptors of lower sensitivity will be lower.

Direct impacts on structures/features that may be suitable for use by roosting bats are very unlikely and project design has tried to avoid any such features. However, trees (particularly near the Amu Darya River where there are riparian forests) may need to be felled to facilitate construction activities and other structures/roosts could be indirectly impacted through disturbance. There are no built (man-made) structures within 100m of the OHTL route, but there are some areas where a building or small number of buildings are within 100-300m of the route. It is certain that these structures will not be directly impacted by the project and it is very unlikely that any bat roosts (if present) would be indirectly impacted by the project. Some natural features that have the potential to be suitable for use by roosting bats are present along the OHTL route, which includes a cliff (c.70m) at the western edge of the Nukus/agricultural area and areas with trees, e.g., around the Amu Darya. No features have been confirmed as bat roosts along the route. It is uncertain at this stage how much these features would be impacted by the project. It is unlikely the cliff will be directly impacted by the project but there may be indirect disturbance to bat roosts if they are present. Impacts on trees will depend on the exact location of the transmission towers and work areas around them, which is unknown at this stage.

Direct mortality of Goitered Gazelle is considered to be highly unlikely.

Construction Phase – Direct Mortality and Reduction in Habitat Quality – Mammals		
Type	Negative	
Duration	Medium- Term	Limited to construction which is 24 months
Magnitude	High	Number of burrows are very limited within the Aol so loss of such sites is very unlikely, although if lost magnitude would be high
Reversibility	Irreversible	Mortality of individuals would be permanent loss
Sensitivity	High	Honey Badger and Caracal UZRDB CR, Marbled Polecat IUCN and UZRDB VU
Likelihood	High	Reduced habitat quality is certain to occur
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible in all months
Extent	Low	Impact will occur in the Project footprint only
Significance	Major	

There is a possibility of the construction work causing disturbance to lekking sites or damage and disturbance to nesting sites of MacQueen's Bustard (IUCN VU). Bustards naturally avoid areas of disturbance and as most of the route is within areas of modified habitat or close to main roads and urbanized areas, which reduces the likelihood of bustards lekking, such behaviors cannot be ruled out. More open areas where MacQueen's Bustard may be lekking or nesting is limited to Section 1 of the OHTL (Ustyurt Plateau) and Sections 3 and 4 of the OHTL route (in more open desert/gravel plains and the Kyzylkum Desert) and areas away from existing disturbance. In Sections 3 and 4, generally the areas away from disturbance and where MacQueen's Bustard is more likely to lek and nest only exist in some parts of the route, these being the more open areas between Nukus and Kyzylkala (approximately 127km) and between Taza-Kel'teminar and the A380 and between Gazli and Karakul (both approximately 60 km). As already discussed, these areas are expected to have a lower density of nesting birds than more open and optimal habitat(to the north of the A380) near Bukhara and the project Aol is very narrow. As such lekking

and nesting is possible, but it is not anticipated that there will be a significant number of nesting attempts within the OHTL Aol.

Ground nesting raptors, such as Steppe Eagle (IUCN EN), are not expected to occur as nest sites would have been identified already within nesting range (Ustyurt Plateau) or the Aol is outside of the known nesting range. Other species such as Eastern Imperial Eagle (IUCN VU) are not expected to nest as there is no suitable nesting habitat (forest/large trees).

Construction Phase – Disturbance / Direct Mortality, Loss of Nesting Sites and Reduction in Habitat Quality – MacQueen’s Bustard		
Type	Negative	
Duration	Medium- term	Impacts in localized areas during construction period which would be 24 months
Magnitude	High	Suitable lekking and nesting areas are limited within the Aol so loss of nesting sites is very unlikely. Nesting is however possible and cannot be ruled out entirely and as such any direct impacts during construction would be high
Reversibility	Irreversible	Direct mortality of adults very unlikely but loss of nests, eggs and chicks would be irreversible
Sensitivity	High	IUCN Vulnerable and CH qualifying species (for migration)
Likelihood	Low	Considered to be absent and if present in very low densities so likelihood of impact is low
Frequency	Periodic	During Construction
Timing	Nesting season, throughout construction	Impacts during the breeding season only throughout construction period
Extent	Low	Impact will occur in the Project footprint only
Significance	Major	

Vegetation and ground clearance are also very likely to negatively impact other nesting birds (passerines etc.), and possibly species such as European Turtle Dove and Yellow-eyed Pigeon (both IUCN VU) which are high sensitivity receptors, through direct mortality of adult birds as well as loss of nests, eggs and chicks. The nesting bird assemblage is of moderate conservation importance and impacts are likely to be medium-term (as construction period is 24 months) and irreversible.

Construction Phase – Direct Mortality lower sensitivity Ground and Tree Nesting Birds (passerines etc.)		
Type	Negative	
Duration	Medium- term	Impacts in localized areas during construction period which is 24 months
Magnitude	Medium	Potential mortality could reduce population size within the Project footprint
Reversibility	Irreversible	Direct mortality of adults very unlikely but loss of nests, eggs and chicks would be irreversible
Sensitivity	High	IUCN Vulnerable species are of high sensitivity (or lower)
Likelihood	High	Unmitigated loss of nests and chicks is certain
Frequency	Periodic	During Construction
Timing	Nesting season, throughout construction	Impacts during the breeding season only throughout construction period

Extent	Low	Impact will occur in the Project footprint only
Significance	Moderate	

Mitigation Measures

A summary of mitigation measures to avoid and mitigate for direct impacts on sensitive vertebrate receptors is included below. Mitigation measures are largely based on avoidance of impact through selection of the working areas to favor areas of modified habitat or area of degraded natural habitat. These measures will be included (and expanded upon) in a Construction Biodiversity Management Plan.

- All site workers will undertake a Project induction before working on site. The induction will include a comprehensive biodiversity element where the baseline ecological value and sensitivity of the receptors within the AoI will be discussed.
- Prior to construction works (habitat clearance, levelling or any other works), working areas will be clearly demarked so that site workers fully understand the working area. Encroachment into areas outside of agreed working areas will be prohibited and working areas will be subject to regular check by the EPC Contractor Biodiversity Manager to check enforcement of working areas.
- Working areas should avoid trees / shrubs as these are likely, due to their sporadic distribution across the AoI to be of importance to breeding birds.
- Construction of the OHTL is expected to commence in Q2 2025 so pre-clearance works will include the following:
 - Pre-clearance mammal surveys will be undertaken in spring / summer 2024, 2025, 2026 to identify and map any Marbled Polecat, Honey Badger, Caracal and Corsac Fox burrows and if identified within or adjacent to working areas they will be recorded and mapped in detail.
 - If burrows are not in active use they will be checked by an ecologist and carefully destroyed (excavated) with supervision.
 - If burrows are found to be in active use further avoidance and mitigation is required. Where land acquisition limits allow (i.e., work can be moved within a larger plot of land where work is agreed) exclusion zones of 500m will be set up so that work can continue but avoid the burrow. If this is not possible the work in these areas will be delayed and no access will be allowed in these buffer zones until it can be proven the animals have moved on and are not active at that site, naturally and of their own accord. Once the burrows are proven to be inactive the burrow will be monitored and destroyed as above.
 - It is likely that any work in the area around a burrow will result in the animals evacuating and re-locating to another nearby burrow away from disturbance. Whilst these mammals are a high sensitivity receptors they are considered to occur at very low densities and disturbance impacts are therefore likely to be negligible, minor at worst and therefore not significant. They will have large territories with several burrows which can be utilized in areas away from the immediate work areas. The loss of any burrows in the work areas, considered to be of very low likelihood, will not have a significant impact on these species.
 - Pre-clearance surveys and translocation will be completed for Central Asian Tortoise, Desert Monitor, Desert Sand Boa and Blotched Rat-snake prior to commencement of construction activities (i.e., during the tortoise active season (From mid-April up to mid / end of June each year)) in any permanent or temporary works area with a tentative suggested approach below.

- Any animals found during the spring active season of each year will be captured, tortoises will be microchipped and moved approximately 2 km from the work area. Animals will be moved to areas of suitable habitat and will be distributed evenly. Detailed records will be kept of all animals moved.
- Each work area will be thoroughly searched by appropriately qualified ecologists and any burrows that could potentially support tortoises (they have a characteristic shape) will be fully investigated using an endoscope. Should tortoises be found they will carefully be dug out (by hand) and translocated. Where burrows are shown to be empty, they will be destroyed. Only burrows in the working area are to be destroyed. If other receptors (lower sensitivity reptiles and mammals) are found in the burrows they will be dug out and removed away from construction zone. Detailed records will be kept of all animals moved, number of burrows checked and number of burrows destroyed.
- Translocation efforts will ONLY take place during the tortoise active season and will cease as soon as aestivating behavior is recorded. Only active animals will be translocated.
- Marking of captured animals will not be undertaken. No paints or other obvious marking will be applied to captured tortoises that could make them potentially more vulnerable to predation.
- If occupied burrows are found after the active season, then the burrows will be clearly marked (using colored flags) and the working areas adjusted to avoid direct impacts on aestivating / hibernating tortoise.
- In the unlikely event that a tortoise is accidentally dug up or disturbed during works in periods of inactivity (i.e., aestivation / hibernation) then they will be carefully transported to an existing holding facility in Tashkent. Transportation to the holding facility will be undertaken by a suitably trained ecologist / species specialist. The holding facility will be operational for accidental findings of tortoises during construction.
- This exercise will be completed throughout the spring active season for any work areas required in 2024 so that the population is significantly reduced, thus reducing the likelihood of animals aestivating and hibernating in work areas. The process will be repeated as required if work extends into the active season of 2025, 2026, etc.
- If animals are kept in a holding facility, after the winter hibernation period they will be released into areas of suitable habitat adjacent (within 2km) to the site they were found. If construction activities have finished in the areas from which they were taken they will be released into that area. Any animals caught and taken to holding facilities will be marked in such a way as their capture location will be known. Records will be thorough to ensure all animals kept in a holding facility can be easily identified as individuals, where they were moved from and where they need to be released again.
- Pre-clearance surveys will be completed for MacQueen's Bustard. If the surveys in spring 2024, 2025, 2026, etc. identify areas used by lekking or nesting MacQueen's Bustard they will be recorded and mapped in detail. An exclusion zone of 1 km from any areas where lekking MacQueen's Bustards have been identified and an exclusion of 750m from any MacQueen's Bustard nest sites will be applied. Where land acquisition limits allow (i.e., work can be moved within a larger plot of land where work is agreed) work can continue outside of the exclusion zone. Regular checks of active nests (from an appropriate distance and with optical aids as not to cause

disturbance) will be completed by the EPC appointed ornithologist/s under the EPC Biodiversity Manager (with suitable qualifications and experience) and works (habitat clearance, levelling or any other works) will only be allowed to proceed if natural cessation of nesting activity can be proved (e.g. loss of eggs/chicks, abandonment of nest). Access to these areas will not be permitted in these areas and be delayed during the lekking or nesting period (typically April to August) or until the lekking activity or nesting attempt ceases naturally

- Limit the requirement to work in areas of natural habitat and areas that require vegetation clearance to avoid impacts on other nesting birds. Prior to clearance of vegetation, pre-clearance surveys will be undertaken by a suitably qualified ecologist for nesting birds, in particular to identify nesting sites of higher sensitivity and conservation status (e.g., European Turtle Dove and Yellow-eyed Pigeon). Should these species be identified as nesting within or very near to work areas (within 50m), where land acquisition limits allow (i.e., work can be moved within a larger plot of land where work is agreed) exclusion zones of 50m minimum will be set up so that work can continue but avoid the nest. If this is not possible the work in these areas will be delayed until the end of the nesting period (i.e., August/September) or until the nesting attempt ceases naturally.

Direct Impacts on Sensitive Receptors (Vertebrates) – Vehicle Collisions

Vehicle related collision is possible for all vertebrate species present within the Project's AoI and this will result in direct mortality on receptors of low to high sensitivity. Any such impact would be negative, medium-term and irreversible and would be of medium to high magnitude and therefore of moderate to major significance (depending on the receptor killed).

Larger mammals including Goitered Gazelle are more likely to disperse away from construction areas due to their sensitivity to disturbance and thus the risk of collision with vehicles will be small. Marbled Polecat, Honey Badger and Caracal are mostly nocturnal and as such the likelihood of collision is significantly reduced, as night-time driving will be banned or if required will be very limited. Small mammals and slower moving species such as Central Asian Tortoise, Desert Monitor, Desert Sand Boa and Blotched Rat-snake are at higher risk of collision with vehicles and machinery.

It is possible that carcasses on the road could attract scavenging animals, including birds of prey which in turn would increase their risk of collision with vehicles and machinery.

Construction Phase – Direct Impacts on Sensitive Receptors (Vertebrates) – Vehicle Collisions		
Type	Negative	
Duration	Medium-Term	Impacts in localized areas during construction period which is 24 months
Magnitude	Medium to High	Presence of higher sensitivity animals is very limited within the AoI vehicle collision is very unlikely, although if it happens magnitude would be high
Reversibility	Irreversible	Mortality of individuals would be permanent loss
Sensitivity	Low to High	Dependent on receptor impacted
Likelihood	Medium	Direct mortality of sensitive receptors is possible
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible in all months
Extent	Low	Impact will occur in the Project footprint only
Significance	Moderate to Major	

Mitigation Measures

- Appropriate speed limits will be enforced on access road (60kmph), internal road network and working areas (40kmph). Regular signage will be installed along the site access roads informing all drivers of the speed limit.
- Speed limits will also be communicated at the site induction as well as the possibility of reduction in speed limits during the construction period. Any changes in speed limits will be clearly communicated to all staff and evidence of such communication kept.
- Speed limits on any access roads or along the OHTL corridor will be reduced to 20 km/h (daytime) and 10 km/h (night-time) during the breeding bird season if MacQueen's Bustard are recorded nesting. Changes in speed limits will be enforced through updated signage and speed checks will be regularly completed in these areas. Speed limit changes will be enforced 2.5 km either side of any confirmed nesting location of this species (e.g., a 5 km zone of reduced speed limits in proximity to nesting MacQueen's Bustard).
- Speed limits will be enforced by the installation of live speed and location tracking software on all EPC Contractor vehicles (e.g., cars and worker / equipment transport) and all Developer vehicles. Data will be analyzed monthly by the EPC Contractor Biodiversity Manager, and Developer data will also be analyzed monthly by the Developer Biodiversity Manager. Records of these checks will be kept and reported as well as being included in the annual reports. Any driver caught breaking the speed limit will be subject to disciplinary procedures including fines.
- In addition to GPS units regular random speed checks (using a radar gun or similar) will be completed monthly by the EPC Contractor and all vehicles (including non-project vehicles) will be checked. Vehicles breaking the speed limit will be stopped and the drivers will be informed of the correct speed limits. If the vehicle breaking the speed limit is a project vehicle disciplinary action including fines will be applied.
- A ban of driving at night will be enforced and if absolutely necessary the speed limit will be reduced to acceptable limits (e.g., 40 km/h on the access road and to 20 km/h on any internal roads).
- Ban against off-road (outside of designated access routes) driving at all times of the day.
- Regular checks of access roads for carcasses and if found these will be moved to at least 50m from the road to reduce the likelihood of hitting scavengers, including birds of prey.
- An incidental / chance find procedure will be included in the BMP so that all workers report any road collisions so that any such incident can be investigated in full.

Direct Impacts on Sensitive Receptors (Habitats, Vertebrates) – Poaching, Collection etc.

It is possible that site workers may poach or take plants and animals from the site, either for firewood, as food (e.g., hares, eggs), as a trophy (e.g., Goitered Gazelle) to sell (e.g., Central Asian Tortoise, other reptiles or small mammals) or persecution (e.g., snakes).

Any of the identified receptor are potentially at risk from this medium-term, irreversible negative impact. The likelihood of this occurring is low to medium and the magnitude of this impact ranges from medium to high depending on the receptor affected.

Construction Phase – Direct Impacts on Sensitive Receptors (Habitats, Vertebrates) – Poaching, Collection etc.		
Type	Negative	
Duration	Medium-Term	Impacts in localized areas during construction period which is 24 months
Magnitude	Medium to High	Dependent on receptor affected
Reversibility	Irreversible	Mortality of individuals would be permanent loss
Sensitivity	Medium to High	Dependent on receptor impacted
Likelihood	Low to Medium	Unlikely to occur
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible in all months
Extent	Medium to High	Possible for site workers or poachers could access a wider area around the site Aol in areas otherwise generally not accessed
Significance	Moderate to Major	

Mitigation Measures

- The Project will enforce strict controls on hunting, gathering, poaching and otherwise disturbing flora and fauna within the Project Aol. Any breaches of this ban will be strictly enforced, and any workers found in breach of this control measure will be subject to disciplinary procedures which will entail instant dismissal where species of international conservation concern (IUNC CR/EN/VU) or high in-country conservation concern (UzRDB CR/EN) are affected. For more common species a formal warning will be issued, followed by dismissal if the offence is repeated.
- The ban on hunting etc. will be included in the site induction along with discussions about the sanctions for breaches of this control measure (and this will be further clarified by Developer EPC Contractor).
- The EPC Contractor Biodiversity Manager will undertake monthly checks (walkovers) of the workers compound and any evidence of poaching will be fully investigated and reported in full.
- A chance find procedure will be implemented should any site worker find a wild animal, especially one that has become a nuisance (e.g., scavenger in the works camp, presence of small mammals in worker accommodation, presence of snake or scorpion on the works site) and the EPC Contractor will arrange for an appropriately qualified person to capture and relocate. Where scavengers have been identified within the works site additional housekeeping measures may be required.
- Specialists will be present on site to record species prior to and during the start of the construction work. The EPC Contractor is to prepare a chance finds procedure prior to further works commencing in Q2 2025 and will be provided/updated for all subsequent work/years, which will be agreed with the Lenders 6 months in advance of the work commencing.

Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Disturbance

The presence of site workers and machinery can result in disturbance related impacts to all terrestrial ecological receptors present within the Aol. These impacts are of low to medium likelihood, and the magnitude of such impacts will vary depending on the sensitivity of each receptor to disturbance. For example, disturbance distances for large and more secretive or nocturnal species such as Goitered Gazelle are likely to be significantly greater than for smaller mammals, Central Asian Tortoise, and other species

of reptiles. The significance of any such disturbance impacts is likely to range from Moderate to Major, depending on the sensitivity of the affected receptor. The duration of impact will be of medium-term, throughout the construction period of 24 months. It is likely that any disturbance impacts, irrespective of duration will be reversible once the disturbance event has passed.

Construction Phase – Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Disturbance		
Type	Negative	
Duration	Medium-Term	Impacts in localized areas during construction period which is 24 months
Magnitude	Medium to High	Dependent on receptor affected
Reversibility	Reversible	Impact likely to be reversible once disturbance event has passed and disturbance events likely to be localized and will cease on completion of construction activities.
Sensitivity	Medium to High	Dependent on receptor impacted
Likelihood	Low to Medium	Impacts are not certain to occur or be significant.
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible in all months
Extent	Low	Likely to occur within the Project AoI or only in immediately adjacent habitats.
Significance	Moderate to Major	

Mitigation Measures

- Site wide induction to include information regarding disturbance of ecological receptors.
- Chance find procedure to report sightings of potentially sensitive receptor (e.g., Goitered Gazelle, MacQueen's Bustard) and investigation of any such sightings by the EPC Contractor in order that additional buffer areas can be agreed, where necessary (see above).
- Continual monitoring of the site by the EPC Biodiversity Manager to record sensitive receptors and any such information will be passed on to the EPC Contractor and buffer / exclusion zones would be updated if required.

Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Reduced Air Quality / Dust

The soil across the AoI is very fragile and the AoI is very dusty. It is likely that constructed related disturbance to upper soil layers will likely increase the amount of dust in the air which in turn could result in negative impacts on plants and vertebrate receptors. In addition, air pollution from site vehicles from the concrete batching plant could also result in negative impacts on valued receptors. These impacts are medium-term and reversible and are considered to be of minor to moderate significance.

Construction Phase – Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Reduced Air Quality / Dust		
Type	Negative	
Duration	Medium-term	Limited to construction period which is 24 months
Magnitude	Low to Medium	Dependent on receptor affected
Reversibility	Reversible	Impact likely to be reversible once construction activities have finished
Sensitivity	Low to High	Dependent on receptor impacted

Likelihood	Low to Medium	Impacts are not certain to occur or be significant
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible in all months
Extent	Medium	Impacts within Project AoI but dust and pollution could affect areas within 2 km of Project activities
Significance	Minor to Moderate	

Mitigation Measures

- Speed limits will be altered on access roads if dust is a significant issue. This will be monitored by the EPC Biodiversity Manager. Vehicles will be properly maintained to reduce emissions.
- Emissions from the batching plant will be monitored in line with control plans to minimize air pollution.

Direct Impacts on Sensitive Receptors (Vertebrates) – Noise

Noise as a result of construction can result in direct impacts on valued ecological receptors (vertebrates) due to acoustic masking, disturbance and displacement thereby reducing survivorship and reproductive success.

Any impacts are likely to be medium term (for the duration of construction which is 24 months) and reversible. The magnitude of impact ranges from low to medium and is likely to be of minor to moderate significance.

Construction Phase – Direct Impacts on Sensitive Receptors (Vertebrates) – Noise		
Type	Negative	
Duration	Medium-term	Limited to construction period which is 24 months
Magnitude	Low to Medium	Dependent on receptor affected
Reversibility	Reversible	Impact likely to be reversible once construction activities have finished
Sensitivity	Low to High	Dependent on receptor impacted
Likelihood	Low to Medium	Impacts are not certain to occur or be significant
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible in all months
Extent	Medium	Impacts within Project AoI but noise could affect areas within 2 km of Project activities
Significance	Minor to Moderate	

Mitigation Measures

- Vehicles will be properly maintained to noise emissions.
- Timing of works to avoid sensitive periods of the year and maintain buffer zones around MacQueen's Bustard lekking sites and nests and known burrows of Marbled Polecat and Corsac Fox (see above).
- Use of available technology and management practices with construction methodologies to reduce noise.
- Regular monitoring of noise levels within works compounds and works areas as far as possible and apply corrective measures, as necessary.

Direct Impacts on Sensitive Receptors (Vertebrates) – Lighting

Lighting could potentially result in negative impacts of a range of ecological receptors including those of high sensitivity such as nocturnal mammals. In addition, lighting could impact foraging and commuting routes for bats.

Any impacts are likely to be medium term (for the duration of construction) and reversible. The magnitude of impact ranges from low to medium and is likely to be of minor to moderate significance.

Construction Phase – Direct Impacts on Sensitive Receptors (Vertebrates) – Lighting		
Type	Negative	
Duration	Medium-term	Limited to construction which is 24 months
Magnitude	Low to Medium	Dependent on receptor affected
Reversibility	Reversible	Impact likely to be reversible once construction activities have finished
Sensitivity	Low to High	Dependent on receptor impacted
Likelihood	Low to Medium	Impacts are not certain to occur
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible at night and in months, although more likely in spring, autumn and winter (i.e., shorter day lengths)
Extent	Low	Lighting will not be extensively used (if at all) and as such any impact would be very localized and within the Project Aol only
Significance	Minor to Moderate	

Mitigation Measures

- Limit the amount of lighting, especially within the wider Aol (e.g., at transmission tower sites and working areas). This will be achieved by ensuring that night-time working is banned and is only completed when strictly necessary (i.e., emergency works are required).
- Where lighting is required within lay-down areas and worker compounds etc. ensure that any lighting is shielded and protected to reduce light-spill and glare. Low UV intensity lighting will be used, to further reduce light spill.
- For external security lights PIR trigger units will be used and these should be timed to automatically switch off after five minutes.
- No lighting will be installed along the access road roads.

Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Littering, Waste Management

Unmitigated, it is possible that poor waste management could result in the proliferation of litter across the Project Aol including plastic containers, plastic bags and glass. This waste could result in negative impacts to sensitive receptors through ingestion or entanglement. Any such impact could be medium-term (throughout construction period), reversible, and the significance of this impact would be minor to moderate depending on the receptor effected.

In addition, poor management of other solid wastes, including food waste could result in the presence of pest species such as rats and mice, which could outcompete wild rodents, and feral cats and dogs which could increase the risk of predation of wild rodents and other prey species (e.g., Tolai Hare, , reptiles. ground nesting birds).

Construction Phase – Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Littering, Waste Management		
Type	Negative	
Duration	Medium-term	Limited to construction which is 24 months
Magnitude	Low to Medium	Dependent on receptor affected
Reversibility	Reversible	Impact likely to be reversible once construction activities have finished.
Sensitivity	Low to High	Dependent on receptor impacted
Likelihood	Low to Medium	Impacts are not certain to occur
Frequency	Periodic	During Construction
Timing	Not relevant	Impacts possible in all months during construction activities.
Extent	Medium	Impacts within Project Aol but possible wind-blown litter / waste could affect areas within 2 km of Project activities
Significance	Minor to Moderate	

Mitigation Measures

- Waste Management will be included in the Site Induction so that all site workers understand their responsibilities to maintaining a clean and tidy site. Where possible all materials than can be recycled will be.
- Zero tolerance to littering in work areas. This zero-tolerance approach should also be applied to smoking and workers must use appropriate smoking areas (supplied with 'butt bins') at all times, even when on construction sites. Litter must not be thrown out of vehicle windows when driving to and from or around the site.
- Daily inspections of working areas should be completed and corrective actions applied, where necessary.
- Additional mitigation measures for pest species, including feral cats and dogs are included below.

Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Pest Species

As discussed above it is possible that pest species become established within the working areas as a result of increased littering or poor waste management as well as the propensity of certain species (e.g., rats, cats and dogs) to associate with human habitation.

An increase in pest species could result in impacts on wild animals through direct and indirect competition for food resources, direct mortality through predation, and direct impacts as result of disturbance impacts. Such impacts could be reversible or irreversible, will be between low to high magnitude and as such significance will vary from minor to major depending on the receptor being affected.

Construction Phase – Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Pest Species

Type	Negative	
Duration	Long- term	Will entail long-term effects such as competition for food resources
Magnitude	Low to High	Dependent on receptor affected
Reversibility	Reversible or irreversible	During construction period only however pest species could persist within the Project AoI after construction.
Sensitivity	Low to High	Dependent on receptor impacted
Likelihood	Low to Medium	Impacts are not certain to occur
Frequency	Periodic	During Construction and possibly post-construction if pest species become established.
Timing	Not relevant	Impacts possible in all months during construction activities.
Extent	Low to Medium	Dependent on pest species
Significance	Minor to Major	

Mitigation Measures

- Where pest species are identified the EPC Contractor and Biodiversity Manager will be notified and an appropriate course of action taken. For small mammal pest's live traps will be used, in order to reduce the risk of by-catch. Poison baits should be avoided, unless it can be certain that non-target species will be affected, and any such use should be in accordance with national and international best practice. If poison baits are to be used it must be certain that any poisoned animal cannot move out on to the wider AoI to reduce the risk of natural predators eating poisoned animals.
- Where feral cats and dogs are identified the EPC Contractor Biodiversity Manager must be notified and efforts made to catch these animals and transport them to appropriate animal shelters away from the site. Guard dogs for the works site (e.g., security for site offices, workers accommodation) must not be used. No pets (cat, dogs, etc.) will be allowed on the site.

10.3.2 Potential Impacts during the Operation Phase

Direct and Indirect Impacts on Sensitive Receptors (Birds) – Collision with OHTL

The route of the OHTL is considerable and spans half the width of Uzbekistan, notably crossing the broad migration routes of the Central Asia to East Africa and Central Asia to South Asia flyways. There is no refined migration corridor or 'bottleneck' along any part of the route, so birds, other than waterbirds, are most likely to be moving through a broad front generally moving north or south along the flyway. Although, it has been identified that the route runs close to several IBAs designated for migratory birds and crosses a known migratory corridor, the Amu Darya corridor. These areas are likely to have a higher volume of migratory birds and will potentially have a higher risk of impacts but also due to the scale of the project it is inevitably going to cause impacts to birds that are likely to have a significant impact cumulatively along the whole OHTL route.

The operation of OHTLs is likely to have an impact on birds as they are proven mortality factor for migratory and soaring birds. In most cases, impacts from over-head powerlines lead to severe injuries or immediate death. In case of collision accidents, birds crash at high flight speed into cables or wires. The resulting injuries vary widely and are comparable to traumata caused by collisions with cars. Electrocution harms mostly birds sitting on the live components or having ground contact, but this is less of an issue with high power OHTL such as the one proposed here. Electrocution is primarily associated with low and medium-voltage electricity distribution lines. Birds that perch or nest on pylons can be electrocuted by causing a

short circuit, either by touching two live wires, or a live and an earthed component. However, with most transmission pylons the air gaps between live components are too large to be bridged by birds, so electrocution is more frequently associated with distribution power lines where air gaps are smaller. Although there is still a risk in high-voltage transmission lines, it is considered a negligible risk.

The following table shows the species of conservation concern considered to be of higher risk of impact from collision with the OHTL. These species are also discussed further in the CHA document.

Table 57: Species of conservation concern considered to be of higher risk

Common Name	Conservation Status		Notes
	IUCN	UZBDB	
Sociable Lapwing	CR	VU	A widespread species within Uzbekistan during spring and autumn migration periods. Migration through the Aol is likely
White-headed Duck	EN	EN	Breeding, passage and wintering species in Uzbekistan and known to occur in adjacent IBA and non-IBA wetlands. Migration through the Aol is likely
Pallas's Fish Eagle	EN	-	A rare and infrequent passage bird. Possible migration through the Aol
Egyptian Vulture	EN	VU	Egyptian Vulture are a widely distributed breeding species within Uzbekistan and this species will also migrate through the country. Migration through the Aol is likely
Saker Falcon	EN	NT	Approximately 70 breeding pairs in Uzbekistan however breeding habitat is not present within the Project Aol (e.g., cliff faces, chinks). Migration through the Aol is likely
Steppe Eagle	EN	VU	Breeding and migratory species through Uzbekistan. Species has previously over-wintered within the Amu Darya River corridor. Migration through the Aol is likely
Lesser White-fronted Goose	VU	VU	Wintering and passage species within Uzbekistan within plainland water reservoirs of the Amu Darya and Syr Darya river basins including Lake Dengizkul. Wintering is irregular and populations fluctuate between 200 and 2,000 individuals. Migration through the Aol is likely
Common Pochard	VU	-	Widely distributed species with large global population and known to occur in adjacent IBA and non-IBA wetlands. Migration through the Aol is likely
Greater-spotted Eagle	VU	VU	A non-breeding species and only occurs in low numbers on migration. Migration through the Aol is likely
Eastern Imperial Eagle	VU	VU	Breeding and migratory species within Uzbekistan. Breeding in very low density has been previously recorded within the Ustyurt Plateau and the Kyzylkum Desert. Migratory populations are also considered to be low (UzRDB). Migration through the Aol is likely
Great Bustard	EN	CR	Formerly a breeding species within Uzbekistan, however current status is as a wintering species and usually in colder winters only. Migration through the Aol is likely and wintering possible
MacQueen's Bustard	VU	VU	Recorded in low numbers along OHTL so far (Autumn surveys). Likely significant migration through the Project Aol, breeding likely and wintering possible

Avistep

The Birdlife International AviStep Sensitivity Tool for Energy Planning was updated to include Uzbekistan in October 2024 and the sensitivity mapping is shown on the figure below. Kungrad OHTL goes through

areas, with categories of avian sensitivity for transmission powerlines, which are mostly High with smaller areas of Moderate. It also passes through the edges (or very close to) three areas that are Very High. The categories of avian sensitivity are defined as:

Moderate - development is considered to pose a moderate risk to bird populations. However, comprehensive site-level assessment is necessary to confirm this level of risk.

High – Development is considered to pose a high risk to bird populations. However, comprehensive site-level assessment is necessary to confirm this level of risk. This area may be unsuitable for development and will certainly require mitigation measures.

Very High - Development is considered to pose a very high risk to bird populations. However, comprehensive site-level assessment is necessary to confirm this level of risk. This area is likely to be unsuitable for development and will certainly require mitigation measures.

The three areas that are categorized as Very High avian sensitivity are due to the location of protected areas. The protected areas are Khorazm National Nature Park, Lower-Amudarya State Biosphere Reserve and Karakyr Lakes IBA as discussed above and in the sections below where relevant. A site-level assessment has been undertaken for the Kungrad OHTL and the risk posed is fully assessed below.

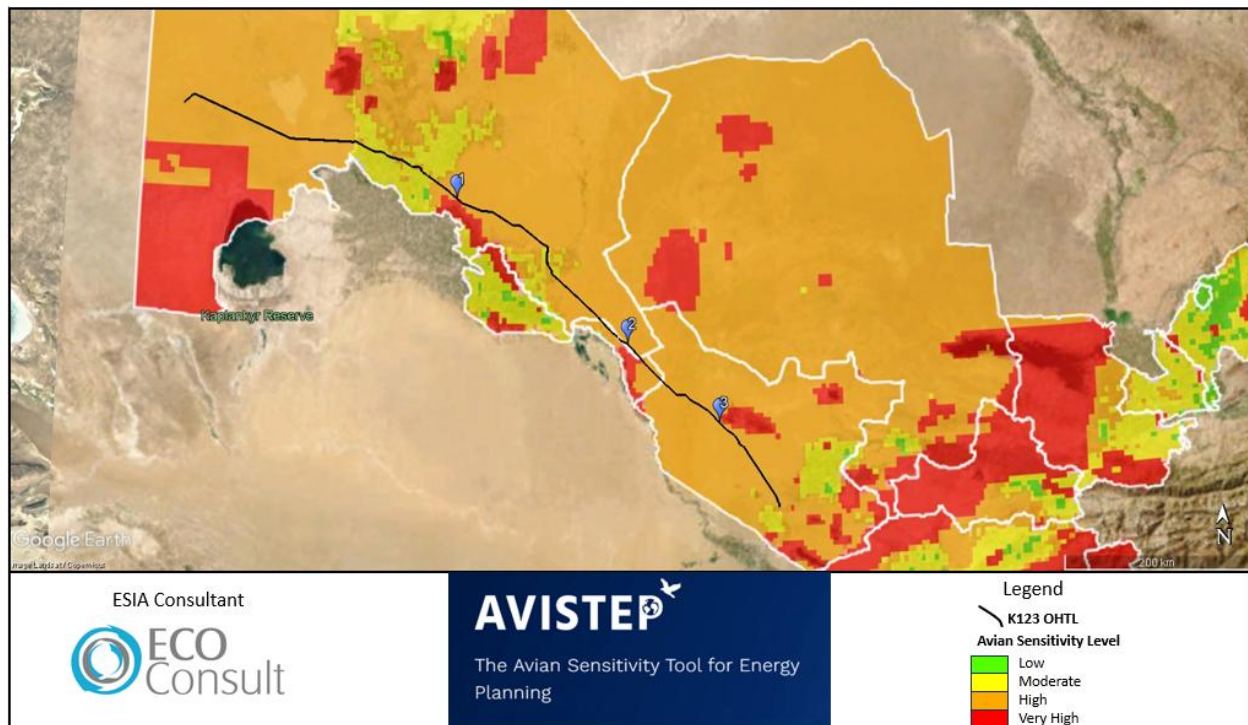


Figure 78: Project location in relation to Avistep sensitivity mapping

Sociable Lapwing

Whilst the impact of collision with OHTLs is not as well published for wading birds as it is for other species, there is still a risk particularly in suitable habitats, during the breeding season and during night-time migration (e.g., see Prinsen, H.A.M., G.C. Boere, N. Píres & J.J. Smallie (Compilers), 2011. Review of the conflict between migratory birds and electricity power grids in the African-Eurasian region. CMS Technical Series No. XX, AEW Technical Series No. XX. Bonn, Germany.). It is likely that due to their flight behavior and higher maneuverability wading birds are more likely to avoid collision with OHTL than other more at-

risk species. However, considering the conservation status of Sociable Lapwing any impacts could be significant.

It is a widespread species within Uzbekistan during spring and autumn migration periods where it is known from the Central Kyzylkum, the Aydarkul Lake and the Tudakul and the Talimarzhan water reservoirs. It can be found on the banks of reservoirs and marshes in the plainland wetlands and dry steppe areas, fallow land and harvested fields during migration periods. This species does not breed in Uzbekistan. In 1970–80s, flocks of 10–20 individuals were recorded however in recent years concentrations of birds have been found during the autumn migration in the Talimarzhan Reservoir (2000+ birds in 2012 and 4000+ birds in 2015).

There are no known stop-over sites present within the Aol and the Aol does not support suitable staging habitats. The Aol is outside of areas where this species is known to congregation large numbers in Uzbekistan (e.g., Talimarzhan Reservoir approx. 200km SE of Aol).

MacQueen's Bustard

It is well documented that bustard species are heavily impacted by collisions with OHTLs, for example in the recent article by Collar and Kessler (2024). The size, flight behavior and other biological characteristics of bustards results in a low level of detection and being able to avoid collision with such structures such as OHTL and fence lines.

Previous nesting population in Uzbekistan between 1960–80-s were estimated between 1,500 to 3,000 individuals; however, during migration up to 20,000 individuals were recorded. According to the UzRDB in-country populations and breeding range has decreased during the last decades (sic 1990's to 2010's). Recent (2016) estimates of the breeding population within the south-eastern area of the Kyzylkum Desert (Bukhara Region) were approximately 2,000 breeding pairs and this was updated in 2021 to approximately 2,350 breeding females. It is also considered that approximately 10% of the total Uzbekistan breeding population over-winters in the southern part of the Kyzylkum Desert (Bukhara Region). Many of the papers reviewed to inform the CHA indicate a likely 9.4% annual decline in MacQueen's Bustard across its range, mainly due to unsustainable wintering mortality from hunting.

In addition to unsustainable winter hunting MacQueen's Bustard, mortality at OHTLs has been recorded across its range including within Uzbekistan (Bukhara Region, 2010).

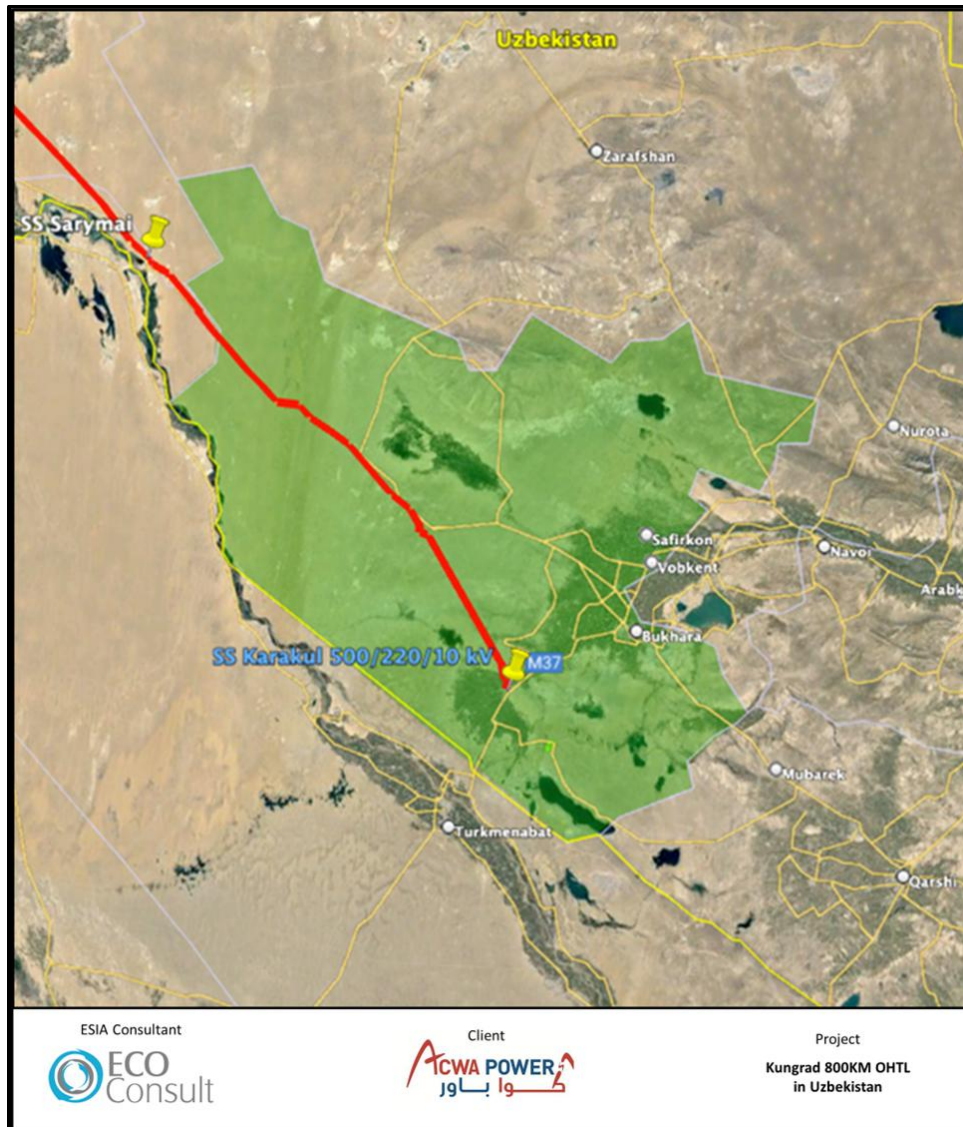


Figure 79: Breeding MacQueen's Bustard Area - Bukhara Region of the Kyzylkum Desert

Due to the range of this species, the breeding populations in the north of the range (Kazakhstan, China and Mongolia) being the highest in number (likely to be over 50% of the global population) and those populations being long range migrants, a significant proportion of the population would migrate into or through Uzbekistan every year (see figure below). This would mean that a high proportion of those birds would ultimately cross the route of the proposed OHTL during migration and likely twice per year. This is confirmed by various research projects that show satellite tracks of migratory birds from different core breeding populations crossing the route at various places (such as those that have wintered in the UAE shown below). Satellite tracking data does also indicate that birds that nest in central Kazakhstan or further east (east Kazakh, China and Mongolia) will avoid flying over the mountains in eastern Uzbekistan and are therefore concentrated on migration through central Uzbekistan. This is shown in the satellite data from three distinct populations of birds breeding in Central Kazakhstan and in the Xinjiang and Gansu areas of China / Mongolia in the figure below.

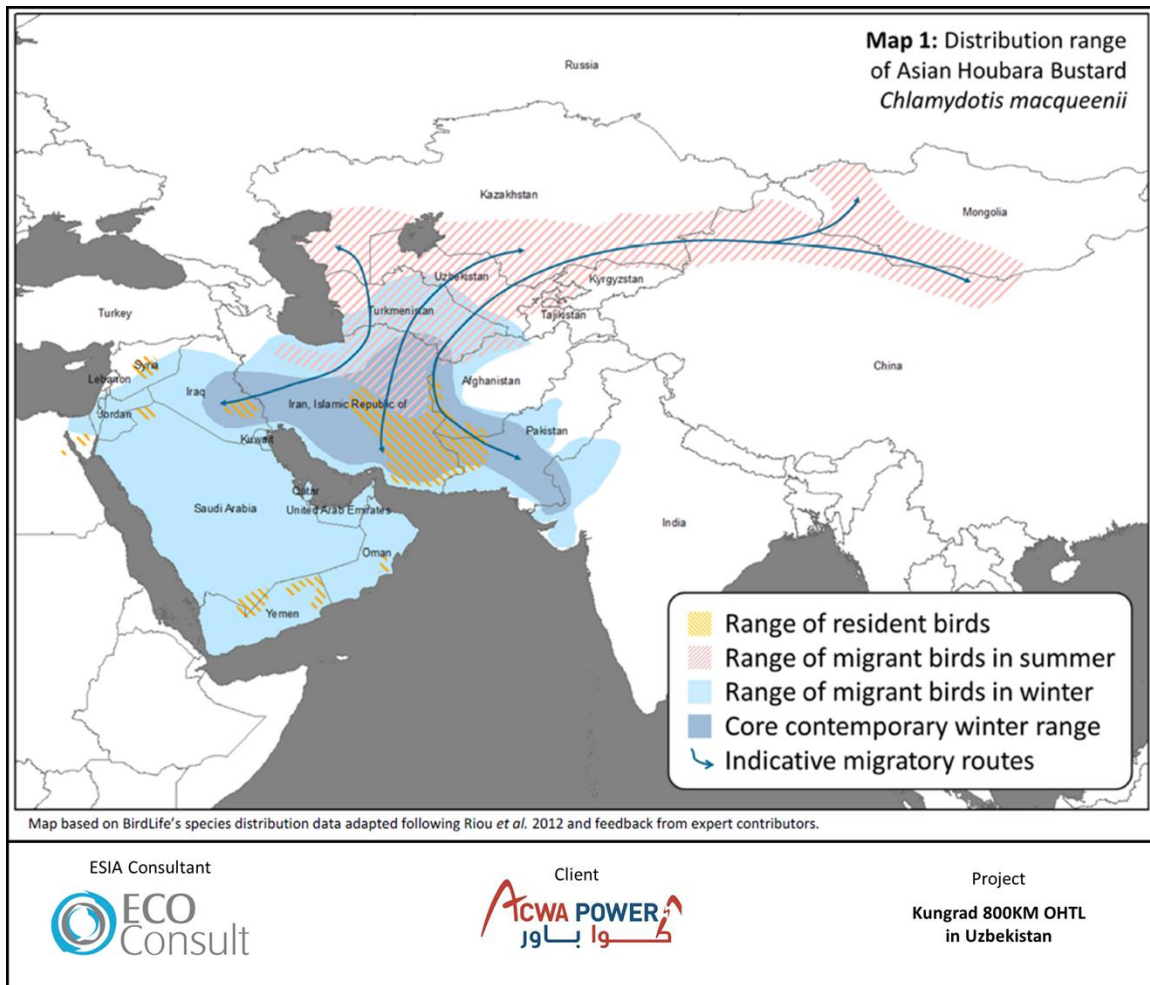


Figure 80: Distribution Range of Asian Houbara Bustard

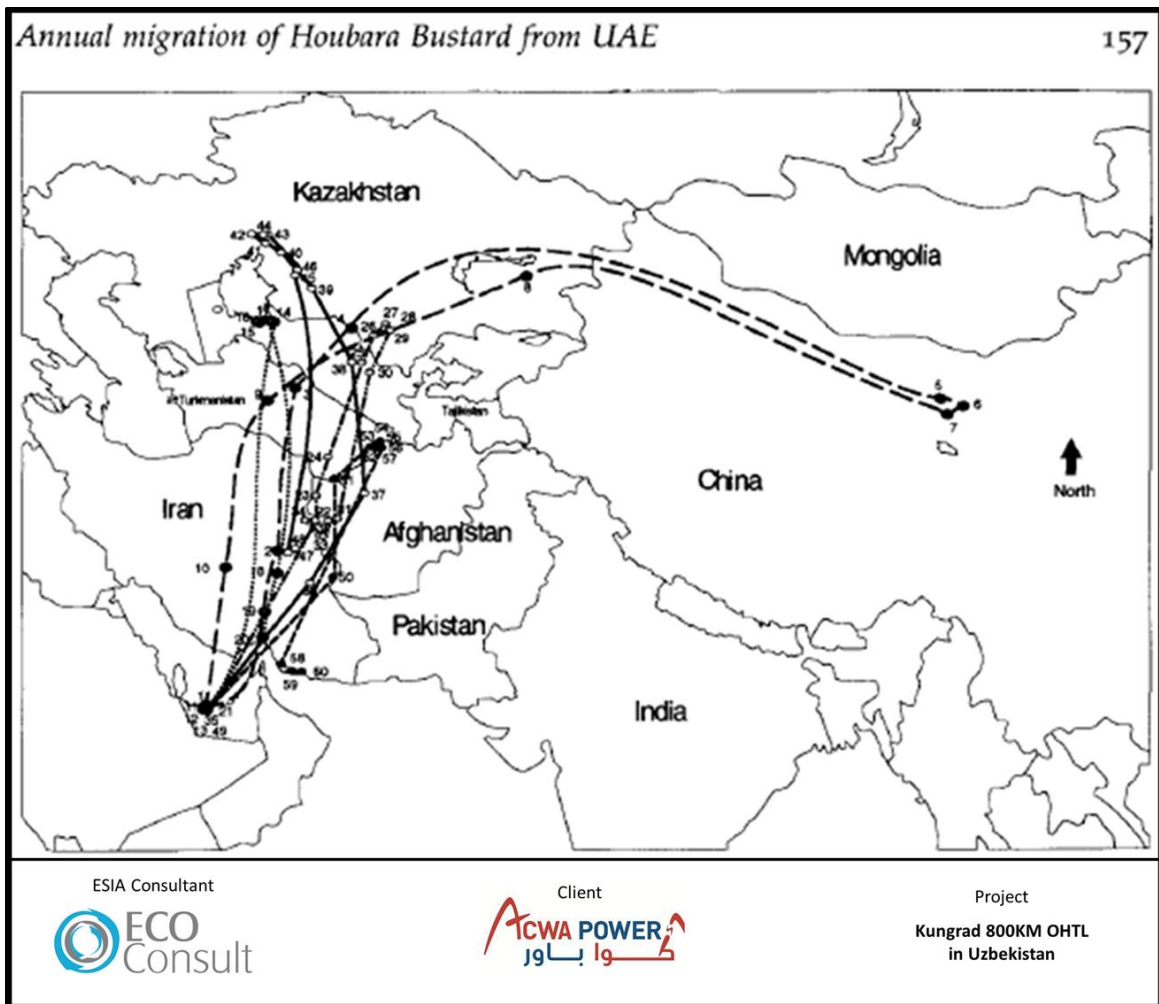


Figure 81: Migration of Asian Houbara Bustard from UAE through Central Asia

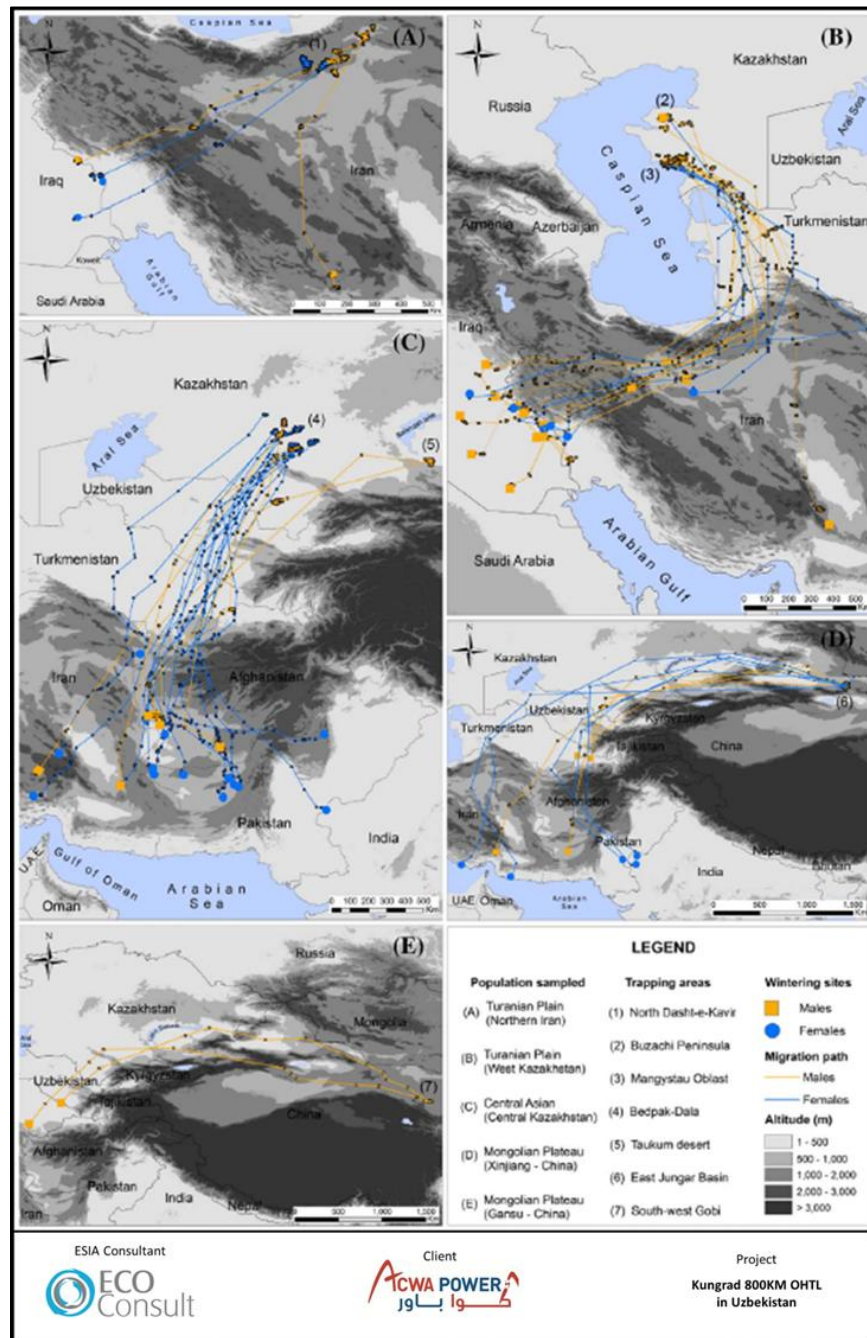


Figure 82: Migration tracking of Asian Houbara Bustard throughout range

Other species – large migratory soaring birds and waterbirds

Generally, any large soaring or fast flying species is at risk of collision with OHTLs. The size and flight behavior (and sometimes other biological characteristics) of these species results in a low level of detection and being able to avoid collision with such structures.

Steppe Eagles are known to move through Uzbekistan in significant numbers during migration, more so than the other migratory soaring birds of higher conservation concern. These species move through Uzbekistan on a broad migration front. Birds will avoid flying over the high mountains at the far eastern

end of Uzbekistan, resulting in a reasonably concentrated flyway through the Kyzylkum desert, for example as shown by satellite tracking research of the Steppe Eagle migration from the Altai-Sayan region of Russia and Central Kazakhstan in 2018-2023 (shown below). This is also shown in the existing data from the OHTL bird surveys.

It is anticipated that most migratory soaring birds will be at insignificant risk to collisions due to their flight behavior, i.e., smaller and more maneuverable birds (such as falcons and harriers) will actively avoid the OHTL and most large soaring raptors (like eagles and vultures) will be moving at a much greater height than the OHTL and avoid it. This is shown in the existing data from the OHTL bird surveys and the Wind Farm VP surveys. However, factors such as unsuitable weather for migration and the need to rest or roost is likely to bring them into greater risk of collision.

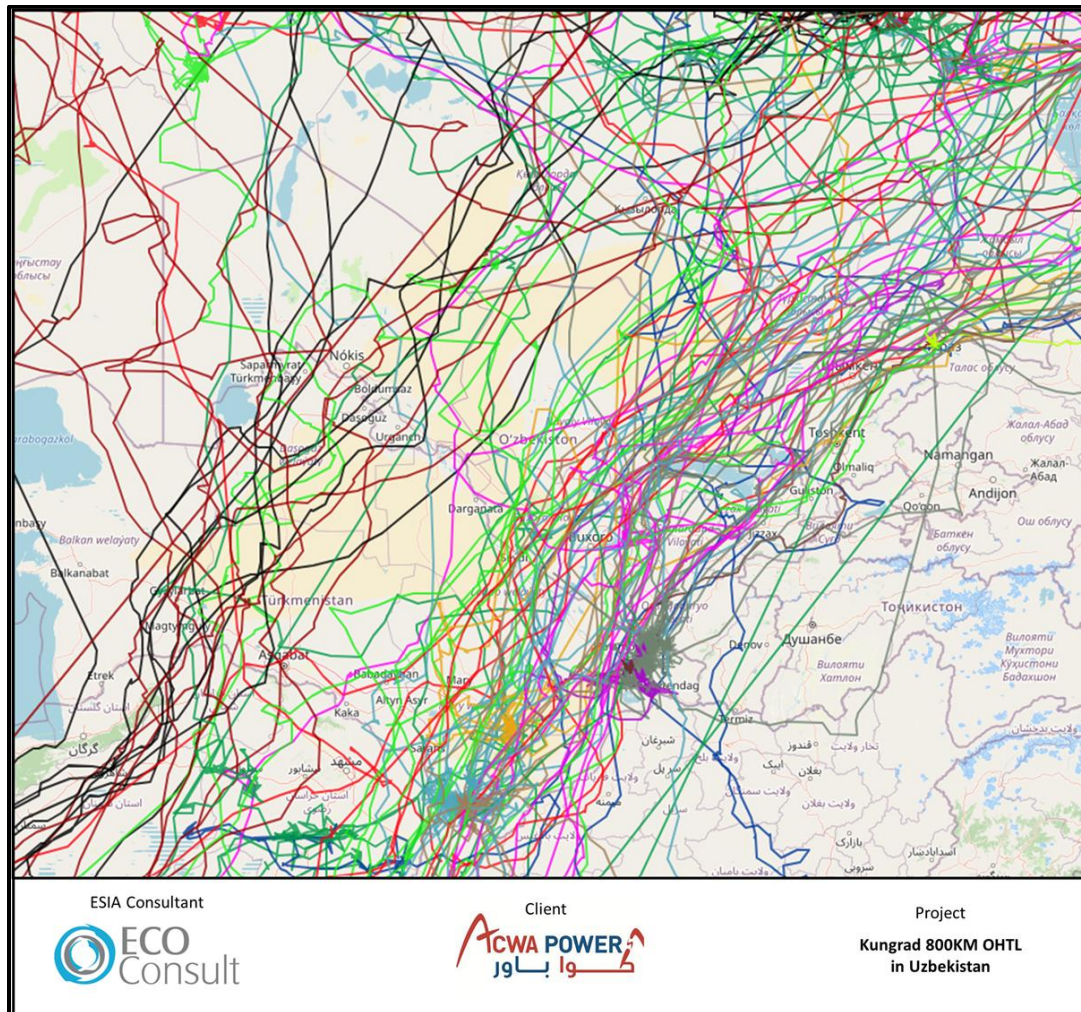


Figure 83: Steppe Eagle migration 2018-2023

Large accumulations of waterbirds are known to use waterbodies in the wider area of the project Aol during all seasons of the year, but particularly during migration and winter. Some species are known to winter in the area in globally significant numbers, such as White-headed Duck and Red-crested Pochard. The waterbird counts for this project have shown a large number of birds using those waterbodies during autumn migration but significantly less during the winter when the waterbodies froze over.

There are no known stop-over sites present within the Aol and the Aol does not support suitable staging habitats. It is very likely that wintering and migrating populations will cross the project Aol when moving

between waterbodies as well as on migration. However, it is considered very unlikely that the project will result in significant impacts to these species due to natural avoidance behavior of water birds as well as their likely flight heights being much higher than the OHTL when undertaking movements between waterbodies or on longer migration flights. The closest waterbody to the OHTL which is known to support significant populations of White-headed Duck for example, Karakyr Lake, is approximately 9 km north of the OHTL and other lakes are further away. It is therefore likely that any birds moving between lakes during passage and winter periods will be flying at altitudes significantly higher than the OHTL and as such the risk of collision is minimal. Any birds undertaking longer migration flights to more southerly wintering grounds or northerly breeding areas are again likely to be flying at altitudes higher than the proposed OHTL and the risk of collision is minimal.

Potential Biological Removal (PBR) fatality based thresholds that were calculated for the Bash and Djenkeldy wind farms²² have been used for this assessment. However, some of the species that will potentially be impacted by the Kungrad projects were not included in the existing analysis and some assumptions are made. For example, some species not included in the PBR analysis have relatively large population sizes and would have a higher PBR threshold and therefore the very low predicted CRM outputs would not equal or exceed the PBR threshold. In the existing analysis and this assessment, for any species that the PBR is 0, any one fatality will breach the threshold of significance. A full and up to date project specific PBR analysis will be undertaken for all species that could be impacted by the project and will include PBR based fatality thresholds for those species not already assessed in the cited analysis. The PBR analysis will be undertaken as part of the Collision Risk Management Plan (CRMP) and Adaptive Management Plan (AMP) which will be submitted and approved by lenders 6 months prior to any impacts from line stringing (or turbine operation).

Operation Phase – Direct and Indirect Impacts on Sensitive Receptors (Birds) – Collision with OHTL		
Type	Negative	
Duration	Long-term Permanent	/ During operation period (25+ years)
Magnitude	High	Predicting the likely collision with OHTL is very difficult and whilst some species it may be lower (based on natural avoidance) even low levels of predicted collisions may exceed PBR thresholds. Other species such as MacQueen's Bustard are very unlikely to naturally avoid the OHTL and significant number of collisions is very likely and are likely to exceed PBR thresholds.
Reversibility	Irreversible	Mortality would be permanent and irreversible
Sensitivity	High	IUCN Critically Endangered species are of high sensitivity (or lower)
Likelihood	High	Collisions with the OHTL are almost certain
Frequency	Periodic Frequent	to Could happen at any time but expected especially during periods of migratory behavior
Timing	N/A	Impacts possible in all months but more significant during migration periods
Extent	High	Potential for impacts over a wide area if mortality affects trans-continental migrants
Significance	Major	

²² 5 Capitals, Bash WF PBR Analysis, 2023

Mitigation Measures

The alternative options analysis of the connection of the OHTL were previously discussed in “Section 4”. As noted throughout this section, the Developer aimed to the greatest extent possible to:

- Align with existing 500kV lines (as discussed in “Section 4.1”) but this was not possible as there are no existing 500kV lines within or near the proposed route;
- Align, to extent possible, with existing infrastructure elements to include highways, railways, gas pipelines and other high voltage networks (as discussed in “Section 4.2”).
- Investigated the option of undergrounding the 500kV line as discussed previously under “Section 4.4”. For this, a full Environmental Cost-Benefit Analysis (ECBA) was undertaken and is presented in Annex I. The ECBA concludes that the underground option is not a viable one.

Taking the above into account, due to the requirements and length of the OHTL, routing options will never be able to completely avoid the risk to migratory birds or the risk of collision impacts. For a large proportion of the route (Ustyurt substation to Sarymai switching station) it is proposed to have two OHTL running in parallel and for the remainder (Sarymai to Karakul) a single OHTL. Whilst there is a possibility of multiple lines together increasing the collision risk, it does also increase the visibility of the lines and could aid in reduction of collisions. Additionally, some areas are urbanized areas with other structures and increased disturbance that birds will avoid that will increase the avoidance of the proposed OHTL.

The proposed design of the towers and lines are possibly the least impactful possible as the towers are free standing with no support wires, the conductor wires are all on the same level and there is only one shield wire above (please refer to Figure 8 for a schematic of the conductors). It is usually the thinner, and less visible, shield wire/s that are the highest risk of causing collisions, so only having a single wire is positive.

Mitigation is being installed to reduce the operational impact of the OHTL on migrating birds including birds of prey, waterbirds, and other large soaring birds. Bird Flight Diverters (BFDs) are to be installed along the entire length of the OHTL on the shield wire. Hawkeye BFDs will be installed as these are ones that glow or at night and are dynamic (*e.g.*, move with the wind) to increase visibility for diurnal and nocturnal migrants. The Project Developer and EPC Contractor is committed to install diverters. Installation of earthing wire and attached BFDs will be completed at the same time (within 1 week). BFDs will be installed to the manufacturer’s guidance and assessment of the OHTL, taking into consideration number and spacing, at a minimum of 1 every 10m.

The installation of BFDs will need to be recorded by the O&M Contractor Biodiversity Manager and these checks need to be included in the annual reports. BFDs should be checked every 6 months before the spring and autumn migration seasons so that they are in place and operational for higher risk periods. Any damaged or defective BFDs will need to be replaced within 2 months of being reported as faulty.

However the need for and extent of replacing damaged / defective BFDs will be undertaken following a review of the outcomes of the PCFM studies (discussed in further details below). This issue will be discussed in agreement with lenders and other relevant stakeholders, including most importantly NEGU to whom the OHTL will be handed over upon completion of construction and as the owner of the OHTL.

- Operational monitoring will be completed for at least the first three years of operation to monitor actual levels of mortality. Post construction fatality monitoring will be completed along the whole OHTL and the program of post construction monitoring will include carcass searching, searcher efficiency trials and carcass persistence trials. Additionally, Bird Strike Indicators (BSIs) will be used to

detect bird strikes with the OHTL. The results of the post-construction fatality monitoring will be used to inform a GenEst Analysis. Post-construction monitoring will follow the latest international best practice including the recently published PCFM Handbook (EBRD, IFC, KFW 2023). Full details of the PCFM Protocol will be included in an Operational BMP/BAP documents. PCFM survey areas will also include OHTLs that are adjacent to the Project Aol, especially in areas that may be subject to greater movement of high-risk species (e.g., MacQueen's Bustard).

- An adaptive management strategy will be developed (in line with the PCFM Handbook), and additional mitigation will be undertaken if the results of the post-construction fatality monitoring indicate higher than predicted mortality, especially in relation to species of elevated conservation concern. Adaptive management could include retrofitting of BFDs on unmarked lines (including adjacent OHTL) where PCFM surveys indicate areas of elevated mortality or provision of additional BFDs on marked lines if the installed BFDs are not preventing (or reducing) mortality. This could include installation of additional BFDs or those that are shown to increase avoidance / reduce collision in species susceptible to OHTL impacts (e.g., bustards). Installation of BFDs can be undertaken using a drone and would not require powerlines to be disconnected. Installed mitigation could also be changed if additional research into the effectiveness of BFDs comes to light during the construction period which would be agreed with lenders.
- On completion of the three-year post-construction fatality monitoring a decision will be taken to continue or cease this survey effort or reduce it to specific times of the year. This will be undertaken with the Lenders. If monitoring is ceased site workers will continue to record any carcasses they find and this information will be passed on to the Project team.
- A chance find procedure will be implemented and any carcasses seen by site workers will be reported to the O&M Contractor Biodiversity Manager so that they can investigate.
- It is likely that even with installed BFDs, mortality of MacQueen's Bustard will remain a significant residual impact and result in a net loss of this species and off-setting will be required. An off-set plan is outlined in the section below. Full offset plan will be detailed in the Biodiversity Action Plan.

Indirect Impacts on Sensitive Receptors (terrestrial mammals and breeding / resident birds) – Disturbance

During the operation of the OHTL disturbance impacts are likely to be very minor as the site will not be subject to regular activity other than occasional vehicle movements and maintenance operations around the site. Certain species including Goitered Gazelle and MacQueen's Bustard are likely to be more susceptible to such impacts as a result of their natural behaviors. It is possible other receptors including breeding passerines and other mammals may experience disturbance impacts during the operation of the OHTL. Any such impact will have to be very short-term (for the duration of the disturbance impact) and reversible and is likely to only result in impacts of low magnitude. The significance of operational disturbance is therefore considered to be minor, at worst.

Mitigation Measures

- Ban on off-road driving, especially during sensitive periods of the year (e.g., breeding bird season) and if off-road driving is required a check of the working area should be completed by the Project's Ecologist.
- Speed limits to be enforced.

- Sensitive species are to be included in the site induction for all operational staff where additional control measures will be discussed including allowing animals to move around the site, not chasing after them in vehicles or approaching them on foot and what to do if they observe breeding birds within their works areas.

In addition, if any significant maintenance work is required (e.g., replacement of any transmission towers or wires etc.) all impacts related to construction will be relevant and all mitigation outlined in previous sections will be followed.

10.3.3 Monitoring

Long term monitoring of the Project AoI will be completed as set out above and will include:

- Habitat and Flora monitoring within the AoI to measure the success of habitat rehabilitation work to reasonably demonstrate a net gain in Natural Habitat as well as to record the presence of invasive / non-native flora.
- Post-construction fatality monitoring to be completed in the first three years of operation to record the actual impact of collisions with the OHTL. Additional surveys and or mitigation measures to be implemented as part of an Adaptive Management Strategy.
- All of the above monitoring requirements will be included within Construction and Operational Biodiversity Action Plans which will include KPIs and a BEMP against which the results of the monitoring will be assessed.

10.3.4 Offsetting

Based on the impact assessment undertaken, the Project will likely require off setting measures. Identified below are the offsetting measures that the Developer has committed to and which will be discussed in further details within the standalone offset plan and BAP.

In addition to the mitigation measures already defined, the Project will implement offset measures during construction and operations to address residual impacts and thus achieve no net loss for priority biodiversity features, and for Natural and Critical Habitat. In particular, the Project will – in collaboration with relevant in-country stakeholders – support undergrounding of current or proposed Low Voltage Distribution Lines (LVDL), or removal of any such lines which are no longer necessary, within a priority area for MacQueen’s Bustard in Bukhara Province. The detailed location, scale and schedule of this offset will be agreed in consultation with key stakeholders. While this offset is primarily targeted at MacQueen’s Bustard, removal of LVDL in this area is likely to also have significant benefits to birds of prey by removing electrocution risks. Monitoring of current electrocution risks in the area would allow removal of LVDL to also function as an offset towards any unforeseen collisions of birds of prey with wind turbines. These offset measures are further detailed in the Project’s Biodiversity Offset Plan (BOP).

The scale of offsets necessary has currently been estimated on a precautionary basis, using existing data on bustard collisions with powerlines near part of the Project OHTL route. This estimate will be refined during Project implementation via a program of Post Construction Fatality Monitoring (PCFM). That Program will not only enable refinement of offsets for MacQueen’s Bustard but also identify the need for any other adaptive management of mitigation or offsets owing to unforeseen impacts. It will be developed for both turbines and powerlines following good international industry practice and carried out for an

initial minimum 3-year period, but the actual timeframe will depend on fatality results. If PCFM indicates collisions of other Critical Habitat-qualifying bird or bat species with turbines to levels that exceed PBR-based fatality thresholds, additional mitigation or offset actions will be implemented as part of adaptive measurement as contained in the ESIA. Those may include operational controls (such as turbine curtailment or shut-down-on-demand during high-risk periods) or the enhancement of mitigation and offset measures.

11. ARCHEOLOGY AND CULTURAL HERITAGE

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to archaeology and cultural heritage. 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.

11.1 Assessment of Baseline Conditions

11.1.1 *Methodology for Assessment*

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

A. Literature Review

Literature review included a comprehensive review of archives, publications, and studies on previous archaeological and cultural heritage work and surveys undertaken in the area, and which are available through desktop review.

B. Stakeholder Consultation and Engagement

Stakeholder consultation and engagement activities were undertaken with key entities involved in archaeology and cultural management. This included the entities below.

- Ministry of Cultural Heritage of the Republic of Karakalpakstan;
- Agency of Cultural for Khorazm Region;
- Agency of Cultural Heritage of Bukhara Region; and
- Department of Archeology at the Karakalpak Research Institute of Humanities

The objective was to obtain any secondary data available on archeology and cultural heritage sites within the OHTL route and understand any requirements to be considered for the Project development. Additional details on the outcomes of such consultations are provided below.

C. Secondary Data Review

Prior to the archaeology and cultural heritage experts undertaking any site related surveys, a full and detailed review of up-to-date high-quality drone image 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.

D. Site Survey

Archeology and cultural heritage experts from the Innovative scientific-research center / Research and museumization of archaeological monuments under the Ministry of Higher Education, Science and Innovations. The survey was undertaken during December 2023 and January 2024.

The survey was undertaken for the entire OHTL route and a 100m buffer on each side.

The objective of the field survey was to ascertain the presence of any surface archaeological or cultural heritage sites or remains. 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 it so identifies 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.).

11.1.2 Results

A. Literature Review and Stakeholder Consultation and Engagement

As part of the initial OHTL route development process, the Developer, through a technical consultant, undertook consultations with the following entities and obtained secondary data on archeology and cultural heritage sites of importance.

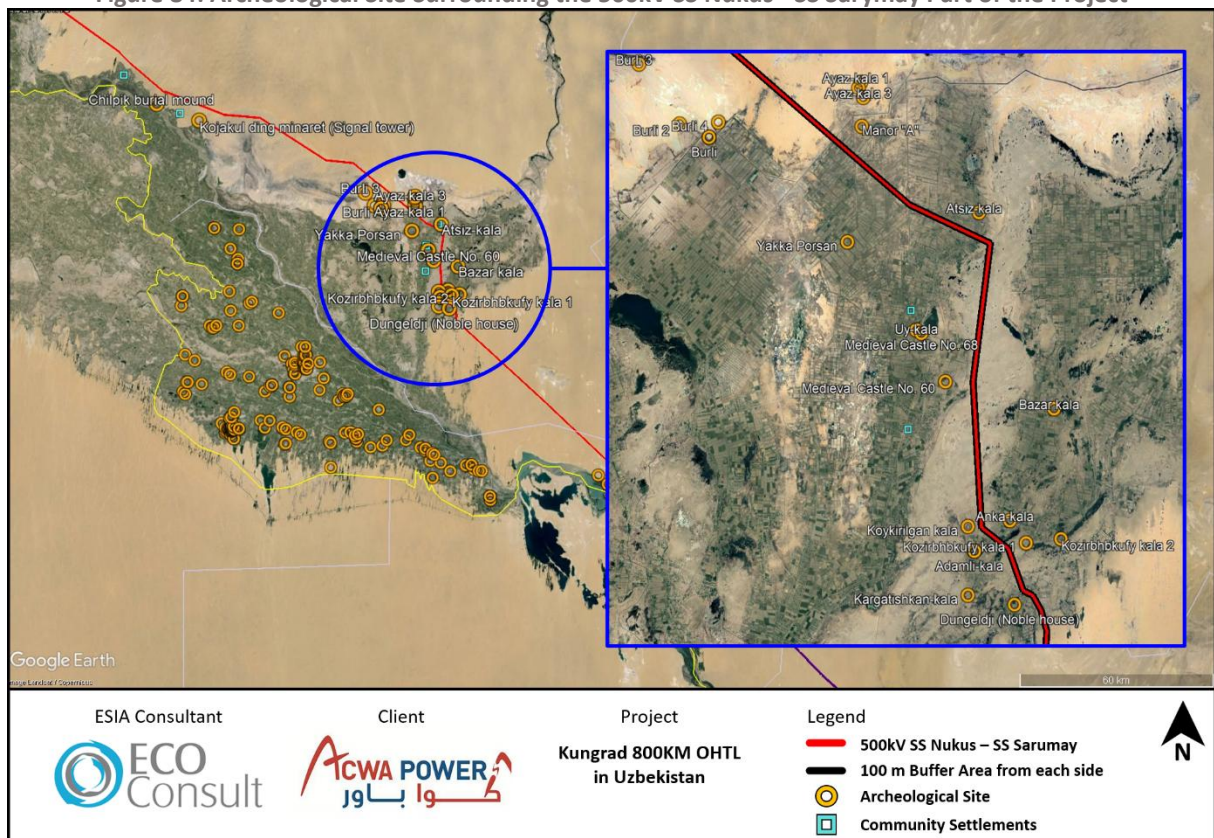
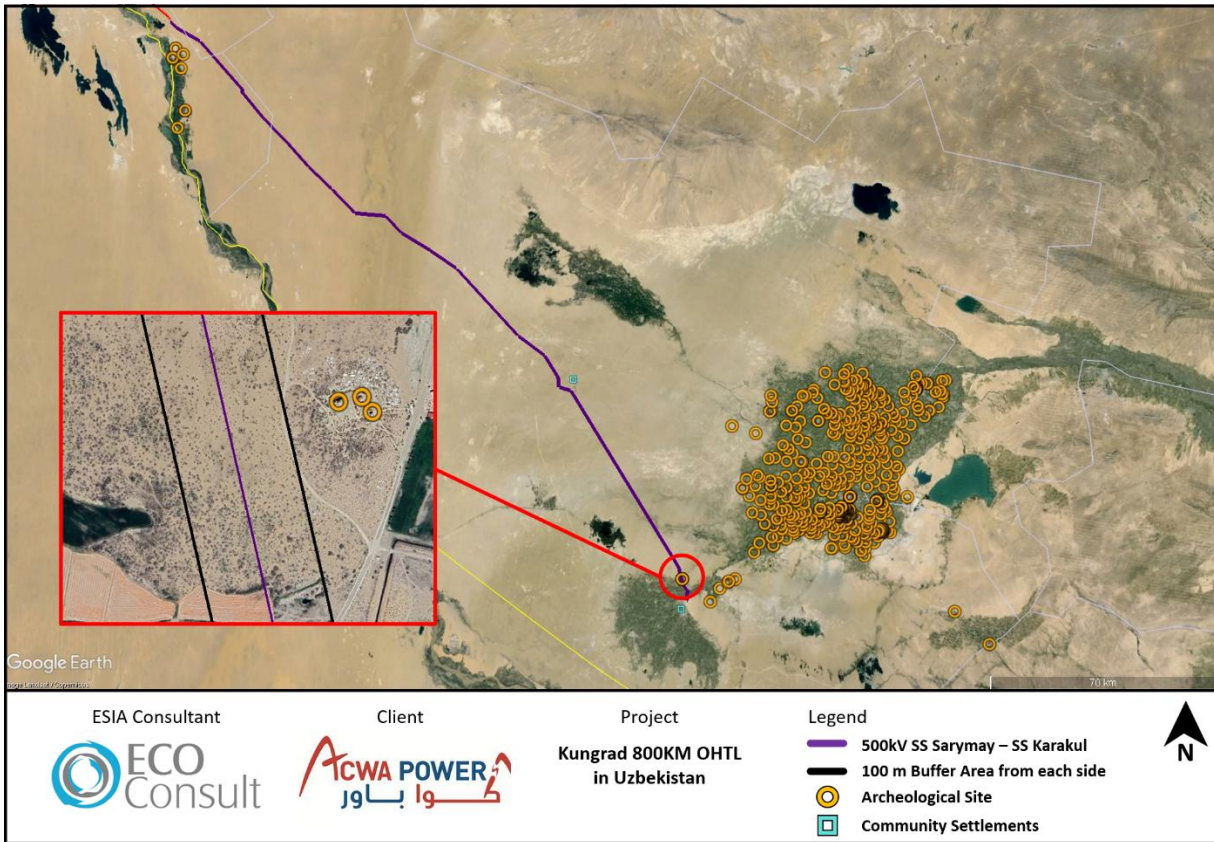
- Ministry of Cultural Heritage of the Republic of Karakalpakstan;
- Agency of Cultural for Khorazm Region; and
- Agency of Cultural Heritage of Bukhara Region

The table below proves list of these along with their coordinates and distance to the OHTL.

Site	Latitude	Longitude	Distance to OHTL (km)
Unknown Tomb	39.5924	63.84383	0.26
Abdurahman Vali maqbarasiasjid	39.59264	63.8436	0.25
Masjid	39.59256	63.8431	0.21
Castle house	41.22682	61.73916	4.18
Tashmozor mound	41.22858	61.73318	4.42
Tomb of Tashmozor	41.23067	61.72882	4.57
Group of rock mounds	41.25509	61.69477	4.91
Dungeldji (Noble house)	41.70961	61.15497	1.36
Kargatishkan kala	41.71508	61.11697	3.62
Adamli kala (Bazergen)	41.74073	61.1223	1.5

Koykirilgan kala	41.75519	61.11697	0.87
Kozirbhbukufy kala 1	41.74557	61.16443	1.21
Kozirbhbukufy kala 2	41.74794	61.19287	3.53
Angka kala	41.75867	61.15117	1.47
Group of rock mounds	41.80701	61.06391	4.91
Uy Kala	41.86786	61.07883	3.83
Atsiz rala	41.93828	61.12594	1.44
Yakka Porsan	41.92106	61.01831	4.51
Ayazkala 1	42.01419	61.029	3.97
Ayazkala 2	42.01084	61.02718	3.58
Ayazkala 3	42.0055	61.03056	3.24
Kojakul ding minaret (Signal tower)	42.21985	60.22922	4.43
Chilpik burial mound	42.26401	60.06959	4.31
Group of rock mounds	42.56881	59.55728	2.17
Azler Baba shrine	42.56881	59.55243	2.55
Grieving Mother monument	42.59289	59.54536	2.28
Poet`s park	42.59589	59.53469	3.03
Edige monument	42.59599	59.5344	3.05
Tokk`alla	42.582	59.51486	5.06
K`azy Maylik shrine	42.65277	59.55243	3.52
Kyrantau	42.64467	59.32009	3.92
Imam Eashan Baba shrine	42.63843	59.32029	4.54
Ajiniyoz Qosibay og`li bust	42.66815	59.19324	3.97
Otesh batyr shrine	42.71685	59.09707	2.72
Zana Castle	42.7072	59.01269	4.54
Balf auliyo shrine	42.87657	58.70355	4.86

The initial routes developed avoided all areas provided from the above entities except for one (1) site known as “Kyrantau Cultural Heritage Site”. The Ministry provided detailed coordinates for this site and required that the OHTL avoid the entire site (80 hectares). Based on the above, the final route has taken this into consideration as noted in the figure below.



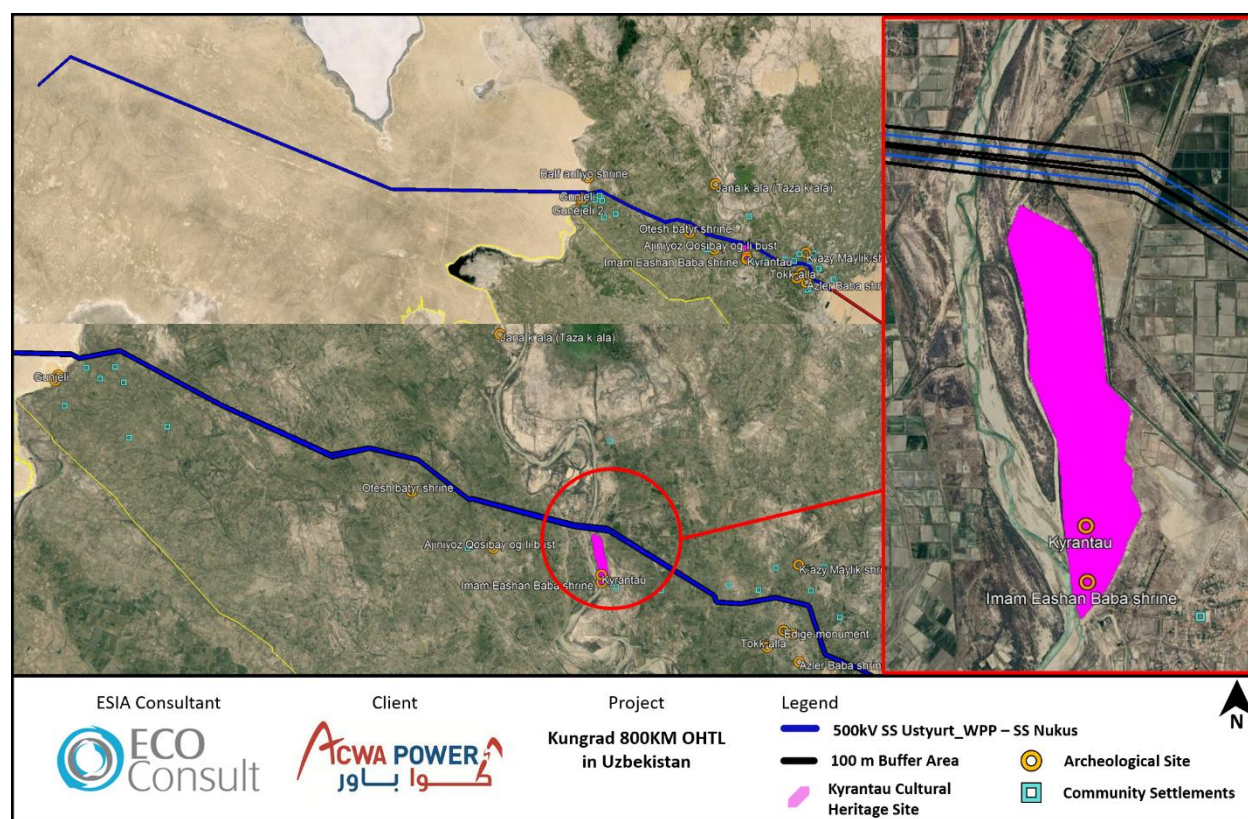


Figure 86: Archeological Site Surrounding the 500kV SS Ustyurt - SS Nukus Part of the Project

The 'E&S Team' undertook further consultations with the Department of Archeology at the Karakalpak Research Institute of Humanities. Objective was to obtain further information on any other potential sites of interest that should be avoided. The Department provided list of the sites that are identified in the table below. As noted, none are located within or near the OHTL Route.

Table 58: List of Archeological Sites of Importance from the Department of Archeology

Name	Latitude	Longitude	Distance to OHTL (km)
Gunjeli	42.811703	58.676286	2.55
Gunejeli 2	42.816106	58.679283	2.06
Krantau	42.644639	59.320139	3.95
Tok-kala	42.581581	59.515969	4.62
Burli	41.982000	60.904778	5.42
Burli 2	41.989692	60.880608	5.89
Burli 3	42.024236	60.847589	4.57
Burli 4	41.990806	60.912336	4.14
Ayaz-kala 1	42.014108	61.029108	3.94
Ayaz-kala 2	42.010889	61.027139	3.59
Ayaz-kala 3	42.005389	61.031064	3.33
Yakkeparsan	41.921056	61.018306	4.53
Manor "A"	41.988469	61.029889	1.79
Medieval Castle No. 60	41.839639	61.098500	1.84
Medieval Castle No. 68	41.869719	61.074778	4.20

Uy-kala	41.867858	61.078831	3.83
Atsiz-kala	41.938278	61.125942	1.44
Koy-kirilgan-kala	41.755192	61.116969	0.87
Anka-kala	41.758667	61.151167	1.46
Adamli-kala	41.740831	61.122278	1.49
Kozi-kirilgan-kala	41.745572	61.164431	1.21
Kargatishkan-kala	41.715075	61.116975	3.60
Mansion "Dingilje"	41.709608	61.154969	1.07

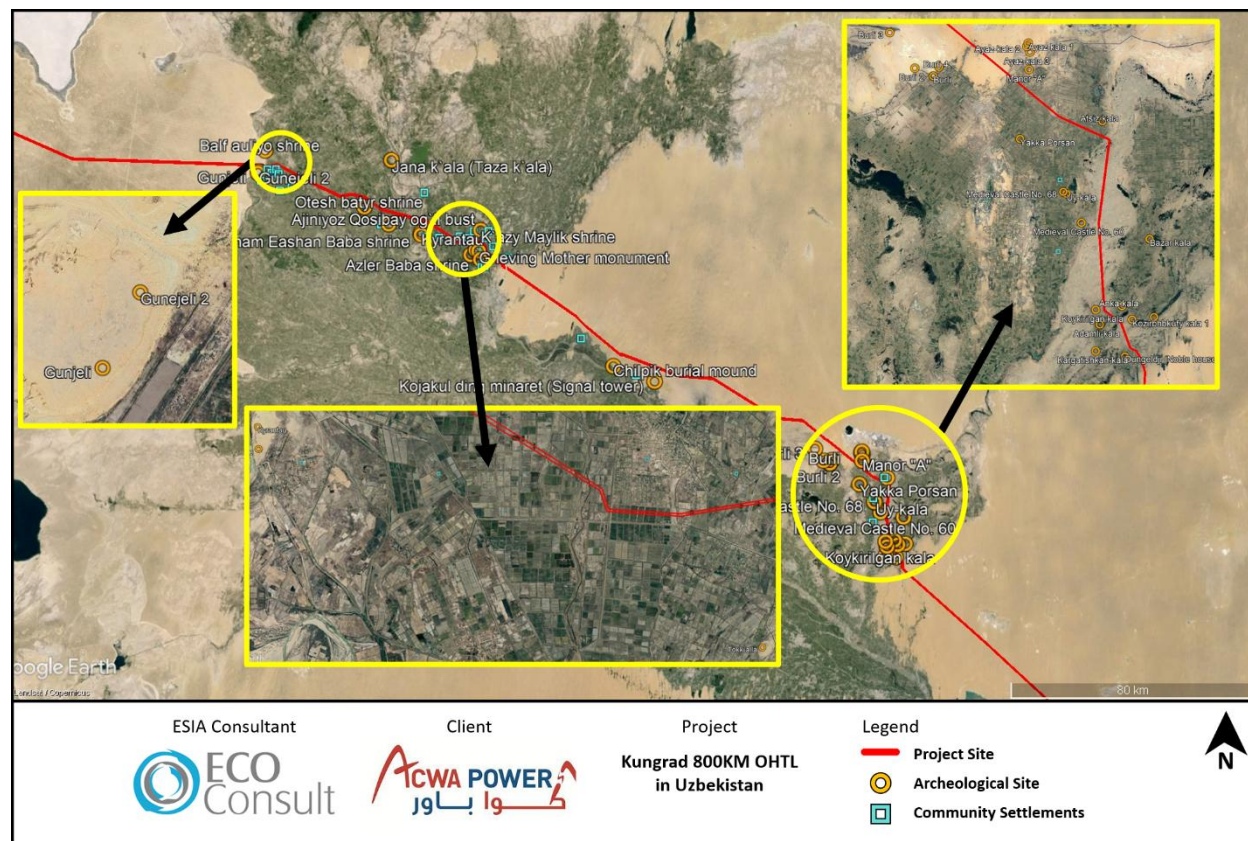


Figure 87: Archeological Sites Avoided by the Project

B. Site Survey

The table below presents the key findings of the site survey undertaken for the Project site. In addition, the figure that follows presents the location of the sites within the Project area.

As noted in the table below, a total of eleven (11) sites were recorded within the OHTL route and 100m buffer on each side. The table below identifies the coordinates for each site, distance to OHTL, area, description, buffer distance required for protection.

Table 59: Outcomes of Archeology and Cultural Heritage Survey

Point	Finding	Coordinates	Distance from overhead power line	Total area	Description and importance as archaeological and cultural heritage	Comments
1	Karakol District Kobil Ota Cemetery	39.53819, 63.85928	0 m	2,248,782 m ²	A modern cemetery	Does not need protection
2	Chibirdon father's cemetery	39.592482, 63.843428	103.4 m	74,024 m ²	Tombs of the VIII-IX centuries	State protection. Protection zone should be 50 m.
3	Krantov Ovul	42.61933, 59.482766	0 m	34,132 m ²	An early medieval settlement	Must be protected. Protection zone should be 50 m.
4	Object 26. (Ustyurt 1)	42.835842, 58.60003	0 m	65 m ²	Tomb	Must be protected. Protection zone should be 20 m.
5	Object 27 (Ustyurt 2)	42.834566, 58.551256	99.4 m	39,470 m ²	Fort-cemetery	The Power line column should not fall over the hill. Protection zone should be 20 m.
6	Object 29 (Ustyurt 4)	42.84218, 58.151135	0 m	1,462 m ²	Complex of fort-cemeteries	The Power line column should not fall over the hill. Protection zone should be 20 m.
7	Object 30 (Ustyurt 5)	42.861444, 57.883776	0 m	7,018 m ²	Fort-cemetery that has 2 modern tombs	The Power line column should not fall over the hill. Protection zone should be 20 m.
8	Object 31 (Ustyurt 6)	42.870208, 57.8455391	87.1 m	988 m ²	Fort-cemetery that has 2 modern tombs	The Power line column should not fall over the hill. Protection zone should be 20 m.
9	Object 33 (Ustyurt 8)	42.894887, 57.765208	0 m	6,564 m ²	A cistern of ancient times	The Power line column should not fall over the hill. Protection zone should be 50 m.

10	Object (Ustyurt 9) 34	43.18772, 56.76284	0 m	4,310 m2	Fort-cemetery that has 1 modern tomb	The Power line column should not fall over the hill. Protection zone should be 20 m.
11	Object (Ustyurt 11) 36	43.13656, 56.55458	21.6 m	940 m2	Modern tomb	Only the pillar should not fall on the grave. Protection zone should be 20 m.

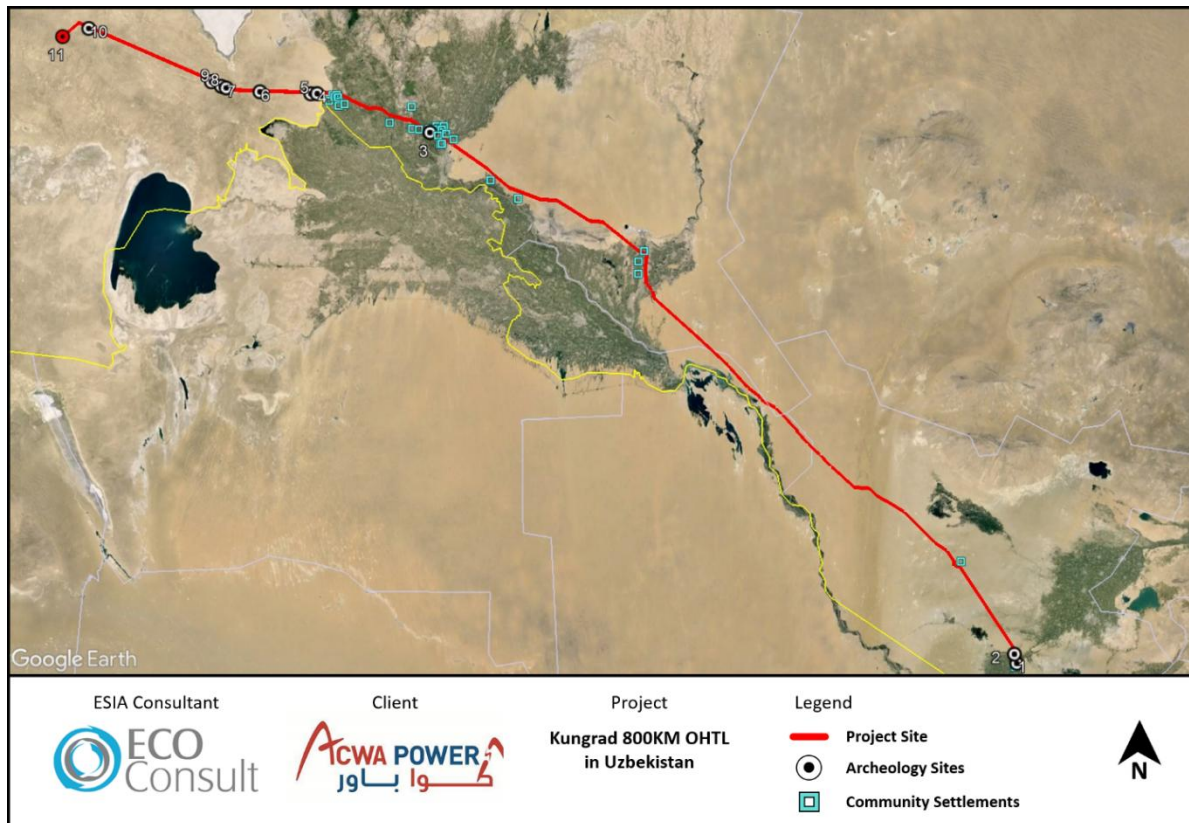


Figure 88: Archeology and Cultural Heritage Sites along the OHTL



Figure 89: Pictures of Sites Recorded

11.2 Assessment of Impacts

This section identifies and assesses the anticipated impacts from the Project activities on archeology and cultural heritage 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.

11.2.1 Potential Impacts during the Construction Phase

Site preparation activities which are to take place onsite by the EPC Contractor for installation of the OHTL and the various Project components (e.g., substation) are expected to include land clearing activities, levelling, excavation, grading, etc.

Although such activities are limited to the relatively small individual footprints of these facilities and the actual area of disturbance is relatively minimal, if such activities are improperly managed, they could damage or disturb archaeological remains present on the surface of the Project site. As noted earlier, there were several sites recorded within the Project area.

In addition, there is a chance that throughout such construction activities, archaeological remains buried in the ground are discovered. Improper management (if such sites are discovered) could potentially disturb or damage such sites which could potentially be of importance.

Construction Phase		
Type	Negative	N/A
Duration	Medium-term	Limited to construction phase which is 24 months
Magnitude	High	Given that there are sites within the area and activities could damage these sites in inappropriately managed.
Reversibility	Irreversible	
Sensitivity	Medium	
Likelihood	Medium	Given that there are sites within the area and activities could damage these sites in inappropriately managed.
Frequency	Rare	Expected to occur on minimal occasions during construction phase
Timing	Not relevant	
Extent	Low	Limited to actual footprint of activities or recorded sites only
Significance	Moderate	

Mitigation Measures

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

- Ensure that final detailed design to be prepared by the EPC Contractor completely avoids placing towers within the location of the sites recorded as well as the buffer distance requirements. The overhead transmission line can pass above the recorded sites.
- Should the detailed design prepared by the EPC Contractor include any additional areas outside of the current Project footprint that was surveyed in detail, follow inspections for these areas should take place by an archeology and cultural heritage expert.
- All sites must be demarcated along with signage in English, Uzbek, Karakalpak, Russian indicating “Site of Archaeological / Cultural Heritage Importance – No Access Allowed.”

- Induction training and Toolbox Talks (TBT) should be delivered to all workers to: (i) emphasize the presence and location of the sites and their overall importance; and (ii) explain chance find procedures to ensure clarity when archaeological and cultural heritage finds are encountered on site.
- Driving will only be permitted on formal site roads and off-road driving is prohibited unless it is driving within a working area (e.g., moving equipment or infrastructure around the site or for maintenance operations).
- Workers are only permitted within authorized working areas and moving to any offsite area is prohibited. This includes in particular movement into the sites recorded under any circumstances at any time of the day.
- Ensure all workers read, understand and sign the worker code of conduct which includes specific requirements related to such an issue and which include:
 - Respect religious sentiments and customs and traditions of co-workers.
 - Respect the local religious and/or traditional days of celebration and their restrictions.
 - Respect the religious shrines and burial sites and practices of the local population.
 - Do not disturb shrines and other religious monuments.
 - Recognize that shrines and sacred sites may include trees, sheds, piles of pebbles, and piles of offerings.
- No worker may possess or withdraw any archaeological item or remains from the Project Area (to include above or below ground) such as ceremonial jars, pottery, or similar objects. If a worker were to find such a piece inside the Project, he/she shall immediately stop working and notify his supervisor to implement the chance find procedure.
- Throughout the construction phase, and as the case with any Project development that entails such construction activities, there is a chance that potential archaeological and/or cultural heritage remains above or underground might be discovered. It is expected that appropriate measures for such chance find procedures are implemented. Those mainly require that construction activities be halted and the area fenced along with proper signage, while immediately notifying the Ministry of Culture and Tourism. No additional work will be allowed before the Ministry of Culture and Tourism assesses the found potential archaeological site and grants a clearance to resume the work. Construction activities can continue at other parts of the site if no potential archaeological remains were found. If found, same procedures above apply.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring Requirements

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

- In the case that a suspected site is discovered, a report should be prepared that includes the following to be submitted to Developer and upon approval it is to be submitted to the Ministry of Culture and Tourism:
 - Photo documentation of the site including photos for delineation markers and signage

- Location (GPS coordinates)
 - Site estimate
 - Topographical description
 - Description of nature and conditions of the site
- After the Ministry of Culture and Tourism concludes their assessment of the discovered site, the above report should be updated with the findings of the Ministry with supporting formal letters to include: (i) formal letter with mitigation to be implemented as required by the Ministry (if required and applicable); (ii) formal letter from the Ministry granting permission to commence with construction work within the discovered site.
 - Submission of Induction Training records of workers that includes archeology and cultural heritage model.

11.2.2 Potential Impacts during the Operation Phase

Inappropriate operational activities by the Project Operator (NEGU) could damage or 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. This could include the following:

- Off-roading by O&M workers and driving into the sites;
- Workers walking by foot into the areas of the sites and intentionally or unintentionally disturbing the sites;
- Collection of items from the site; and
- Other as applicable

Operation Phase		
Type	Negative	N/A
Duration	Long-term	Throughout entire operational period
Magnitude	High	Given that there are sites within the area and activities could damage these sites in inappropriately managed.
Reversibility	Irreversible	
Sensitivity	Medium	
Likelihood	Medium	No local community activity in the area
Frequency	Rare	Expected to occur on minimal occasions during operation phase
Timing	Not relevant	
Extent	Low	Limited to actual recorded sites only
Significance	Moderate	

Mitigation Measures

The following identifies the mitigation measures to be applied by the Project Operator (NEGU) during the operation phase and which include:

- Induction training and Toolbox Talks (TBT) should be delivered to all workers to emphasize the presence and location of the sites and their overall importance.

- Driving will only be permitted on formal site roads and off-road driving is prohibited unless it is driving within a working area (e.g., moving equipment or infrastructure around the site or for maintenance operations).
- Workers are only permitted within authorized working areas and moving to any offsite area is prohibited. This includes in particular movement into the sites recorded under any circumstances at any time of the day.
- No worker may possess or withdraw any archaeological item or remains from the Project Area and from the sites recorded in specific (to include above or below ground) such as ceremonial jars, pottery, or similar objects.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the Project Operator (NEGU) during the operation phase and which include:

- Submission of Induction Training records of workers that includes archeology and cultural heritage model.

12. AIR QUALITY AND NOISE

This section presents an assessment of potential impacts on air quality and noise 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.

12.1 Assessment of Potential Impacts

Due to the nature of the Project, there are no anticipated impacts on air quality and noise during the operational phase.

12.1.1 *Potential Impacts during the Construction Phase on Air Quality and Noise*

Site preparation activities which are to take place onsite by the EPC Contractor for installation of the OHTL towers and the various Project components to include substation, conductors, etc. are expected to include land clearing activities, levelling, excavation, grading, etc.

Although such activities are limited to the relatively small individual footprints of these facilities and the actual area of disturbance is relatively minimal, nevertheless such activities will likely result in an increased level of dust and particulate matter emissions, which in turn will directly and temporarily impact ambient air quality. If improperly managed, there is a risk of nuisance and health effects to construction workers onsite and to a lesser extent to the surrounding receptors from windblown dust.

It is important to note that the generation and dispersion of dust depends on weather conditions; dry conditions with high wind speeds would cause excessive dust generation, while wet conditions and low wind speeds wouldn't. Given the characteristics of the site (its arid desert nature with frequent dry/windy conditions) sand and salt storms are probable. However, this is not within the control of the EPC Contractor and hence impacts from such events are not within their responsibility.

In addition, construction activities will likely entail the use of vehicles, machinery and equipment (such as generators, compressors, etc.) which are expected to be a source of other pollutant emissions (such as SO₂, NO₂, etc.) which would also have minimal direct impacts on ambient air quality.

All the above activities will likely include the use of machinery and equipment such as generators, hammers, compressors, etc. and which are expected to be a source of noise and vibration generation within the Project site and its surroundings. If improperly managed, there is risk of nuisance and health affects to construction workers onsite and to a lesser extent to the nearby surrounding receptors.

Construction Phase		
Type	Negative	
Duration	Medium-term	Limited to construction period only which is 24 months
Magnitude	Medium	Dust and noise will be noticeable but dispersed
Reversibility	Reversible	Baseline restored after completion of construction works
Sensitivity	Low	There are no sensitive receptors impacted
Likelihood	High	Limited to construction period only
Frequency	Frequent	Expected to occur regularly during construction phase
Timing	Not relevant	

Extent	Medium	Around 2km from active areas due to wind influence
Significance	Minor	

Mitigation Measures

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

- Undertake dust and noise monitoring program (as discussed in further details below) to verify the dust and noise levels and to define and implement on a case-by-case basis measures and systems to maintain dust and noise levels within allowable limits. If dust or pollutant emissions were found to be excessive due to construction activities (i.e., higher than allowable limits) the source of such emissions should be identified, and adequate control measures must be implemented;
- Ensure that for activities associated with high dust and noise levels, workers are equipped with proper Personal Protective Equipment (PPE) to include dust masks, respirators (if required), and earmuffs;
- Apply basic dust control and suppression measures which could include:
 - Regular watering of roads for dust suppression. Only non-potable water will be used for such activities;
 - Proper planning of dust causing activities to take place simultaneously in order to reduce the dust incidents over the construction period;
 - Proper management of stockpiles and excavated material through appropriate enclosures and covers. This entails that it is of appropriate size to ensure entire coverage of the stockpile/excavated material, durable, ability to withstand exposure to weather conditions (heat, rain, and strong winds in particular);
 - Proper covering of trucks transporting aggregates and fine materials (e.g., through the use of tarpaulin);
 - All vehicles within construction areas onsite shall adhere to a speed limit of: (i) 30km/h at the main access road; (ii) 20 km/h within the Project area; and (iii) 10km/h within working areas;
 - Where practical, compact the ground in areas that are heavily used by vehicles and machinery;
 - Limit or suspend earthworks during extreme weather conditions (e.g., strong winds); and
 - Ensure periodic washing of vehicles in order to remove any dusty material in a dedicated area.
- Ensure that vehicles and trucks comply with the limits for exhaust emissions. This will be through: (i) ensure all vehicles and trucks are equipped with a catalytic convertor; (ii) ensuring that all vehicles and trucks utilized onsite are properly licensed for operation with relevant authorities;
- Apply adequate general noise suppressing measures. This could include the use of well-maintained mufflers and noise suppressants for high noise generating equipment and machinery;
- Develop a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the construction phase for early detection of issue to avoid unnecessary pollutant and noise emissions;
- Turn off any equipment, machine or vehicle not in use; and.

- For worker accommodation (if developed near construction active areas) the following will be undertaken: (i) the site will be appropriately sited at a sufficient distance (i.e. 2-3 km at least) from any construction related activities onsite; (ii) accommodation specifications will ensure that all opening (e.g. doors, windows) as well as façade is of suitable quality that would provide sufficient insulation from outside dust and noise. Other specifications and requirements for worker accommodation is provided in “Section 14.4.7”.

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 the EPC Contractor during the construction phase and which include:

- Dust and noise monitoring should be undertaken on a quarterly basis during the construction phase at key points where active construction activities are undertaken. This will include at least one (1) monitoring point which represents activities undertaken. The monitoring should include TSP, PM10 and PM2.5 and noise levels. Results should be compared with national limits or IFC standards as included within the General EHS Guidelines or EU limits, whichever is more stringent;
- Dust and noise monitoring should be undertaken more frequently (i.e., monthly basis) in OHTL sections that run within 2km from local community areas as well as sections that run within farmlands;
- Reporting on number of air quality and noise monitoring programs undertaken;
- Reporting of any excessive levels of pollutants/dust and the measures taken to minimize the impact and prevent it from occurring again;
- Inspection on worker accommodation ensure proper siting and proper specifications for opening and façade.

13. INFRASTRUCTURE AND UTILITIES

This section first provides an assessment of baseline conditions within the Project site and surrounds in relation to infrastructure and utilities and then assesses the anticipated impacts 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.

13.1 Assessment of Baseline Conditions

This section discusses the methodology for the assessment of baseline conditions in relation to infrastructure and utilities and presents the outcomes and results of the assessment.

13.1.1 Methodology of Assessment

Assessment of baseline conditions was based on a site visit by the 'E&S Team' to the OHTL route and 100m buffer area. The site visit aimed to identify to the greatest extent possible any key visible infrastructure and utility elements within the Project site or surrounding areas (e.g., electricity infrastructure lines, water infrastructure lines, etc.).

In addition to the above, the 'E&S Team' also reviewed detailed satellite images as well as drone surveys to identify any additional infrastructure and utility elements that could not be identified throughout the site survey.

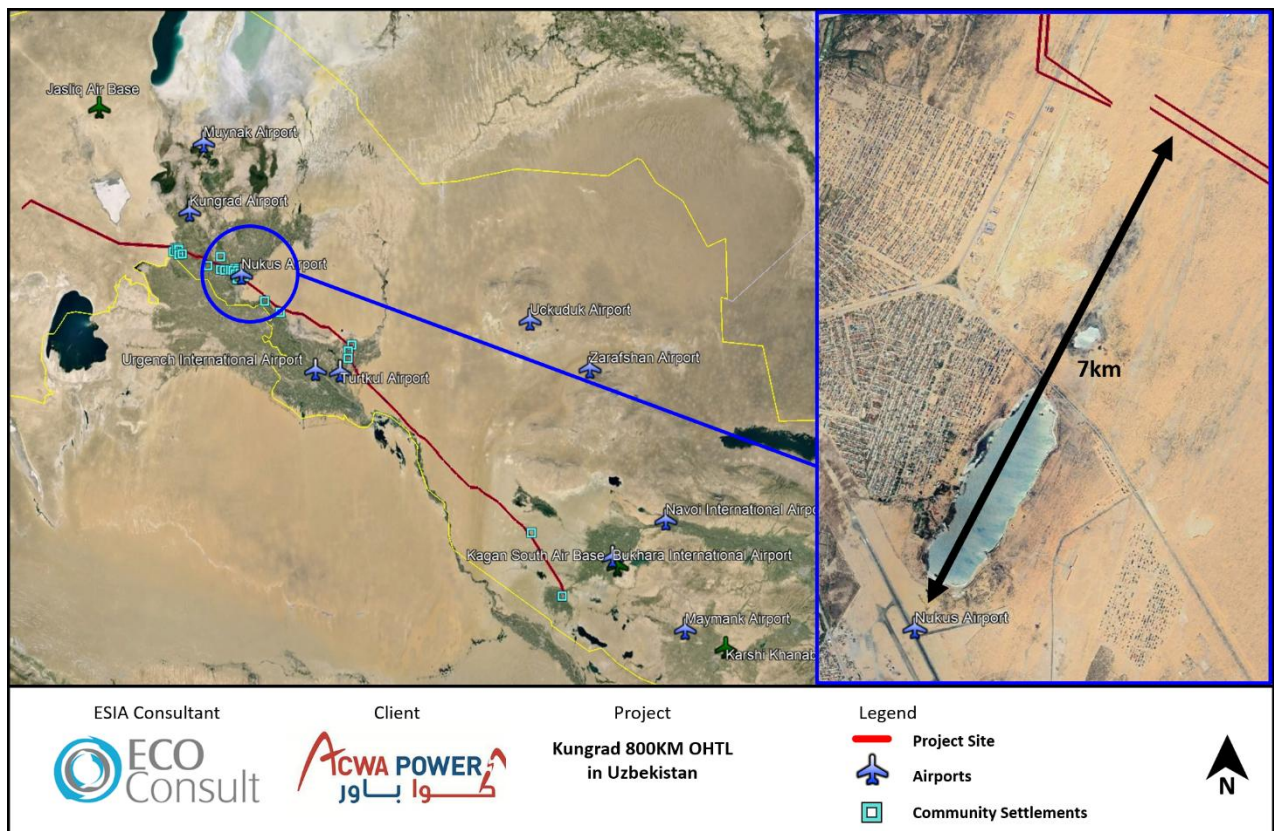
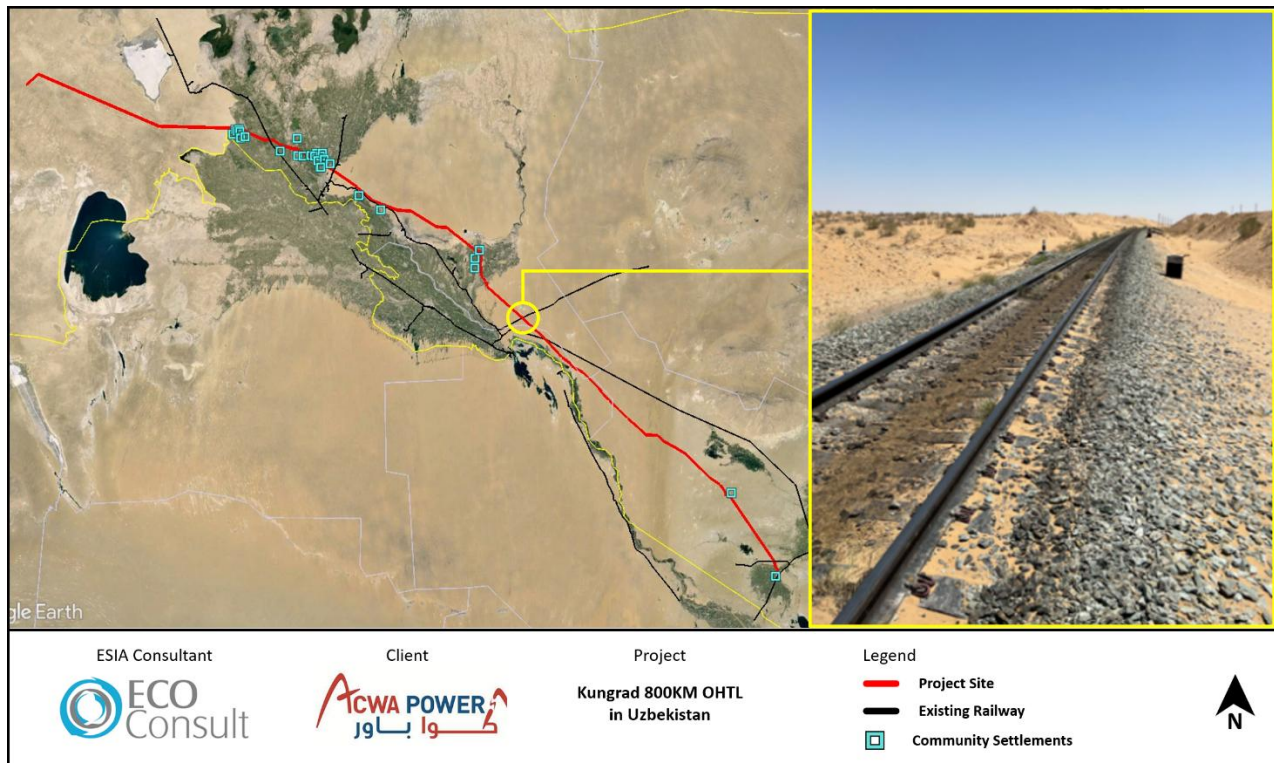
Finally, consultations were undertaken with key governmental entities to better understand and characterize infrastructure and utility element services required for the Project development as discussed further throughout this section. This includes water supply, waste management services, traffic and transport, etc. as discussed in further details below.

13.1.2 Civil and Military Aviation

As part of the site survey undertaken, no infrastructure elements in relation to civil and military aviation were recorded or noted (e.g., radars). In addition, based on secondary information collected, the OHTL is not located within or near airports. The closest airport is Nukus Airport located around 7KM from the OHTL at the closest point. The airport and OHTL is presented in the figure below.

13.1.3 Railways

Secondary information was collected on railways. As noted in the figure below, the OHTL crosses the railway in three (3) different sections. The preliminary design undertaken by the Developer has taken into account all design considerations required for railway crossings in accordance with the "Electrical Installation Rules."



13.1.4 Oil & Gas Infrastructure

Secondary information was collected on all oil and gas pipelines. It was noted that the OHTL crosses over oil and gas pipelines and infrastructure at several points as noted in the figure below. The preliminary design of the OHTL has taken into account all design considerations required for oil and gas pipeline crossings in accordance with the “Electrical Installation Rules,” which identifies specific requirements related to the angle of crossing.

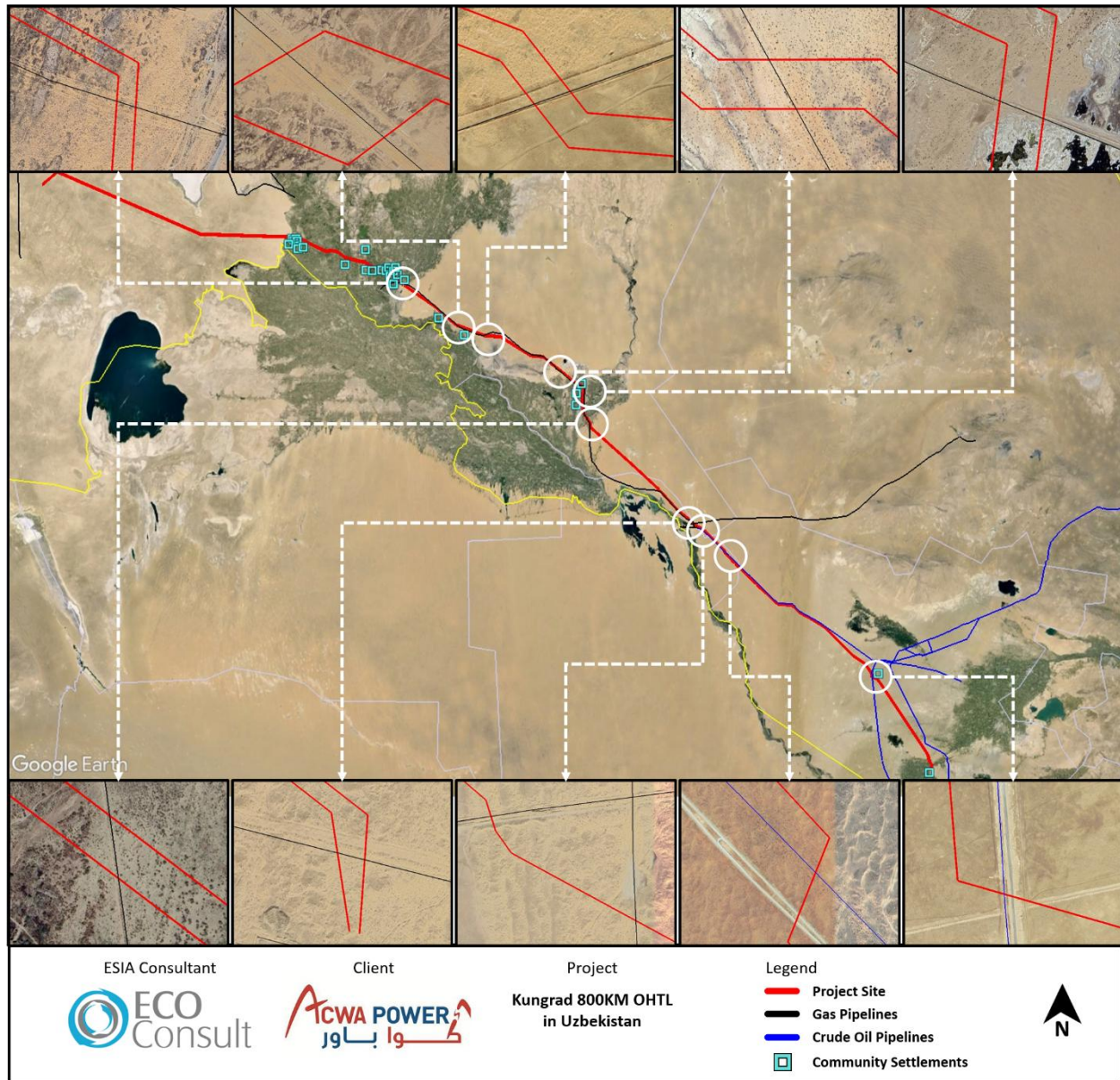


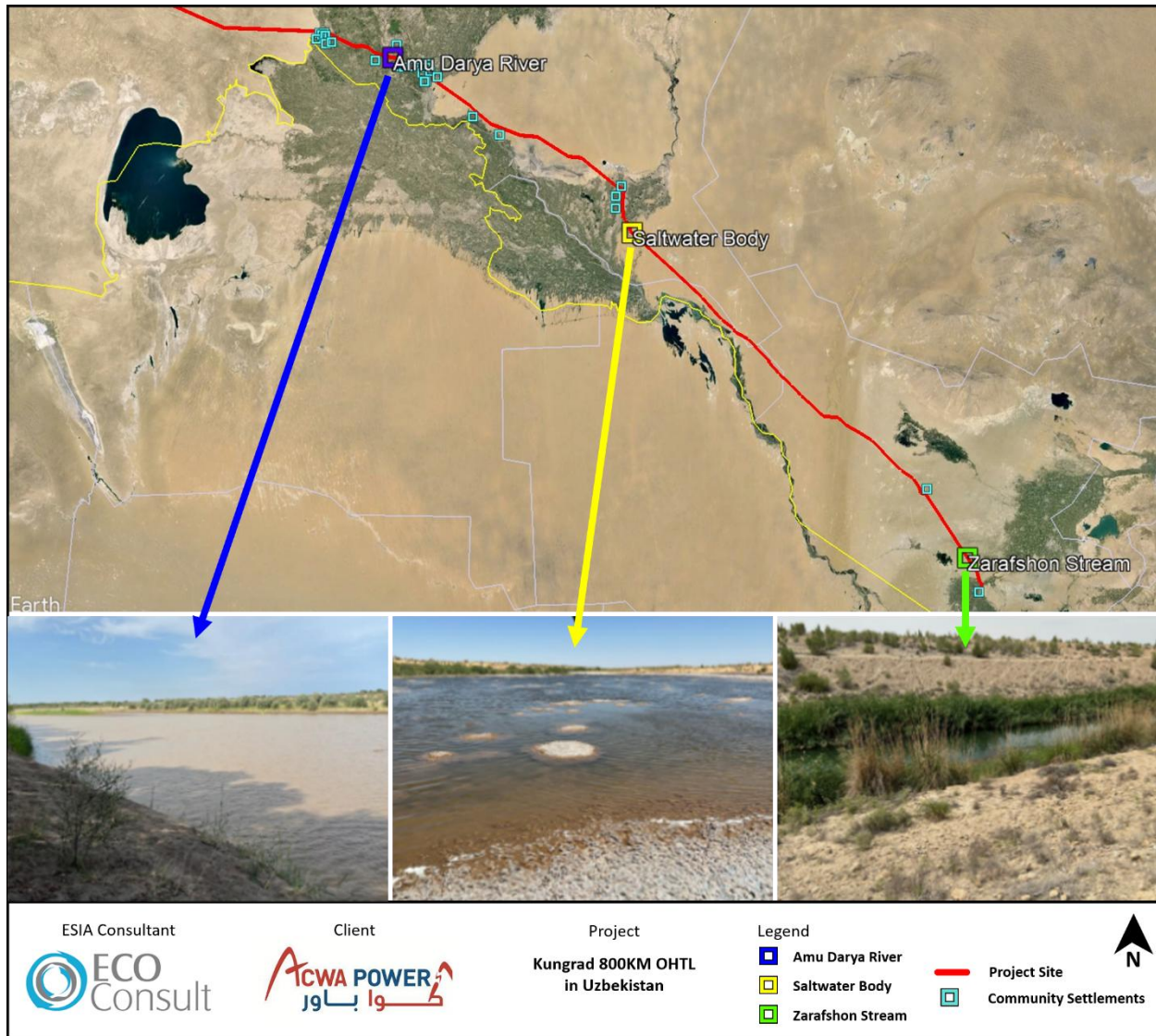
Figure 92: Project Site and Oil and Gas Infrastructure

13.1.5 Water Resources

Secondary information was collected on water bodies to include lakes, reservoirs, marshlands, water canals, rivers, etc. in order to avoid all these features. Based on that it was indicated that only two (2) key

water resources intersect with the OHTL, which is the Amu Darya River and Zarafshan stream. Refer to figure below.

However, as part of site visit undertaken by the 'E&S Team' another water resource was noted to cross within the OHTL route that includes a small saltwater body that is around 0.016km² in area. Refer to figure below.



In addition, within farming areas the OHTL crosses and intersects with several water canals that are used by the agriculture areas as noted in the figure below.

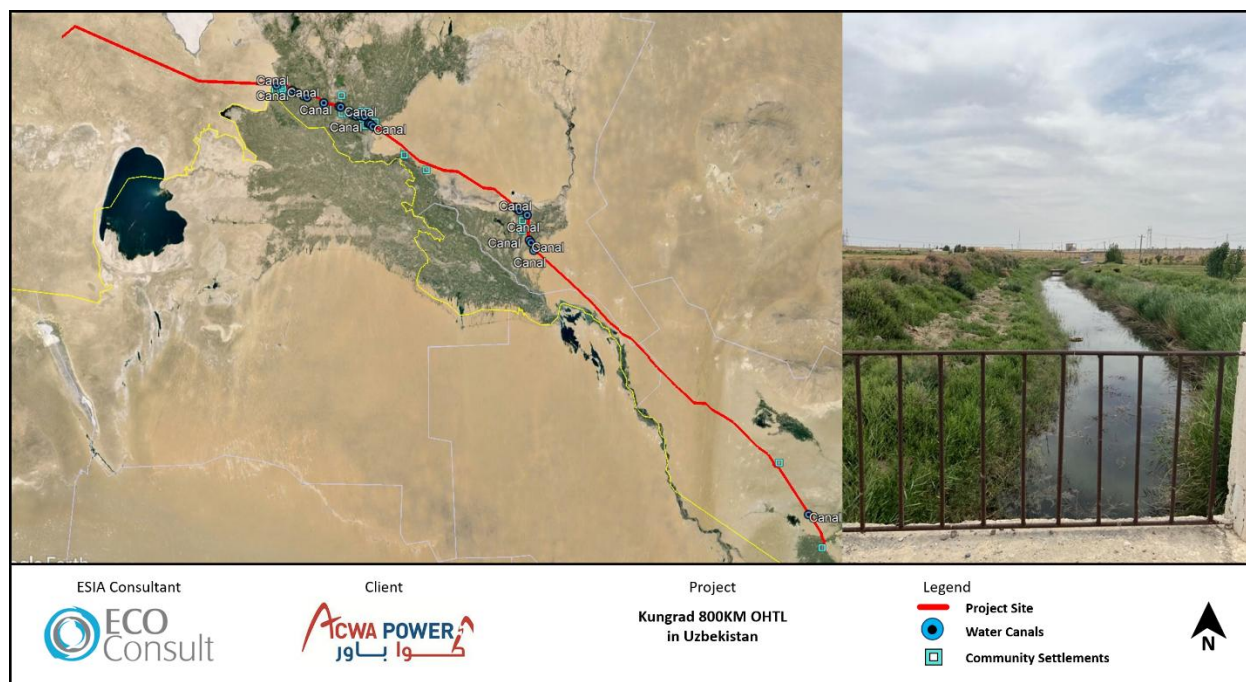


Figure 94: Water Canals within the Project Site and Example Figure

In addition to the above, please note that a water resources supply and demand assessment was undertaken as part of the Wind Farm ESIA. Please refer to “Section 14.2.5” of the Wind Project ESIA. The water assessment identifies several resources for supply of water required for the Wind Farm project which can also be used for the OHTL component as well. This includes the following:

- Option 1 – Assake Audan Groundwater Well
- Option 2 – Gurkurek Groundwater Well
- Option 3 – Department of Technical water supply under Urgench transgaz. This is expected to be the most likely option for water supply for the OHTL.
- Option 4 – Onsite Groundwater Well

13.1.6 Other Remaining Infrastructure Elements

As part of the site visit undertaken by ‘E&S Team,’ additional unknown / unmarked infrastructure elements were noted. The points of intersection are provided in the figure and table below. There could be additional infrastructure elements apart from those identified below within the route or its servitude (ROW).

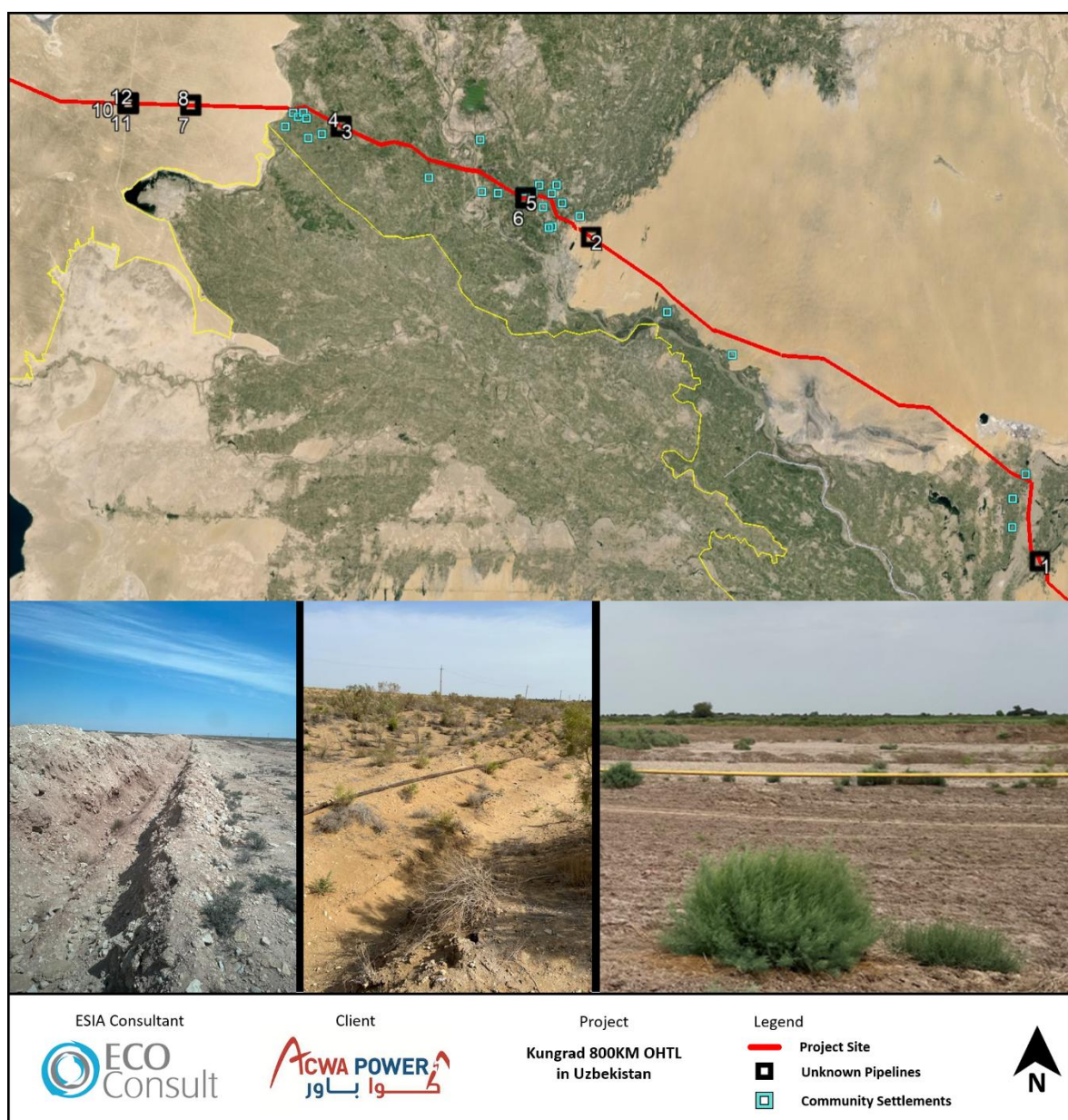


Figure 95: Observed Unknown Pipelines

Table 60: Project's Points of Intersection with Oil and Gas Infrastructure

Point	Latitude	Longitude	Description
1	41.7276578	61.1569578	Unknown Pipeline
3	42.5252304	59.6958130	Unknown Pipeline
3	42.7914931	58.8726263	Unknown Pipeline
4	42.7911009	58.8714594	Unknown Pipeline
5	42.6201911	59.4807785	Unknown Yellow Pipeline
6	42.6194742	59.4809040	Unknown Yellow Pipeline
7	42.8392514	58.3732083	Unknown Pipeline with Sign that indicates the presence of a pipeline nearby
8	42.8399583	58.3727251	Unknown Pipeline with Sign that indicates the presence of a pipeline nearby

9	42.8418893	58.1639456	Buried Pipeline
10	42.8427103	58.1640950	Buried Pipeline
11	42.8426596	58.1654069	Previous Pipeline that appears to be in the process of being removed
12	42.8419191	58.1652771	Previous Pipeline that appears to be in the process of being removed

13.1.7 Waste Management (Solid Waste, Wastewater and Hazardous Waste)

Consultations were undertaken with State Unitary Enterprise to obtain information on municipal and construction waste disposal facilities, Wastewater Treatment Plants (WWTPs), and hazardous waste landfills. Results are presented below.

Municipal and Construction Waste Disposal Facilities

It is important to note that currently there are no landfills in Uzbekistan (including Karakalpakstan) that are constructed or operated according to international standards. The first proper solid waste landfill to meet international standards is currently being developed in Tashkent Region and is financed by the Asian Development Bank (ADB). This is located around 1,000km from the Project site. This will include the construction of new sanitary landfills that meet EU requirements, waste sorting complexes, waste transfer points, as well as the purchase of specialized equipment and vehicles.

On the other hand, there are 197 landfills in Uzbekistan (as per description earlier none of which are according to international standards). Four (4) are located in Kungrad District and are all under the State Unitary Enterprise, while the fifth is for industrial establishments located. Additional information has been requested for those landfills within Bukhara and Khorazm region but has not been provided to date.

Table 61: Closest Landfill to the Project Site

Name	Distance to Project	Description
Kanli Landfill	170 km	Located in the territory of the Kanli Mahalla with an area of 15 hectares. Landfill is surrounded by corrugated steel and wire fences.
Karakalpakstan Landfill	300 km	Located in Karakalpakstan village with an area of 0.5 hectares and is unfenced.
Kirkkiz Landfill	100 km	Located in Kirkkiz with an area of 0.5 hectares and is unfenced.
Jasliq landfill	200 km	Located in Jasliq with an area of 0.5 hectares and is unfenced.
Uzkorgaz WWTP and Sodium plant landfills	100km	The Uzkorgaz landfill has an area of 50 hectares while the sodium plant has an area of 8 hectares. The EPC Contractor and Project Operator can negotiate with these plants the possibility of disposing wastewater at their facilities.

Wastewater Treatment Plants

The table below provides an overview of the Wastewater Treatment Plants (WWTPs) within Kungrad District. As noted below, it is most likely that the Project will rely on disposal at Nukus WWTP within Karakalpakstan Region. Additional information has been requested for those landfills within Bukhara and Khorazm region but has not been provided to date.

Table 62: Closest WWTPs to the Project Site

Name	Distance to Project	Description
Uzkorgaz WWTP and Sodium plant WWTP	100km	Those are WWTPs for the industrial facilities located in Elobod and Kirkkiz. No additional information could be obtained on design capacity and current capacity. The EPC Contractor and Project Operator can negotiate with these plants the possibility of disposing wastewater at their facilities.
Nukus WWTP	200 km	The WWTP includes complete biological treatment facilities with a design capacity of 65, 000 thousand m ³ /day with an actual average daily flow of 15,000 m ³ /day. The WWTP was put into operation in 1984. There are plans to undertake expansion and renovation for the existing WWTP as well as a complex sludge processing unit. The project will start in 2024 and will be completed by 2026. In case the first option is not available, this is the most likely WWTP to be used by the Project.
Takhiatash WWTP	200km	The WWTP has a design capacity of 7,600 m ³ / day and is not working and it just disposes wastewater without treatment. There are plans to construct a new WWTP within the area.

Hazardous Waste Landfill

There are no hazardous waste landfills in Uzbekistan. In general, disposal depends on the type of hazardous waste generated and for each type there are governmental authorized specialized companies that collect, process, recycle and/or manage such waste streams.

The key hazardous wastes expected to be generated from the Project are summarized below along with the key disposal method/entity for each.

Table 63: Disposal Methods for Hazardous Wastes

Hazardous / Solid	Containers	Plastic containers should be recycled by specialized companies involved in the production of pellets while metal containers can be sold for reuse or recycling at Uzmetskombinat.
	Paints / paint pots	Paints are handed over to specialized companies for recycling.
	Used spill kits and contaminated soils	This waste should be disposed by a specialized company involved in contaminated kits and soils. An example of such as company would be «Ecotibbiyot».
	Clinical	This waste should be disposed by a specialized company involved in clinical waste. An example of such as company would be «Ecotibbiyot».
	Batteries	Batteries are recycled by Uzvtortsvetmet
	Fluorescent tubes / bulbs	Should be passed for demercurization to specialized company – an example of such company is ASP Selta.
Hazardous / Liquid	Spent /excess lube oil	Oily waste can be processed only JV Uz-Prista LLC as per Presidential Decree №-1759 dated 22.05.2012
	Spent /excess hydraulic fluid	Oily waste can be processed only JV Uz-Prista LLC as per Presidential Decree №-1759 dated 22.05.2012
	Spent / excess solvents	This waste should be disposed by a specialized company involved in solvents. An example of such as company would be «Ecotibbiyot».
	Acids / alkalis solutions	This waste should be disposed by a specialized company involved in acids and alkalis solutions. An example of such as company would be «Ecotibbiyot».

	Paints	This waste should be disposed by a specialized company involved in paints waste. An example of such as company would be «Ecotibbiyot».
	Discarded chemicals	This waste should be disposed by a specialized company involved in chemicals. An example of such as company would be «Ecotibbiyot».

13.1.8 *Traffic and Transport*

Highway A380 is a major highway in Uzbekistan that starts from G‘uzor District in Qashqadaryo Region and ends in Kungrad District in Karakalpakstan, more specifically in the northwestern corner of Uzbekistan that borders with Kazakhstan. The total length of Highway A380 is around 1,200km as shown in the figure below.

Highway A380, particularly the Guzar-Bukhara-Nukus-Beyneu section, plays a crucial role in enhancing regional trade within the Central Asia Regional Economic Cooperation (CAREC) Corridor 2. Covering a distance of approximately 240 km, this highway connection between the Kungrad district in the Republic of Karakalpakstan and the Kazakh border is a vital trade route in the region. It efficiently links various western Uzbekistan regions, including Kashkadarya, Bukhara, Khorazm, and Karakalpakstan, to the Caspian Sea port of Aktau in Kazakhstan. As a key transportation artery, the A380 corridor is poised to become increasingly vital for facilitating regional trade between Uzbekistan and Kazakhstan.

The proposed upgrading and widening of A380 highway align with the government's priority to enhance transportation infrastructure and revitalize this important trade route.

This highway will be the key highway that will be used to access the Project site for all of its transportation requirements.

As noted in the figure below, the highway runs in many areas close to the OHTL route.

Based on consultations with Ministry of Transport of Karakalpakstan / Kungrad District Road Use Unitary Enterprise, the following information was requested on Highway A380 but it was indicated that such information was not available.

- Theoretical road capacity;
- AM/PM traffic counts; and
- Road conditions;

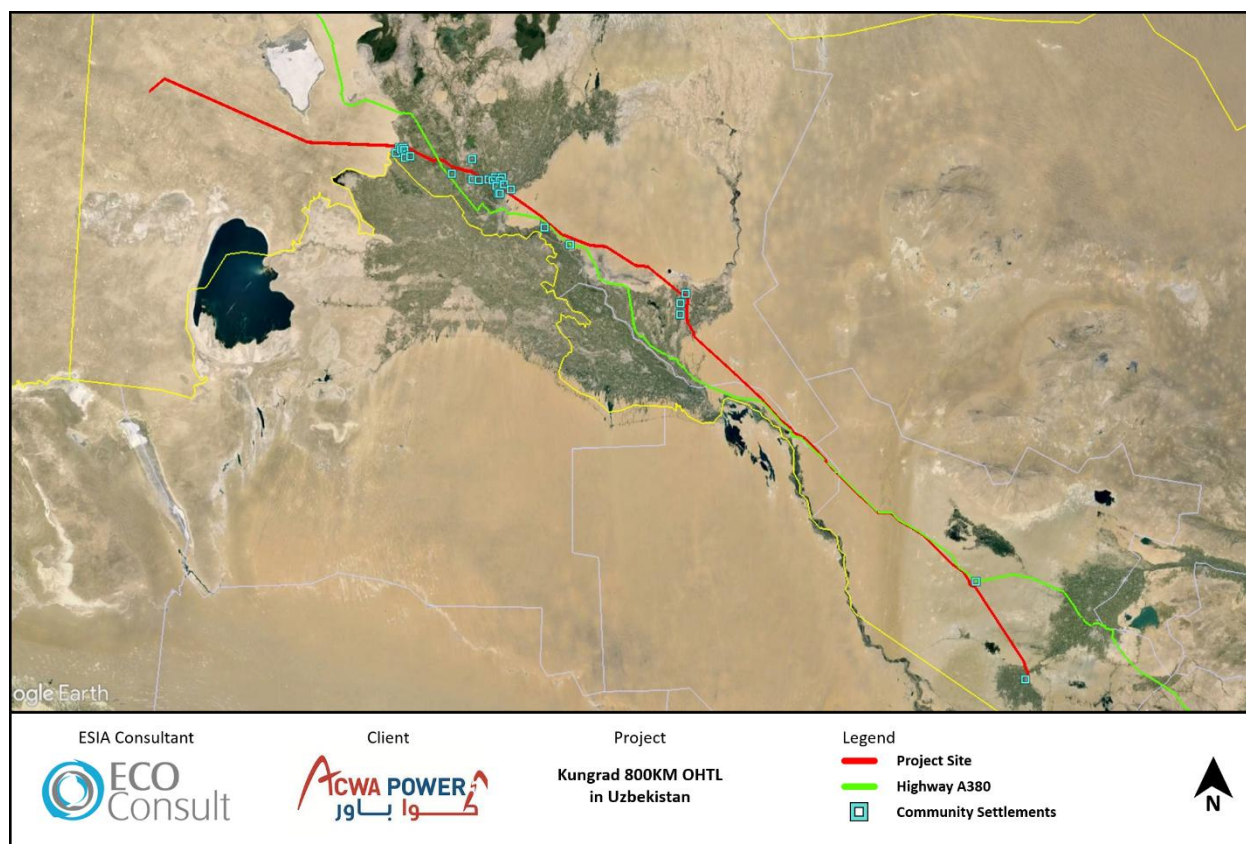


Figure 96: Project Site in Relation to Highway A380

13.2 Assessment of Potential Impacts

This section identifies the anticipated impacts on infrastructure and utilities 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.

13.2.1 *Potential Impacts on Civil and Military Aviation during the Planning Phase*

As noted earlier, no infrastructure elements in relation to civil and military aviation were recorded or noted (e.g., radars), while the closest airport is located 7KM from the OHTL.

In accordance with local requirements, no permit or formal clearance is required from the Civil Aviation Agency (CAA) for structures that are lower than 50m in height (as discussed earlier maximum towers height is around 37m) and in addition there are no restrictions on setback distances of OHTLs from airports.

Therefore no impacts are relevant. However, there are additional requirements that should be considered by the EPC Contractor.

- As part of the detailed design, the EPC Contractor will consult with CAA and Military Defense entity to obtain whether any technical conditions will be required for the OHTL including in particular the parts that run near Nukus airport (e.g., aviation lighting requirements).

13.2.2 Potential Impacts on Railway during the Construction Phase

As noted earlier, the, OHTL crosses the railway in three (3) different sections. The preliminary design undertaken by the Developer has taken into account all design considerations required for railway crossings in accordance with the “Electrical Installation Rules.”

However, inappropriate management of construction activities by the EPC Contractor could entail other impacts from railway infrastructure such as:

- Occupational health and safety risks to works when working near or close to the railway; and
- Damage / disturbance to railway infrastructure from inappropriate construction activities (e.g., driving of machinery).

Construction Phase		
Type	Negative	
Duration	Medium-term	Relevant for construction period which is 24 months
Magnitude	Medium	Impacts will be noticeable
Reversibility	Irreversible	As it could entail serious H&S risks
Sensitivity	High	Given that it could entail serious H&S risks to workers
Likelihood	Low	Such impact is unlikely to occur
Frequency	Rare	Such impact is unlikely to occur
Timing	Not relevant	Throughout entire construction period
Extent	High	Impact could affect entire railway operation
Significance	Moderate	

Mitigation Measures

The following identifies the key mitigation measures that should be undertaken by the EPC Contractor during planning and construction phase of the Project:

- As part of the detailed design, the EPC Contractor will be required to consult / engage with the relevant entity managing the railway to provide detailed design and obtain technical requirements or conditions for the OHTL intersections / crossings as well as overall construction management requirements. All consultations will include formal communications;
- In addition, EPC Contractor should also obtain Occupational Health and Safety (OHS) requirements for works to be undertaken near the railway for consideration within the Occupational Health and Safety Plan (OHSP) and Emergency Preparedness and Response Plan (EPRP) as discussed in “Section 14.4.6”;
- Detailed design will take into account all design requirements that should be considered for railways in accordance with the “Electrical Installation Rules” as well as any other legal requirements to be considered for such an issue and outcomes of consultations; and

- As part of induction training, it must be emphasized to all workers the presence of the railway within the Project site. It must also be emphasized that all activities should be restricted to designated areas and that it is strictly prohibited to approach the railway or its buffer area.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor during the planning phase and which include:

- Submission of formal letter from railway entity;
- Submission of final detailed design; and
- Submission of OHSP and EPRP with considerations for railway crossings.

13.2.3 Potential Impacts on Oil & Gas Infrastructure during the Construction Phase

As noted earlier, the OHTL crosses oil and gas infrastructure in various sections. The preliminary design undertaken by the Developer has taken into account all design considerations required for oil and gas infrastructure crossings in accordance with the “Electrical Installation Rules.”

However, inappropriate management of construction activities by the EPC Contractor could entail other impacts from oil and gas infrastructure such as:

- Occupational health and safety risks to works when working near or close to the oil and gas crossings; and
- Damage / disturbance to oil and gas infrastructure from inappropriate construction activities (e.g., driving of machinery).

Construction Phase		
Type	Negative	
Duration	Medium-term	Relevant for construction period which is 24 months
Magnitude	Medium	Impacts will be noticeable
Reversibility	Irreversible	As it could entail serious H&S risks
Sensitivity	High	Given that it could entail serious H&S risks to workers
Likelihood	Low	
Frequency	Rare	Such impact is unlikely to occur
Timing	Not relevant	Throughout entire construction period
Extent	High	Impact could affect entire oil and gas operation
Significance	Moderate	

Mitigation Measures

The following identifies the key mitigation measures that should be undertaken by the EPC Contractor during planning and construction phase of the Project:

- As part of the detailed design, the EPC Contractor will be required to consult / engage with the relevant entity managing the oil and gas infrastructure to provide the detailed design and obtain technical requirements or conditions for the OHTL intersections / crossings as well as overall construction management requirements. All consultations will include formal communications;
- In addition, EPC Contractor should also obtain Occupational Health and Safety (OHS) requirements for works to be undertaken near the oil and gas infrastructure for consideration within the Occupational Health and Safety Plan (OHSP) and Emergency Preparedness and Response Plan (EPRP) as discussed “Section 14.4.6”;
- Detailed design will take into account all design requirements that should be considered for oil and gas in accordance with the “Electrical Installation Rules” as well as any other legal requirements to be considered for such an issue and outcomes of consultations; and
- As part of induction training, it must be emphasized to all workers the presence of the oil and gas within the Project site. It must also be emphasized that all activities should be restricted to designated areas and that it is strictly prohibited to approach the oil and gas or its buffer area.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor during the planning and construction phase and which include:

- Submission of formal letter from oil and gas entities;
- Submission of final detailed design; and
- Submission of OHSP with considerations for oil and gas crossings.

13.2.4 Potential Impacts on Water Resources during the Construction Phase

Impacts on Water Infrastructure Elements

The following key risk and impacts are noted in relation to the construction phase of the in relation to water resources:

- Site preparation activities which are to take place onsite by the EPC Contractor for installation of the OHTL are expected to include land clearing activities, levelling, excavation, grading, etc. Although such activities are limited to the relatively small individual footprints of the towers and the actual area of disturbance is relatively minimal, such activities could disturb soil, and result in erosion and runoff which could result in siltation of surface water and impacting its water quality. This is particularly important at the Amu Daya River crossing, saltwater body, Zarafshan stream and the water canals.
- Siting of transmission towers within these water bodies could result in direct impacts on water resources to include impacts on water quality (e.g., increase in turbidity) and/or impacts on water environment (as applicable – e.g., benthic communities).
- Improper management of construction activities (through for example improper waste management, hazardous material management) could reach and pollute such water bodies through impacts on

water quality (e.g., dissolved oxygen) and/or impacts on water environment (as applicable – e.g., benthic communities).

Construction Phase		
Type	Negative	N/A
Duration	Medium-term	Limited to construction period which is 24 months
Magnitude	Medium	Given the small project footprint of tower components, impact is considered of medium magnitude and sensitivity.
Reversibility	Irreversible	
Sensitivity	Medium	
Likelihood	Medium	
Frequency	Rare	
Timing	Not relevant	
Extent	Low	
Significance	Moderate	

No key impacts are anticipated during the operation phase, given that O&M activities will be minimal and target for specific tower areas that require either corrective or preventive maintenance.

Mitigation Measures

- EPC Contractor will confirm and verify all water streams, crossings, rivers, bodies or similar and all will be considered as part of the detailed design. The final detailed design by the EPC Contractor will ensure that no towers are placed within any of the identified water resources above, or any additional water bodies identified.
- As discussed in “Section 9.1.2” erosion and sediment control measures will be undertaken. In line with that, the following erosion and sediment control measures should be implemented and in particular for all construction activities to be undertaken within 1km from any water body / stream:
 - 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 sediment 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;
 - Erect wind erosion control that could include: (i) water application on disturbed soil areas of the project to control dust; (ii) minimizing removal of topsoil; (iii) avoid deposits of loose spoils; and
 - Return surfaces disturbed during construction to their original (or better) condition to the greatest extent possible.
- Ensure all waste streams including hazardous waste and material is managed in accordance with measures identified earlier in “Section 9.1.1”.

- As discussed previously under “Section 8” EPC Contractor is expected to properly plan construction activities to avoid any damage or disturbance to the water canals (to include but not limited to movement of equipment and machinery into the construction sites, worker code of conduct, excavation activities, etc.). Should any damage occur, restoration and/or compensation activities will be undertaken by the EPC Contractor as required with the LRP. Please refer to the LRP for additional details.

Following the implementation of these mitigation measures, the significance of the residual impact can be reduced to not significant.

Monitoring Requirements

- Submission of final detailed design ensuring avoidance of all water resources
- Visual inspections to be undertaken by the EPC Contractor in areas within 1km radius to ensure proper erosion and sediment control measures are implemented.
- Water canal management will be subject to monitoring requirements included within the LRP.

Impacts on Water Resources

It is expected that the Project throughout the construction and operation phase will require water for potable usage (drinking, showering, etc.) and non-potable usage (e.g., cleaning of machinery and vehicles).

The tables below provide an estimate of the water requirements during the construction phase of the project as provided by a technical engineer on this Project. Sources of water consumption during the project execution will include as discussed earlier: (i) potable water; and (ii) non-potable water.

It is important to note that numbers below are based on estimations – actual generated quantities will be updated in the water management plan throughout the execution of the project.

In addition, it is important to note that the number below are considered cumulative of the requirements for both the wind farm and the OHTL.

Table 64: Total Water Requirements Summary

Type of Water	Quantity	Description
Total Potable	40,438 m ³	Assuming 130L per worker per day for the following uses: (i) drinking (5L); (ii) cooking (5L); (iii) bathing (55L); (iv) cloth washing (20L); (v) utensils washing (10L); (vi) flushing of water closets (30L); and (vii) cleaning of rooms (5L)
Total Non-Potable	64,000 m ³	Estimated for onsite activities based on previous wind farm developments in Uzbekistan. Water required for dust suppression, concrete for batching plant (excluding tower manufacturing facility), firefighting, equipment and machinery washing, etc.
Tower manufacturing facility	67,600 m ³	Water required for specifically production of the towers at the tower manufacturing facility (mainly for batching plant requirements).
Total for construction phase	172,000 m ³	
	50% buffer	For any additional water not accounted in the above calculations, changes in actual water consumption on the

		ground, and / or other potential factors that could result in miscalculations or change in calculation.
	260,000m ³	
Total per month	~6,000 m³ / month	

The water requirements throughout the construction phase will be required medium-term duration (for construction period only). As estimated, they are about 6,000m³/month which is around the average annual water consumption of 6 hectare of agricultural land in Karakalpakstan²³. Based on that, they are considered of medium magnitude.

Water requirements during the operation phase are expected to be negligible given that O&M activities will be undertaken through day-trips to specific areas that require corrective or routine maintenance activities.

Although water requirements are considered of medium magnitude, the sensitivity is considered high mainly due to the water situation in Uzbekistan in general and Karakalpakstan in particular. Uzbekistan ranks 25th out of 164 countries on the World Resources Institute's list of the most water-stressed nations. The country faces a severe water shortage, particularly in regions like Karakalpakstan, where it could trigger a social and environmental crisis. The scarcity of water affects not only agriculture but also domestic use. By 2030, the population of Uzbekistan is projected to approach 40 million people, leading to a 7-8 km³ reduction in available water resources. This will exacerbate the current water shortage, increasing it from 13-14% to 44–46%, which will hinder the development of both agriculture and industries.

A water resources assessment was undertaken by the 'E&S Team' as part of the ESIA works. The outcomes of the assessment is provided within "Section 14.2.5" of the Wind Farm ESIA. The water assessment identifies several resources for supply of water required for the Wind Farm project which can also be used for the OHTL component as well. This includes the following:

- Option 1 – Assake Audan Groundwater Well. This option is no longer considered given that it will require additional assessments to ensure that it would not entail impacts on wildlife (which could consume water from such source) as well as impacts from accessibility (e.g., need to construct a road to access to this source).
- Option 2 – Gurdurek Groundwater Well. This option is no longer considered given that it will require additional assessments to ensure that it would not entail impacts on wildlife (which could consume water from such source) as well as impacts from accessibility (e.g., need to construct a road to access this source).
- Option 3 – Department of Technical water supply under Urgench transgaz
- Option 4 – Onsite Groundwater Well

Taking the above into account, and the location of the OHTL across Uzbekistan, it is most likely that the EPC Contractor would rely on Option 3 which is water supply from Urgench transgaz pipeline.

Construction Phase		
Type	Negative	

²³ [Assessment and forecast of water resources use in Uzbekistan \(e3s-conferences.org\)](https://www.e3s-conferences.org/)

This was also verified based on consultations with Deputy Minister of Water Resources of the Republic of Karakalpakstan it was indicated that average annual water consumption per 1 hectare in agriculture in Karakalpakstan is 11,200 m³.

Duration	Medium-term	Relevant for construction period which is 24 months
Magnitude	Medium	Amounts of water required is considered medium level
Reversibility	Reversible	N/A
Sensitivity	High	Given water situation in Karakalpakstan
Likelihood	High	
Frequency	Frequent	Throughout entire construction period
Timing	Not relevant	Throughout entire construction period
Extent	High	Could impact all resources / users relying on such water source which could be more than 10km away
Significance	Moderate	

Additional Requirements

The following identifies additional requirements to be applied by the EPC Contractor during the construction phase respectively and which include:

- Undertake feasibility assessment to determine the optimal water supply option for the Project based on the options provided earlier (Option 3 or Option 4) including ensuring no impacts on any potential existing water users. Based on the option selected, ensure all permits and requirements are obtained as applicable.
- Document water consumption of the Project during construction (monthly) and during operation (annually)
- Develop a water management plan for the construction and operation phase. The plan should emphasize on water conservation and efficiency such as the following in particular:
 - Utilizing the dry-cleaning methods wherever applicable;
 - Utilizing water saving fittings where applicable (taps, urinals, toilets, trigger guns, etc.);
 - Consider utilizing treated wastewater/grey water for dust suppression and any irrigation requirements as applicable.
 - Ensure that washing/cleaning activities (e.g., vehicle and equipment washing, toilets flushing/cleaning, etc.) are carried out using appropriate methods requiring low water consumption or dry (water-less) cleaning techniques where possible.
 - Awareness about resource efficiency, in particular concerning water use, shall be reinforced to all workers through signage and posters as appropriate.
 - Undertake weekly inspections for potable and non-potable water storage tanks and water supply connections to ensure there are no leaks. If any are located, they will be fixed immediately.

13.2.5 Other Remaining Infrastructure Elements

As noted earlier, the OHTL crosses several unknown infrastructure elements in various sections. Inappropriate management of construction activities by the EPC Contractor could entail impacts on such infrastructure elements such as:

- Inappropriate siting that could affect operation or function of such infrastructure elements;
- Occupational health and safety risks to works when working near or close to such infrastructure elements / crossings; and
- Damage / disturbance to infrastructure from inappropriate construction activities (e.g., driving of machinery).

Construction Phase		
Type	Negative	
Duration	Medium-term	Relevant for construction period
Magnitude	Medium	Impacts will be noticeable
Reversibility	Irreversible	As it could entail serious H&S risks
Sensitivity	High	Given that it could entail serious H&S risks to workers
Likelihood	Low	
Frequency	Rare	Such impact is unlikely to occur
Timing	Not relevant	Throughout entire construction period
Extent	Low	Impact could affect entire railway operation
Significance	Moderate	

Mitigation Measures

The following identifies the key mitigation measures that should be undertaken by the EPC Contractor during planning and construction phase of the Project:

- As part of the detailed design, the EPC Contractor will be required to consult / engage with the relevant entity managing all other infrastructure elements within the OHTL route to provide the detailed design and obtain technical requirements or conditions for the OHTL intersections / crossings as well as overall construction management requirements. All consultations will include formal communications;
- In addition, EPC Contractor should also obtain Occupational Health and Safety (OHS) requirements for works to be undertaken near such infrastructure for consideration within the Occupational Health and Safety Plan (OHSP) and Emergency Preparedness and Response Plan (EPRP) as discussed in “Section 14.4.6”;
- Detailed design will take into account all design requirements that should be considered for such infrastructure elements in accordance with the “Electrical Installation Rules” as well as any other legal requirements to be considered for such an issue and outcomes of consultations; and
- As part of induction training, it must be emphasized to all workers the presence of such infrastructure elements within the Project site. It must also be emphasized that all activities should be restricted to designated areas and that it is strictly prohibited to approach such elements or its buffer area.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor during the planning phase and which include:

- Submission of formal letter from relevant entities;

- Submission of final detailed design; and
- Submission of OHSP with considerations for such crossings.

13.2.6 *Potential Impacts on Waste Utilities during the Construction Phase*

The Project is expected to generate the following waste streams during the construction phase and which are provided in detail in the table that follows.

- Wastewater during construction includes black water (sewage water from toilets and sanitation facilities) and grey water (from sinks, showers, etc.). Wastewater will be stored onsite though enclosed collection tanks and collected by licensed tankers from the Project to the closest WWTP.
- Solid waste during construction and operation will include construction waste (mainly during construction to include dirt, rocks, debris, etc.) as well as general municipal waste (such as food, paper, glass, bottles, plastic, etc.). Solid waste quantities generated are not expected to be significant and are likely to be easily handled by closest approved solid waste disposal facility.
- Hazardous waste during construction and operation from the will include routine waste generated from such activities to include spent oil, lubricants, paint cans, solvents, etc. Hazardous waste quantities generated are not expected to be significant and are likely to be easily handled by closest authorized facility.

The quantities of waste in the table below for the construction phase are considered a rough estimate based on other similar developments in Uzbekistan. It is likely that such entities will be able to handle the waste quantities and waste disposal requirements of the Project.

Note: due to the limited operational activities that will most likely include day-trip visits for operation and maintenance, and therefore waste quantities will be negligible.

Table 65: Type and Quantities of Waste Estimated for Construction Phase

Category	Type	Description	Quantities / Weight
Non-Hazardous / Solid	Plastic glass	Bottle, jars, etc.	7m ³
	Metal cans and tins	Drink and food cans	2m ³
	Ferrous material	Steel, gratings, sheet steel, beams, wire, etc.	5 ton
	Non-ferrous material	Aluminum, copper piping, etc.	2 ton
	Paper/cardboard/card from packaging	Packaging, printer paper, newspapers, magazines, etc.	3 m ³
	Plastic bottles	Drink bottles, cosmetic bottles, etc.	7 m ³
	Plastic packaging	Plastics, Styrofoam, etc.	15 m ³
	Domestic waste	Mixed wastes	200 m ³
	Textiles	Unwanted and uncontaminated clothes	2 m ³
	Wood from packaging	Pallets, crates, beams, general packaging, etc.	200 m ³
	Concrete	N/A	20 m ³
	Clinical	Medicines	2 m ³
Total Non-Hazardous waste			460 m³ + 7 ton

Hazardous / Solid	Containers	Container contaminated by original content (e.g. lube oil, hydraulic fluid, paints, solvents, etc.	3 m ³
	Paints / paint pots	N/A	1 m ³
	Used spill kits and contaminated soils	Absorbents, filter materials (including oil filters not otherwise specified), wiping clothes, protective clothing contaminated by dangerous substances and soil from remediation activities	1 m ³
	Clinical	Offensive waste (e.g. outer wound / surgical dressing, pads, swab), sharp needles, drugs, containers used to dispose urine, bodily secretion, etc.	2 m ³
	Batteries	N/A	0.5 m ³
	Fluorescent tubes / bulbs	N/A	0.5 m ³
Hazardous / Liquid	Spent /excess lube oil	N/A	8 L
	Spent /excess hydraulic fluid	N/A	8 L
	Spent / excess solvents	Halogenated/non-halogenated	8 L
	Acids / alkalis solutions	From cleaning/maintenance	2 L
	Paints	Waste paint and varnish pots containing organic solvents or other dangerous substances	0.5 m ³
	Discarded chemicals	Discarded organic/ inorganic chemicals consisting of or containing dangerous substances	0.5 m ³
Total Hazardous Waste			9 m³ + 26 L
Wastewater	Black Water	Wastewater generated from sanitary facilities (i.e. toilets) as well as portable toilets	1,500 m ³
	Grey Water	Wastewater generated from sinks, showers, baths, canteens and laundry facilities	14,000 m ³
	Run-off Water	Water generated from impermeable surfaces (e.g. concrete paved areas)	2,000 m ³
	Other wastewater	This could be wastewater generated from equipment/vehicles washing, concrete washout, etc.	1,000 m ³
Total Wastewater			18,500 m³

Construction Phase			Operation Phase		
Type	Negative	N/A	Type	Negative	N/A
Duration	Medium-term	Limited to construction phase which is 42 months	Duration	Long-Term	Throughout entire operational period

Magnitude	Medium	Given waste quantities above	Magnitude	Low	Given waste quantities during operation are minimal
Reversibility	Reversible	N/A	Reversibility	Reversible	N/A
Sensitivity	Medium	Given waste quantities above	Sensitivity	Medium	Given waste quantities during operation are minimal
Likelihood	High	Given nature of activities expected	Likelihood	High	Given nature of activities expected
Frequency	Periodic	Expected throughout entire construction activities	Frequency	Periodic	Expected throughout entire operational activities
Timing	Not relevant	Applicable throughout entire construction activities	Timing	Not relevant	Applicable throughout entire operational activities
Extent	High	Given impact is at final disposal facilities	Extent	High	Given impact is at final disposal facilities
Significance	Moderate	N/A	Significance	Minor	N/A

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

Additional Requirements

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

- Coordinate with the State Unitary Enterprise and obtain list of authorized contractors for collection of wastewater from the site to closest authorized wastewater treatment plant.
- Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the closest authorized landfill (or obtain list of authorized private contractors).
- Coordinate with State Unitary Enterprise to obtain list of authorized contractors for collection of hazardous waste from the site to the closest approved facility for final disposal.

13.2.7 Road Networks during the Construction Phase

1. Sources of Traffic

The principal sources of traffic generated by Project construction are listed as follows:

- **Delivery of Equipment, Machinery and Materials:** this will include vehicles that will be utilized for the delivery of equipment, machinery and materials to the Project site and that are required for the construction phase. This will include but not limited to: (i) haulage container trucks (to supply tower components, conductors, etc.), (ii) site machinery required (excavators, rollers, etc.); (iii) construction material (e.g. aggregate, gravel, soil, etc.), and (iv) and other as applicable. Such vehicles will be using key national highways and roads where such materials are sourced.
- As the EPC Contractor has not been assigned yet, no details are available at this stage on the number of vehicles required for delivery of material and equipment, routes, sources of materials, etc.

Transport of project workers: as discussed earlier, no details are available at this stage on whether there will be onsite or offsite accommodation facilities for workers. Nevertheless, it is expected that Project staff and local workers will be transported to and from the construction site by buses.

- **Service Contractors:** contractors assigned to provide regular services for the Project to include water tankers, wastewater haulers, hazardous waste haulers, food/catering suppliers, that will be through trucks and large vans.
- **Other:** this will include other minor traffic and transportation requirements such as: (i) construction monitoring visits by entities (e.g. lenders, auditors, etc.); (ii) emergency response vehicles in case of an incident onsite (e.g. fire trucks, ambulance, etc.); (iii) other visitors to the site. Those will not generate additional traffic to the site and can be considered negligible.

2. Impact Assessment on Traffic and Road Capacity

Based on consultations with Ministry of Transport of Karakalpakstan / Kungrad District Road Use Unitary Enterprise aimed to obtain the following information:

- Theoretical road capacity;
- AM/PM traffic counts; and
- Road conditions;

However, it was indicated that such information is not available.

Nevertheless, the Project's traffic requirements are expected to utilize as a worst-case scenario throughout all traffic routes to be utilized 1-lane highways which typically have a capacity of 2,000 equivalent vehicles per hour (as opposed to 2-lane highways which have a capacity of 3,500 equivalent vehicles per hour).

Taking into account sources of traffic required for OHTL construction, those were estimated at this point and provided in the table below and then compared to the 1-lane highway capacity. As noted, the entire Project traffic requirement will not result in an additional traffic less than 5%.

Note: the below traffic requirements are based on estimates at this stage and could be subject to change at a later stage once EPC Contractor is appointed.

Table 66: Project and Existing Traffic

Traffic Source from Project	Maximum Number of Vehicles per day	Equivalent Vehicles*	Equivalent Vehicles per hour	Highway Capacity
Delivery Vehicles	200	1000	43	2,000
Buses	8	8		
Service Contractors	5	15		
Total	213	1,023		

***Assuming half/single/double trucks equal to 2/3/5 equivalent vehicles respectively**

Construction Phase		
Type	Negative	
Duration	Medium-term	Limited to construction period only which is 24 months
Magnitude	Medium	Given less than 5% increase only in traffic

Reversibility	Reversible	Baseline restored after completion of construction works
Sensitivity	Low	Given less than 5% increase only in traffic
Likelihood	High	Limited to construction period only
Frequency	Frequent	Expected to occur continuously during construction phase
Timing	Not relevant	
Extent	Medium	Impacts could have an affect up to 5km radius
Significance	Minor	

3. Impact Assessment on Health and Safety

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, to include but not limited to the following:

- Violating traffic rules such as speed limits
- Bad driving behavior such as overtakes, sudden lane changes, misuse of direction indicators, low level of attention, awareness condition of the driver and other
- Road characteristics and conditions. There could be areas within highways utilized that have sections that are in poor conditions and require repairs repair such as potholes and uneven surfaces which gives rise to 'accident hotspots.
- Vehicle maintenance (brakes, suspensions, etc.)
- Weather conditions to include in particular: (i) sand and salt storms, (ii) windy conditions, (iii) extreme hot and cold weather, and (iv) conditions and low/high temperatures
- Project components mainly related to abnormal loads (if applicable) which if inappropriately managed could entail health and safety risks on users on the roads

Construction Phase		
Type	Negative	In extreme cases could entail permanent impacts (e.g. permanent disability) however such impacts are controlled through implementation of general best practice.
Duration	Medium-term	
Magnitude	Low	
Reversibility	Reversible	
Sensitivity	High	
Likelihood	High	
Frequency	Frequent	
Timing	Not relevant	
Extent	Low	
Significance	Minor	

Mitigation Measures

The EPC Contractor is required to develop a Traffic and Transport Plan before commencement of any transportation activities to ensure that the transportation process is properly and adequately managed. The Plan must take into account the following:

- The plan must adhere to the relevant local legislations related to traffic and transport as discussed under the regulatory review section;

- Undertake consultation and engagement activities as part of preparation of this plan with the Ministry of Transport / Logistics Center under the Road Use Unitary Enterprise and the General Department of Automobiles Roads to arrange for the logistics of the transportation requirements.
- Update traffic requirements of the Project as established within the ESIA related to materials, equipment, machinery, project workers, services, etc. where for each the number of vehicles, weight loads, schedule, route/duration and other as appropriate must be identified;
- Update and identify final traffic routes required;
- The Plan must update and identify the final traffic routes required for the Project. The plan must analyze and study the entire route for transportation of the Project components till the Project site. The assessment must take into account worst case scenarios for transportation of Project components. The study must investigate any constraints which need to be considered along the highways leading to the Project site such as bridges, overhead utility cables, slants in roads, etc. and identify accommodations which need to be taken into account (bypasses, adjustments to roads, etc.)
- Identification of types of vehicles to be utilized
- The Plan must also take into account consider the traffic and transportation schedule and requirements of other windfarm developments.
- Identify in detail procedures for onsite management of traffic. This could include but not limited to: (i) optimization of internal traffic layout so that delivery and other vehicles will be able to access site easily; (ii) identification of requirements for controlling access to the site (e.g. security checkpoint, registration, etc.); (iii) providing appropriate lighting for roads and pedestrian walk and ensure they are segregated; (iv) utilization of appropriate and sufficient traffic signs onsite (e.g. speed limits); (v) barricading of open trenches and excavated pits; (vi) utilization of banksmen and flaggers and other.
- Identify procedures for transportation activities under extreme weather conditions including conditions for suspension of activities to include in particular: (i) sand and salt storms, (ii) windy conditions, (iii) extreme hot and cold weather, and (iv) conditions and low/high temperatures
- Identify requirements to be adhered to and enforced on all haulage suppliers such as licensing, driving instructions and code of conduct, speed limits, accident management, monitoring and reporting, etc.
- Identification of a code of conduct to be adhered to and enforced on all drivers in the Project
- Identification of speed limits onsite and identification of all traffic signage requirement onsite
- Identification of a procedure for management of onsite/offsite traffic accidents
- Reflect the procedural actions for traffic management in: (i) induction training material; and (ii) repeated/refresher Toolbox Talks (TBT)
- Identify Key Performance Indicators (KPI) for implementation of plan
- Identify roles and responsibilities for implementation of plan
- Identify abnormal loads and obtain permits to carry these loads on highways
- Ensure all vehicles are subject to a regular inspection / maintenance program

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor and Project Operator during the construction and operation phase and which include:

- Submission of Traffic and Transport Plan
- Submit consultation records with Ministry of Transport / Logistics Center under the Road Use Unitary Enterprise and the General Department of Automobiles Roads.
- Submit final detailed design of road networks (if required).
- Submit signed code of conduct for all drivers.
- Submit TBT records.
- Submit abnormal load permits as applicable.
- Inspection, monitoring and reporting for all requirements within the plan as applicable Recording and documenting of any incidents of non-compliance with plan
- Report all project related onsite/offsite traffic accidents and complaints. Report should identify the cause of accidents or complaints and corrective measures undertaken to ensure such incidents are not repeated again.

14. SOCIOECONOMICS

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to socioeconomics. 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.

Note: as explained earlier, the EPC Contractor has yet to be selected and hence certain elements of the Project details are not yet known or finalized. Following selection, the EPC will provide such details (e.g. footprint and location of staff accommodation (camps), service provision, local recruitment targets, etc.).

The availability of the above information is not aligned with the ESIA submission timeline, the therefore such information should be included within the Project specific management system as discussed in further details under “Section 18.2”.

14.1 Purpose

A socioeconomic baseline provides a comprehensive understanding of the Project affected households social and economic conditions within the Project Area. This chapter describes the socioeconomic baseline conditions for the affected households, of the affected communities within the Project Area.

The socioeconomic baseline overview includes a description of the baseline data collection process, provides a detailed description of the socioeconomic conditions of the affected population, including income, employment, education, health and access to services, infrastructure, and vulnerability.

14.2 National Context and Project Location

14.2.1 National Context

Uzbekistan, officially referred to as the Republic of Uzbekistan, is a predominantly Islamic, land-locked country in the region of Central Asia. With a population of approximately 36 million people, it is the 40th most populous country in the world, whilst ranking 128th in terms of population density. According to the World Bank (World Bank, 2022), Uzbekistan has a Gross Domestic Product of approximately US\$80 billion, with a GDP per capita of US\$2,255, placing the country 147th in the ranking of GDP per capita.

Uzbekistan fell under Russian control in the 19th century and, following the end of Soviet rule in 1991, subsequently gained its independence. For 25 years after gaining independence in 1991, Uzbekistan was led by President Islam Karimov. President Karimov’s rule was characterized by stability and economic stagnation which were underpinned by suppression of political and civic freedoms, state control of land and resources. This included a policy of mandatory nationwide forced labor to support water-heavy cotton crops which shrank the Aral Sea, widespread corruption, and prickly relations with the double-land locked country’s many neighbors.

After a quarter century of rule, the death of President Karimov in 2016 marked a significant time of change in Uzbekistan. Then Prime Minister Mirziyoyev was appointed as president, presenting himself as a reformer and supporter of human rights. In 2017, President Mirziyoyev launched an ambitious and unprecedented reform program aimed at building a private sector–driven, market-based economy. This entailed adopting the 2017-2021 Uzbekistan Development Strategy later continued with the 2022-2026

Uzbekistan Development Strategy which set more ambitious economic goals. The strategy focused on reforms in five main areas: governance systems, judicial systems, economic development, social reforms, security, inter-ethnic harmony and religious tolerance.

Following this platform, in June 2022, President Mirziyoyev announced plans to draft a new constitution which would amend some 65% of the existing constitution. Following a March 2023 referendum, the new constitution became effective on 01 May 2023. The most notable changes included enshrining numerous new human rights and political reforms including extending the presidential term from 5 to 7 years.

From the government's side, a tagline for reforms has been "putting the citizen first" and has grown the section on rights and freedoms by 3.5 times across the domains of law, social guarantees, economy, politics, and culture. Perhaps the largest set of changes concern the rule of law. The new constitution includes greater protections of privacy, presumption of innocence, the right to remain silent, increased burdens of proof, right to representation, abolition of the death penalty, and protections against prolonged arbitrary detainment. Further additions include protection against housing confiscation, reaffirmations of gender equality and prohibiting employment discrimination against mothers, guarantees of free secondary and vocational education, protections for people with disabilities, measures to ease freedom of movement into neighboring countries, as well as protect and restore the Aral Sea.

Despite the inclusion of a wide range of articles enshrining important human rights, the constitutional reform has also been heavily criticized internationally for increasing presidential powers and extending the presidential term in a way that, in practice, makes it possible for President Mirziyoyev to stay in power until 2037. Indeed, on 09 July 2023, a special election was held in which President Mirziyoyev was granted a new seven-year term, despite already being almost halfway through his second (and what would have previously been his final) five-year term. While many were optimistic in 2016 that president Mirziyoyev would usher in a new era of increased democracy and political freedom in Uzbekistan, this move has been largely identified as a continuation of old authoritarian norms taken from the playbook of the Karimov period.

Political and Civil Rights

In 2023, Uzbekistan scored 12 out of 100 on the freedom house global freedom status scale. While Uzbekistan continues to rank among the least free nations globally, it has shown slow but consistent improvement since first scoring 3 out of 100 in 2017.²⁴

Currently, political freedom in the country is extremely limited.²⁵ Opposition to the ruling party has been unable to develop in an environment that actively stifles political pluralism. Accordingly, Uzbek voters face no meaningful choice in both house and presidential elections, which have consistently been found not to be free and fair. Instead, networks of political elites and oligarchs hold the levers of government, which are largely inaccessible to the average citizen. Despite some recent arrests of members of government for embezzlement and other charges, safeguards remain weak, and corruption remains rampant.²⁶

Individual civil freedoms also face significant challenges in Uzbekistan including suppression of individual freedoms of speech, assembly, and religious expression, censorship and repression of free media and targeting of journalists, surveillance of and restrictions to internet use, and limits to independence in academia.²⁷ Violations of civil rights are exacerbated by a lack of due process and independent judiciary,

²⁴ Freedom House (2023), [Uzbekistan: Freedom in the World](#)

²⁵ While formally a constitutional republic with presidential and parliamentary elections, the country was categorized as a consolidated authoritarian regime by Freedom House's Nations in Transit 2023 report.

²⁶ Freedom House (2023), [Uzbekistan: Freedom in the World](#)

²⁷ Freedom House (2023), [Uzbekistan: Freedom in the World](#)

as well as justice system with a history of violating right to counsel, utilizing torture, punishment by compulsory labor, and maintaining poor prison conditions.²⁸

While efforts have been made since 2016 to address these issues, significant barriers remain. For example, torture has long been identified as an issue in Uzbek policing and security.²⁹ In 2016, Uzbekistan passed a law prohibiting torture followed by a 2017 decree barring courts from using evidence obtained through torture. However, in June 2020 data was released showing that of 757 cases investigated since the law's inception, only 33 had led to prosecution, with the government acknowledging that torture remains a serious problem.³⁰

Further, despite constitutional guarantees, freedom of speech and press remains severely limited. Under president Mirziyoyev a modest loosening on control and censorship has led to a cautious emergence of some political and social discourse in domestic and social media. However, most continue to avoid direct criticism of the ruling party. While President Mirziyoyev initially released a number of journalists from prison upon taking office, and 2018 was the first year in recent Uzbek history with no recorded arrests of journalists, such arrests have not stopped entirely. Since 2016, journalists have continued to report harassment, interrogation, and warnings by security services for coverage of sensitive topics. In 2022, multiple journalists, including Karakalpak bloggers, were arrested and some sentenced to multi-year prison terms for anti-government reporting.³¹ This included enforcement, for the first time, of a March 2021 amendment outlawing insults against the president. The right to privacy in Uzbekistan is limited both online and in person. Across the country, some 12,000 *mahalla* or neighborhood committees provide social services in the community, but also serve, to varying degrees, as sources of information for government and law enforcement authorities on local residents.^{32 33}

Economic and Social Rights

The situation for social and economic rights in Uzbekistan is marked by both instances of progress and ongoing challenges. While Uzbekistan has shown some positive developments in areas like forced labor, freedom of movement, and academic freedom, significant challenges remain in the protection of housing rights and the operation of civil society organizations.

While the Uzbekistan's economic environment has seen reforms towards greater openness and modernization leading to increased economic growth in recent years, shortcomings in regulatory transparency, large informal sector, dominance of state banks, and weak rule of law continue to limit the economy.³⁴ This reality is underscored by the Heritage Foundation Index of Economic Freedom which ranks Uzbekistan below the national average at 109th out of 176 countries, though showing consistent improvement from its 166th position in 2017.³⁵ State statistics indicate that the average national salary is around 300 USD per month³⁶ and 17% of people in Uzbekistan fall below the poverty line. Further, many families remain heavily reliant on remittances which make up just over 20% of national GDP. Some two

²⁸ US Department of State 2022, [Country Report on Human Rights Practices: Uzbekistan](#)

²⁹ US Department of State 2022, [Country Report on Human Rights Practices: Uzbekistan](#)

³⁰ Eurasianet (2020), [Uzbekistan scrambles to respond to torture death in police custody](#)

³¹ Freedom House (2023), [Uzbekistan: Freedom in the World](#)

³² A March 2022 decree regionalized the mahalla system and gave greater powers of oversight and surveillance in the local community.

³³ US Department of State 2022, [Country Report on Human Rights Practices: Uzbekistan](#)

³⁴ Heritage Foundation (2023), [Economic Freedom Index: Uzbekistan](#)

³⁵ Heritage Foundation (2023), [Economic Freedom Index: Uzbekistan](#)

³⁶ Radio Free Europe (2023), [Between Migration and Low Wages: Can Uzbekistan solve its Poverty Problem?](#)

million people from Uzbekistan are estimated to be working in Russia leaving many vulnerable to currency fluctuations and political developments impacting the Russian economy.³⁷

Labor law (explored in detail below) has made important positive reforms in recent years. Most notable, Uzbekistan has made significant strides in combating forced and child labor, once hallmarks of the nation's large cotton industry which, until recently, operated on a system of compulsory labor that indentured nearly 2 million individuals each year.³⁸ Since 2016, the criminalization of repeated use of forced labor, elimination of the production quota system for cotton, and incentives for voluntary labor have effectively eliminated the practice from the cotton industry.³⁹ While this represents a significant accomplishment, reports suggest that forced labor may remain an issue in other sectors such as silk production.⁴⁰ Further, trafficking of individuals for forced labor and sex work continues to be a problem with Uzbekistan ranked as a tier 2⁴¹ country in the US Department of State 2023 Trafficking in Persons report.⁴²

While new articles have been adopted in the 2023 constitution to address housing rights, forced evictions have been a challenge in Uzbekistan linked to urban renewal campaigns. These evictions often occur without due process or adequate compensation and have disproportionately affected the most vulnerable groups such as women, children, persons with disabilities, and minorities. Numerous cases exemplify this issue, such as the forced eviction of Olga Abdullayeva and her family in Tashkent in 2021 to make way for a high-rise development, as well as the 2022 arrest of 44 farmers in Samarkand who complained of land seizures.⁴³

Since gaining independence, the country has diversified agricultural production while developing its mineral and petroleum export capacity and increasing its manufacturing base, although cotton remains a major part of its economy (CIA, 2023). The Asian Development Bank's support for Uzbekistan in 2022 focused on reforms for the country's transition towards an inclusive and market-driven economy (ADB, 2023). The ADB is closely aligned with Uzbekistan's national development strategy and its priority areas:

- (i) Governance and public administration reforms.
- (ii) Economic development, including structural reforms, strengthening private ownership and entrepreneurship, and improving transport and trade connectivity.
- (iii) Social development.

Figure 97 below illustrates the GDP growth rate of Uzbekistan from 2021 until the forecasted rate of 2024. The GDP growth rate is expected to steadily decline since the 7.4% rate achieved in 2021, however, the 5.5% forecasted GDP growth rates of 2023 and 2024 are still higher than the forecasted global averages of 2.9% in 2023 and 2.7% in 2024 (OECD, 2023).

³⁷ IOM (2022), Sanctions on Russia already hitting remittance-dependent countries in central Asia

³⁸ ILO (2022), [Uzbek Cotton is free from systemic child labor and forced labor](#)

³⁹ By 2018, the International Labor Organization (ILO) reported that approximately 93% of cotton workers were voluntarily employed in 2018, and in 2021, the Uzbek Forum for Human Rights found no systematic forced labor organized by state officials during the cotton harvest.

⁴⁰ US Department of State 2022, [Country Report on Human Rights Practices: Uzbekistan](#)

⁴¹ Tier 2 countries are "Countries whose governments do not fully meet the TVPA's minimum standards but are making significant efforts to bring themselves into compliance with those standards."

⁴² US Department of State (2023) [Trafficking in Persons Report](#)

⁴³ US Department of State 2022, [Country Report on Human Rights Practices: Uzbekistan](#)

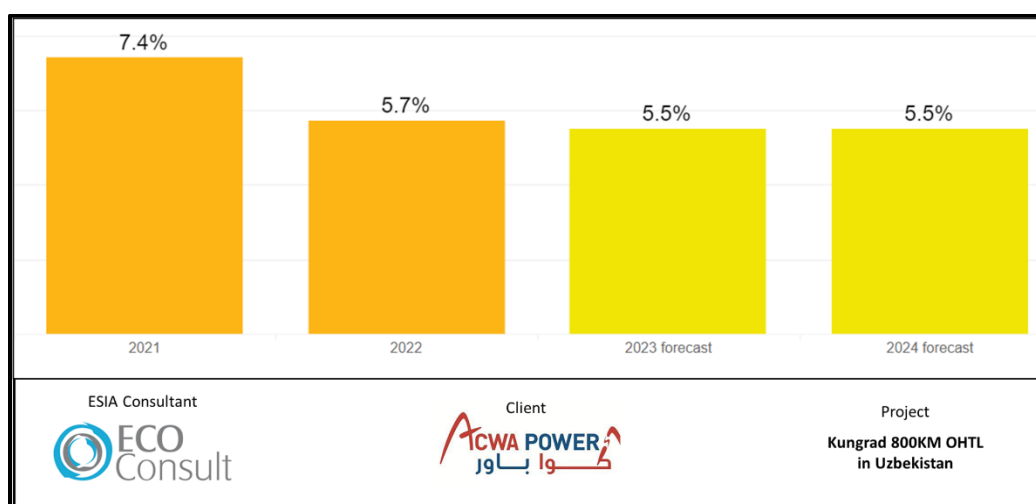


Figure 97: GDP Growth Rate of Uzbekistan (ADB, 2023)

14.2.1 The Region of Khorazm

Khorazm, oft described as Uzbekistan's oldest and most unique region, is located in the northwest of the country, near the Amu Darya River and Aral Sea; and bordering Turkmenistan, Karakalpakstan and the Bukhara region. As of 2023, it is estimated that the region has a population of roughly 2 million people, with roughly 67% of the region's population living in rural areas. As of 2018, the region had an average age of population of 28.00 years old and a life expectancy at birth of 72.21 years old⁴⁴.

Table 67: Ethnic Groups of the Khorazm Region

Ethnic Group	Description
Uzbeks	The majority ethnic group in Khorazm, as in much of Uzbekistan. Uzbeks in Khorazm often maintain strong cultural traditions and practices unique to the region.
Karakalpaks	Originally from the autonomous republic of Karakalpakstan to the north, some Karakalpaks live in Khorazm. They have their own language, which is closely related to Kazakh.
Turkmens	Neighboring Turkmenistan influences the presence of Turkmen communities in Khorazm, especially in areas close to the border. They share linguistic and cultural ties with Turkmens across the border.
Kazakhs	A smaller group within the region, Kazakhs in Khorazm also reflect the historical movements of nomadic tribes across Central Asia.
Russians	As a result of Soviet-era migrations, there is a Russian minority present in the region.
Tatars	Another minority group stemming from historical migrations during the Russian Empire and Soviet periods, contributing to the region's multicultural character.
Others	Includes smaller numbers of other ethnic groups such as Tajiks, Koreans, and others, each adding to the cultural diversity of the region.

Economy of the Region

The economy of Khorazm has traditionally been based on agriculture, primarily cotton and silk production, which still plays a significant role in the region's economy. However, the push towards diversification has

⁴⁴ Knoema (2021), Demographic Statistics of Uzbekistan

led to exploring renewable energy, thus aligning with Uzbekistan's national goals to increase renewable energy capacity. The government of Uzbekistan has been actively promoting green energy projects, with a focus on reducing dependency on natural gas and oil. Agriculture is the heartbeat of Khorazm's economy. The region's fertile soil and the availability of water from the Amu Darya River make the cultivation of a variety of crops ideal in the region. Cotton and rice are the principal crops, underpinning the region's agricultural output. However, this dependence on high-water-demand crops has led to significant water management challenges. In addition to cotton and rice, Khorazm also produces fruits (mainly melons and citrus), vegetables, and grains, which support the local economy and food supply. Like much of Central Asian region, Khorazm faces serious challenges with water scarcity, which are often exacerbated by the inefficient use of water for irrigation in agriculture, primarily cotton cultivation. The mismanagement of water resources not only impacts agricultural productivity but also leads to environmental degradation, including soil salinity and pollution. These environmental issues have direct and indirect effects on public health and the sustainability of local agriculture.

With Khorazm being predominantly an agricultural region, the region is plagued by economic disparities largely influenced by the seasonal nature of agricultural work which does not provide consistent employment throughout the year. This results in significant unemployment and underemployment, particularly during the off-season for farming. The lack of diverse job opportunities outside agriculture compounds this issue, leading to poverty and economic insecurity for many residents.

14.2.2 *The Region of Bukhara*

Situated in the southwestern part of Uzbekistan, the Kyzyl Kum desert takes up a large portion of the region's territory, thus, Bukhara features an arid climate with hot summers and cold winters. The region borders Turkmenistan and the Uzbek regions of Karakalpakstan and Khorazm. As of 2022, it has an estimated population of roughly 2 million people, with 63% of its residents living in rural areas. In 2018, the average age of the population in this region was 29,70 years old, with an estimated life expectancy at birth listed at 74 years old.

Table 68: Ethnic Groups of the Bukhara Region

Ethnic Group	Description
Uzbeks	The majority ethnic group in Khorazm, as in much of Uzbekistan. Uzbeks in Khorazm often maintain strong cultural traditions and practices unique to the region.
Tajiks	A significant ethnic group in the region, many of whom are bilingual in Tajik and Uzbek.
Turkmens	This group mainly resides in the outskirts and rural areas of Bukhara. They maintain distinct cultural practices and often engage in traditional crafts and agriculture.
Kazakhs	A small ethnic minority in Bukhara.
Russians	Representing a smaller proportion, Russians in Bukhara are generally descendants of those who moved during the Russian Empire and Soviet periods.
Karakalpaks	Although primarily based in Karakalpakstan, there are small communities in areas like Bukhara due to historic migrations and economic movements.
Others	Includes various other small groups such as Koreans, Armenians, and others, contributing to the multicultural character of Bukhara.

Economy of the Region

The economy of the Bukhara region is diverse, encompassing traditional sectors such as agriculture and textiles, while also gradually incorporating more modern industries like tourism and energy, particularly renewable energy.

Agriculture is a cornerstone of Bukhara's economy, with the region benefiting from fertile land and a climate conducive to growing a variety of crops. Cotton has traditionally been the dominant crop, playing a central role in the local economy due to its demand both domestically and internationally. Besides cotton, Bukhara is also known for its production of silk, a heritage that dates back to its days as a vital node on the Silk Road. The region also grows fruits (notably melons and grapes), vegetables, and cereals, supporting both local consumption and exports.

The region is involved in the extraction and processing of natural resources, including natural gas and oil, which are significant to the regional and national economy. Bukhara's proximity to significant hydrocarbon reserves has led to the development of several oil and gas fields. Additionally, the Uzbek government's push towards renewable energy sources has begun to spotlight potential investments in wind and solar power, given the region's favorable climatic conditions for these technologies.

Whilst the region benefits from tourism and natural resources, the wealth generated is not always evenly distributed across the population. Rural areas, in particular, face higher levels of poverty compared to urban centers. Many rural residents depend primarily on agriculture for their livelihood, which can be unstable due to fluctuating commodity prices and environmental issues like water scarcity. This disparity leads to limited access to healthcare, education, and other essential services in rural communities.

14.2.3 Autonomous Republic of Karakalpakstan

Karakalpakstan, officially the Republic of Karakalpakstan, is an autonomous republic in the northwestern region of Uzbekistan. The republic has a population of approximately 2 million people, and the people are largely split between the ethnic groups of Uzbek or Karakalpak. Table 69 illustrates a comparison of the ethnic groups of Uzbekistan and Karakalpakstan.

Table 69: Ethnic Groups of Uzbekistan and Karakalpakstan

Ethnic Group	Uzbekistan	Karakalpakstan
	Percentage	Percentage
Uzbek	83.8%	40.4%
Tajik	4.8%	-
Kazakh	2.5%	15.4%
Russian	2.3%	-
Karakalpak	2.2%	37%
Tatar	1.5%	-
Other	2.9%	7.2%

Whilst the economy of the region used to be heavily dependent on fisheries in the Aral Sea, the contemporary economy of Karakalpakstan is predominantly based on agriculture. Cotton, rice and melons are important components of the agricultural base, with fruits such as plums, pears, grapes and apricots being important crops in the region.

14.2.4 Aral Sea: Environmental, Health and Vulnerability Overview

The Aral Sea played an important role in the development of the economies of both Uzbekistan and the Republic of Karakalpakstan. The Aral Sea was a crucial factor in the regions' productive sectors, in ensuring employment of the population, and in the formation of a sustainable social infrastructure. Fertile lands of the Amudarya and Syrdarya rivers' delta, as well as highly productive pastures provided jobs to tens of thousands of people in the field of livestock, poultry, and growing crops. Problems of the Aral Sea arose and took on alarming scales in the 1960s as a result of extreme regulation of the major transboundary rivers of the region - the Syrdarya and the Amudarya (UN Multi-Partner Human Security Trust Fund for the Aral Sea Region, 2023). Significant population growth, the scale of urbanization and intensive development of lands, construction of large hydrotechnical and irrigation facilities on the water-streams of the Aral Sea basin, without taking into account environmental consequences, were main factors of the Aral Sea's drying out.

Rise in Unemployment

The Aral Sea drying up has caused a complex set of environmental, socio-economic and demographic problems in the Aral Sea region and has resulted in several negative consequences. In the past, the Aral Sea was one of the richest fishing grounds in the world: the annual catch of fish in the reservoirs of the Aral Sea was approximately 30-35 thousand tons (UN Multi-Partner Human Security Trust Fund for the Aral Sea Region, 2023). More than 80 % of the inhabitants of the Aral Sea coast were engaged in the extraction, processing and transportation of fish and fish products. The loss of the fishing and transport potential of the sea resulted in the dismantling of industries such as fish processing and ship repair, tens of thousands of people became unemployed.

Health Issues

The most acute issue is the access of the population to high-quality drinking water. More than half of the population of the Aral Sea region, especially inhabitants of rural settlements, have to use insufficiently purified and highly mineralized water. According to official statistics, the provision of centralized water supply for apartments in the Republic of Karakalpakstan for 2006-2016 decreased from 71.3% to 66.6% (UN Multi-Partner Human Security Trust Fund for the Aral Sea Region, 2023).

Water pollution and a large volume of dust and salt rising up from the bottom of the dried Aral Sea have played a core role in the high rates of deceases, general and infant mortality, as well as high rates in a number of somatic diseases: anemia, kidney disease, gastrointestinal disturbances, an increase in the level of respiratory diseases, blood diseases, cholelithiasis, cardiovascular and oncological diseases.

Over the last decade, the infant mortality rate in the Republic of Karakalpakstan has exceeded the same indicators for the Republic of Uzbekistan by 13%, maternal mortality by 17% on average. The death rate from tuberculosis in the Republic of Karakalpakstan remains the highest in the country (19.4 cases per 100,000 population) and almost three times higher than the average for Uzbekistan (UN Multi-Partner Human Security Trust Fund for the Aral Sea Region, 2023).

Impact on Farmers in the Region

Salinization of soil by windborne salt caused by the drying of the Aral Sea is impacting crop health, with farmers flooding their fields at the beginning of each season to leach the salt from the upper layers prior to planting.

Sustainable agricultural development in Karakalpakstan depends mainly on the state of land and water resources. According to official estimates, half of the irrigated land is below the average, and over the past

decade, agricultural land shrank by 177.1 thousand hectares. In general, the reduction of pastures and the decline in land productivity, the reduction in the area of vegetation, and the drying out of lakes have caused the loss of more than 100,000 jobs in various sectors of the economy in recent years.

According to the results of a survey conducted by the Institute for Social Researches, findings revealed that the economic potential of the region, in particular the one of the Republic of Karakalpakstan, was ranked last in terms of its economic potential, agricultural production, and retail commodity turnover and penultimate in terms of its production of consumer goods. Thus, the total per capita income in Karakalpakstan is 1.4 times lower than the average for Uzbekistan. Karakalpakstan is ranked 12th among the 14 regions of the country by volume of products and services indicators, the number of small businesses, and exports per capita, which features the level of entrepreneurship development.

Ensuring food security in the Republic of Karakalpakstan has its own specific features related to the state of land and water resources, environmental challenges, the level of socio-economic development, access to transport, and the capacity of food markets. For approximately sixty percent of the households in the region, the affordability of food products is low. In most districts, households have private backyard plots where they grow vegetables, fruits and melons and keep cattle. The products produced on household plots are mainly consumed by the households themselves and only one-tenth of it is sold (UN Multi-Partner Human Security Trust Fund for the Aral Sea Region, 2023).

Interventions

Any impact of any intervention must be considered as being cumulative on top of being an existing disturbed, and worsening situation. All households in Karakalpakstan are defined as generally vulnerable. The drying up of the Aral Sea has caused the salinization of soils due to airborne salt from the Aral seabed, and airborne pesticides and herbicides in Karakalpakstan, with resulting health implications for residents of the region. Furthermore, irrigation water shortages are leading to increasingly challenging farming conditions, with resulting impacts on income and food security in the area. Accordingly, all project-affected parties in Karakalpakstan have inherent vulnerability due to these existing and worsening harsh environmental conditions. See section 8.3 for a full breakdown of vulnerable households and interventions.

14.3 Household Survey Findings

This section is based on detailed socio-economic baseline that was undertaken as part of the Livelihood Restoration Plan (LRP) for the OHTL. Please refer to the LRP for additional details on the socio-economic baseline.

14.3.1 Population and Demographic Characteristics

The households that were interviewed for the socio-economic surveys were located in several separate districts, with the majority of the households being located within the Kanlykul and Nukus District's. Table 70 illustrates the geographical makeup of the interviewed households.

Table 70: Location of Interviewed Households

District	Count	Percentage
Nukus	46	43
Kanlykul	40	37.4
Karakul	8	7.5

Zhondor	3	2.8
Beruni	1	0.9
Karauzyak	1	0.9
Other	8	7.5
Grand Total	107	100

The figure below provides an illustration of the age distribution of the household members that were identified in the socio-economic survey. It shows that the affected population is a young population, with 71.2% of the household members interviewed being under the age of 40. The most frequently occurring age demographic is the 0-9 range, with 23.14% of the total household members interviewed falling in this category. Regarding the highest and lowest ages identified in the survey population, there are two household members born in 2023 and have not reached their first birthday yet, whilst the oldest household member identified was 79 years old. Of the Households interviewed, the household members are made up of 300 females and 312 males.

In 2017, the median age of the population of Karakalpakstan was 27.7, whilst nationwide in Uzbekistan, the median age was 28.5, illustrating a lower average age within Karakalpakstan. This translates into the Project area, with 71.2% of surveyed household members within the Project area being under the age of 40 years old. This indicates the youthfulness of the household members.

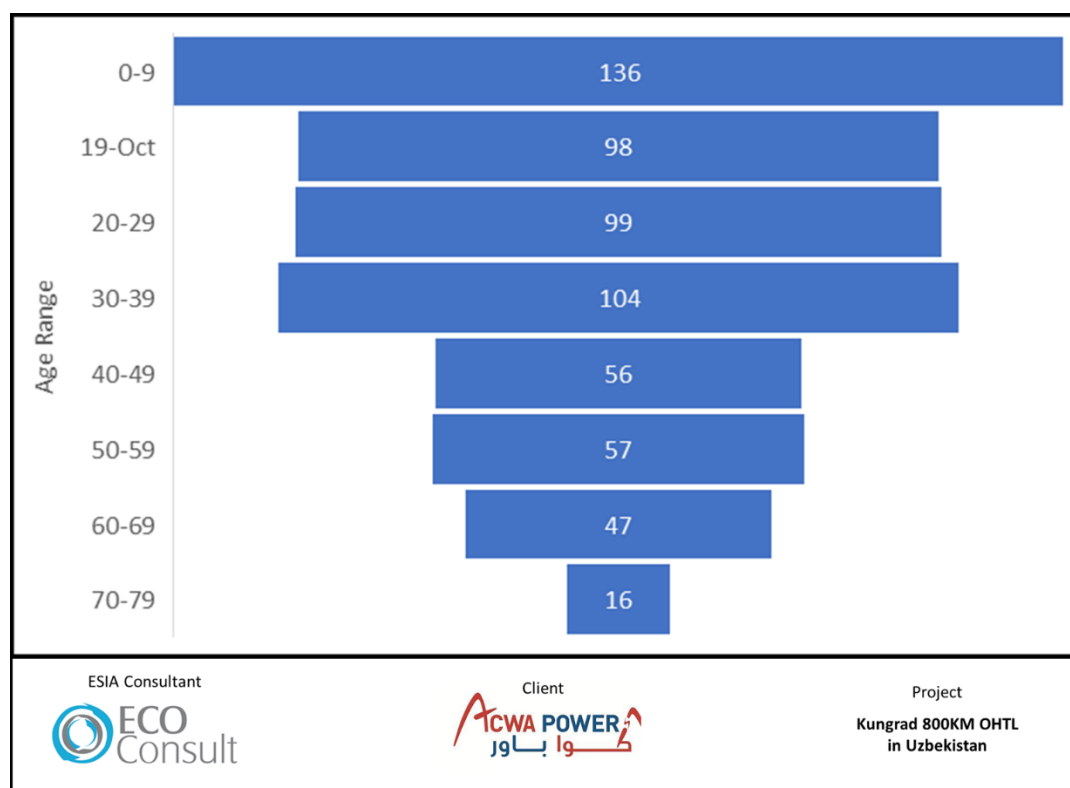


Figure 98: Age Range of Household Members

Table 71: Breakdown of Age by Count and Total Percent

Age Group	Count	Percent
0-9	136	22%
10-19	98	16%

20-29	99	16%
30-39	104	17%
40-49	56	9%
50-59	57	9%
60-69	47	8%
70-79	16	3%
Grand Total	613	100

The breakdown of age from a district perspective can be seen in Table 72 below. Statistically, the district with the youngest population is Zhondor, with an average age of 26.22 years old. The district with the oldest population is Nukus, with an average age of 30.17 years old.

Table 72: Age per District

District	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	Average
Kanlykul	77	29	54	38	21	32	24	3	28.15
Nukus	49	53	35	51	29	24	17	9	30.17
Karakul	12	11	8	8	2	3	4	4	27.5
Zhondor	6	2	5	1	2		2		26.22
Total	144	95	102	98	54	59	47	16	28.01

Of the project-affected people interviewed, 50.9% of the project-affect population are made up of males, with there being 313 males and 300 females. There are 9 people, 6% of the surveyed household members, who have a physical or mental disability.

Table 73 below indicates the household distribution per district, with 107 household heads having been identified. Of the household heads interviewed, 100% identified their religion as Islam.

Table 73: Surveyed Household Distribution per District

District	HH Head	HH Members	Average per HH	Spouse of HH	Son/Daughter
Kanlykul	46	230	5	43	87
Nukus	50	223	4.46	44	114
Karakul	8	50	6.25	8	18
Zhondor	3	17	5.66	2	6
Total	107	520	21.37	97	225

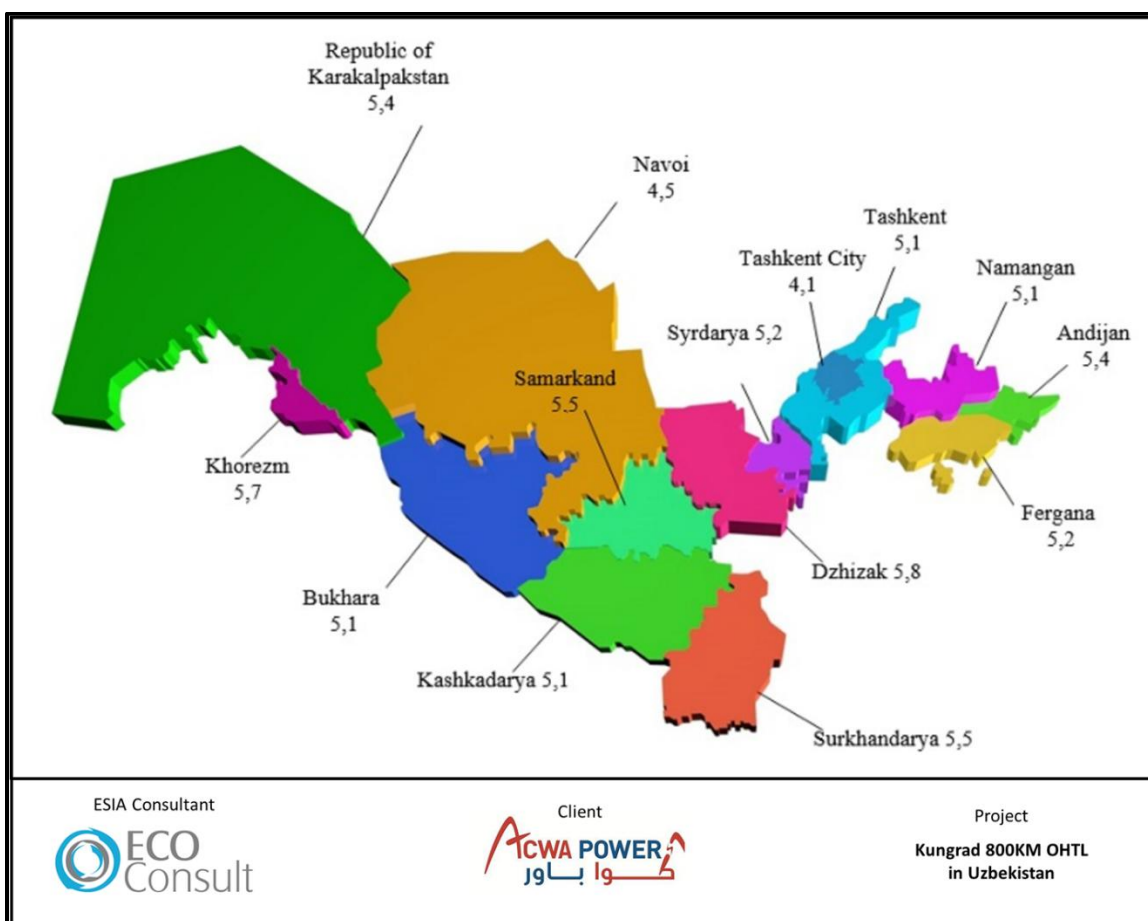


Figure 99: Average Number of Household Members in Uzbekistan's Regions

Figure 99 illustrates a breakdown of the average number of household members per region in Uzbekistan (Statistics Agency Uzbekistan, 2020). The average number of household members per household in Karakalpakstan was 5.4 whilst the average number of household members per household in the Project area was 5.34 which illustrates a consistent average.

Table 74 provides data on the ethnicity, language, and religion that the household heads identify with. Karakalpak is the most common ethnic in the districts of Kanlykul and Nukus, whilst the household heads in Zhondor identify as Uzbek. A similar pattern can be seen regarding the selection of the household heads primary language, with the household heads in the districts of Kanlykul and Nukus predominantly speaking Karakalpak, whilst in Zhondor, the most spoken language is Uzbek. All household heads indicated that they follow Islam.

Table 74: Ethnicity, Language and Religion - Household Head

ID	Ethnicity			Language			Religion
District	Karakalpak	Uzbek	Kazakh	Karakalpak	Uzbek	Kazakh	Islam
Kanlykul	97%	3%		97%	3%		100%
Nukus	75%	15%	10%	80%	11%	9%	100%
Karakul		100%			100%		100%
Zhondor		100%			100%		100%

The marital status of the household members is detailed in Table 75. Most households that were interviewed, indicated that they are married.

Table 75: Marital Status

District	Married	Single	Widowed	Divorced	Living Together
Kanlykul	56.72%	41.45%	1.45%	0.36%	
Nukus	54.1%	43.65%	1.19%	1.19%	
Karakul		2%			98%
Zhondor					100%

Health

Table 81 below indicates the household members that suffer from some form of disability or chronic illnesses. Of the household members who have indicated that they have a chronic illness or physical mobility issue, four of those identified are the heads of their respective households. Those that selected the 'Other' option for this question have indicated that they have illnesses such as anemia, diabetes, hypertension, are bed ridden and one indicating that they did not feel comfortable revealing their issue.

Table 76: Disabilities and Chronic Illness

District	Chronic Illness	Physical Mobility	Sight	Intellectual Learning	Other	None	% of Members with a Disability
Kanlykul	6	2	3	0	3	260	5.1
Nukus	5	4	1	0	4	250	5.3
Karakal	2	1	1	1	2	43	14
Zhondor	0	0	0	1	0	17	5.55
Total	13	7	5	2	9	570	7.48

Education

School education is divided into two stages in Uzbekistan. The first stage includes nine years of compulsory schooling with the same programs all over Uzbekistan. The second stage (grade 10–11) covers education and vocational training after nine years. It includes general secondary education and specialized secondary education. Young people receive general secondary education while staying in school for the tenth and eleventh grades. Upon successful completion, they get a Certificate of Complete Secondary Education (University of Stirling, 2023).

Table 77 below indicates the education level of the project affected population interviewed. The most popular choice of education identified is that of a secondary specialized vocation, with 216 household members finishing this level of education. Those who have selected the 'Other' option are still pupils in school, thus have not completed a secondary level of education yet.

Table 77: Education Levels

District	Finished preschool	Finished general secondary	Unfinished higher education	Finished secondary specialized vocational	Finished higher education	Other	None
Kanlykul	7.63%	2.54%	6.2%	0,4	13.1%	10.9%	19.63%
Nukus	2.9%	6.18%	5.1%	32.36%	22.54%	14.9%	13.45%

Karakal	6.122%	14.28%	12.24%	28.57%	8.16%	16.32%	14.28%
Zhondor	5.88%	0	35.29%	17.64%	5.88%	11.76%	23.53%

Table 83 below indicates the education levels of the affected households through a gender lens. More women have finished a secondary specialized vocational education, whilst more men have completed higher education.

Table 78: Education Levels by Gender

Gender	Finished general secondary	Finished higher education	Finished preschool	Finished secondary specialized vocational	Unfinished higher education	Other	None
Male	4.82%	18.32%	5.78%	32.8%	8%	11.9%	18.3%
Female	5.35%	15%	5%	39.1%	5.69%	14.7%	15%

Literacy Rates

Table 84 represents the literacy rates for the respective regions who partook in the socio-economic survey. The literacy rates have been filtered down to illustrate the literacy rates of those aged 6 years old and above.

Table 79: Literacy Rates

District	Able to Read	Not Able to Read	% Able to Read
Kanlykul	217	6	97%
Nukus	233	5	98%
Karakul	41	2	95%
Zhondor	13	1	93%
Total	504	14	97%

Primary Occupations

The figure below the distribution of employment by economic activity throughout Uzbekistan. The largest employment sector is that of agriculture, forestry and fisheries; which also appears to be one of the largest employment sectors of the households within the Project area.

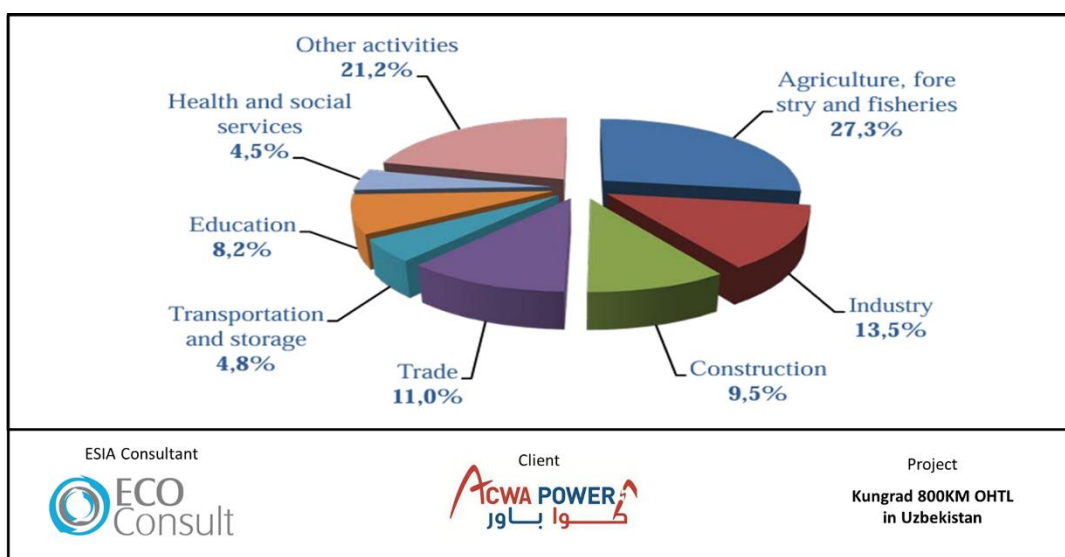


Figure 100: Distribution of Employment by Economic Activity

As per Table 80, commercial farming is the most popular primary occupation in the districts of Kanlykul and Nukus. Household members in Karakul and Zhondor predominantly engage in salaried employment or formal employment. The second most common primary livelihood activity, 'school', illustrates that a large portion of the household members are still students. Regarding the indication of the 'Other' column, the primary occupations identified for this aspect of the primary occupation refers to pensioners, formal employment, kindergarten, students, plumbers, farm workers and teachers.

Table 80: Primary Occupation by District

District	Commercial Farming	General Labor	Housewife	Salaried Employment	Small Trading	School	Subsistence Farming	Too old or sick to work	Other	None
Kanlykul	17%	4%	9%	9%	1%	14%	2%	7%	14%	22%
Nukus	26%	3%	13%	4%	1%	20%	1%	3%	14%	14%
Karakul	0%	0%	34%	6%	0%	2%	0%	0%	8%	50%
Zhondor	0%	0%	18%	12%	0%	0%	0%	0%	6%	65%

Table 81 illustrates the comparative analysis of the primary occupations of household members by gender. Men are overwhelmingly engaged in commercial farming and general labor activities, whilst women are predominantly caring for the household or engage in salaried employment as their primary livelihood activity.

Table 81: Primary Occupation by Gender

District	Commercial Farming	General Labor	Housewife	Salaried Employment	Small Trading	School	Subsistence Farming	Too old or sick to work	Other	None

Male	31%	6%	1%	6%	0%	14%	2%	3%	10%	25%
Female	6%	1%	25%	7%	1%	17%	1%	6%	17%	18%

Table 82 below illustrates the unemployment rates of the household members. This was calculated by analyzing the household members who are above the age of 18 within the Project area that have indicated that they have no primary occupation. The breakdown of the unemployment rate of the household members from a gender perspective indicates that more men, with a rate of 60%, are unemployed than women. According to Macrotrends (2023), Uzbekistan's unemployment rate for 2022 was 6.01%, whilst Karakalpakstan's unemployment rate was last calculated to be 6%. The estimated unemployment rate for the Project affected area is approximately 4,8%, lower than both national and regional rates.

Table 82: Unemployment Rates per District

District	No Primary Occupation	% of District	Male	Female
Kanlykul	7	2	5	2
Nukus	12	4,5	6	6
Karakul	7	14	4	3
Zhondor	4	22,2	3	1
Total	30	/	18	12

Employable Skills

Table 83 illustrates the different employable skills of household member across the districts. No employable skills are the most common answer most household members choosing this response. Regarding tangible employable skills, driving, cleaning and cooking were the most common choices amongst the household members.

Table 83: Employable Skills by District

Skills	Kanlykul	Nukus	Karakul	Zhondor
Administrative	25%	75%		
Carpentry	50%	25%	25%	
Cleaning	56%	39%	3%	1%
Computers	22%	75%	2%	2%
Cooking	42%	42%	16%	
Driving	61%	35%	3%	
Electrical	29%	57%		14%
Gardening	46%	46%	4%	4%
Mechanical	37%	42%	16%	5%
None	44%	39%	13%	4%
Other	25%	75%		
Plumbing	25%	75%		
Sewing	46%	37%	9%	9%
Heavy Equipment Operator		100%		

Table 84 below provides a comparative analysis of employable skills by gender regarding the interviewed household members. There is a clear distinction of skills, with men predominantly focusing on technical skills such as computers and driving; whilst cleaning, cooking and sewing are the prominent skills of women.

Table 84: Employable Skills by Gender

Skills	Male	Female
Administrative	100%	
Carpentry	100%	
Cleaning	3%	97%
Computers	73%	27%
Cooking	2%	98%
Driving	98%	2%
Electrical	100%	
Gardening	85%	15%
Mechanical	100%	
None	50%	50%
Other	25%	75%
Plumbing	88%	13%
Sewing	6%	94%
Heavy Equipment Operator	100%	

Agriculture and Livestock

Table 85 illustrates that the most common livestock kept is that of sheep. Zhondor has the quantity of sheep with 2510 in the district. The second most livestock kept is cattle with a total of 982 heads of cattle across the districts; and Kanlykul keeping the most cattle statistically with 509 cattle.

Table 85: Livestock per District

District	Cattle	Chickens	Sheep	Donkeys	Horses	Goats	Camels	Ducks	Rabbits	Total
Kanlykul	509	350	1210	7	74	84				2234
Nukus	304	255	505		129	90	110			1393
Karakal	130	300	252			79		60	15	836
Zhondor	39	30	2510							2579
Total	982	935	4477	7	203	253	110	60	15	7042

Table 86 provides a breakdown on the income sources of the households in different districts. The most common income source is the sale of crops, with the Nukus District household heads predominantly engaging in this activity.

Table 86: Income Source per District

District	Crop Sales	Cotton	Casual Labor	Sale of Livestock	Employment	Sale of Vegetables	Sale of Fruit	None
Kanlykul	39	1	2	1				3
Nukus	45	3	2	1	3	1	1	
Karakal	3	4		4				
Zhondor	1	1		2				
Total	88	9	4	8	3	1	1	3

Women livelihoods

Table 87 illustrates that the most common occupation of the women interviewed is that of a housewife, with approximately 25% stating that they are housewives, with men (31%) primarily being commercial farmers.

Table 87: Primary Occupations by Gender

District	Commercial Farming	General Labor	Housewife	Salaried Employment	Small Trading	School	Subsistence Farming	Too old or sick	Other	None
Male	31%	6%	1%	6%	0%	14%	2%	3%	11%	25%
Female	6%	1%	25%	8%	1%	17%	1%	6%	17%	18%

Whilst female headed households have been identified and will be monitored, due to the impact being on commercial agriculture, and only impacting a minor % of the farmland, it is not possible to disaggregate gender impacts on the livelihoods of women within the Project Area. However, as with most livelihood restoration projects, women are not recorded as owners of assets and therefore have less control over the decisions regarding the use of compensation.

14.3.1 Household Survey Findings: Expectations and Concerns

Table 88: Concerns and Expectations in the Region

Region	Key expectations	Concerns
Karakalpakstan	1. Community development and upgrading of facilities. 2. Jobs and employment. 3. Farming equipment. 4. Overall sense of excitement in the region for the Project.	1. Loss of income. 2. Loss of farmland. 3. Health issues from power-lines. 4. Cadastral data might be incorrect.
Bukhara	1. Project will be successful. 2. Overall enthusiasm for the Project in the Bukhara region. 3. Accurate compensation	1. Loss of land. 2. Want replacement land in another area.
Khorazm	1. Support the Project and understand that it should bring growth and development with it. 2. Will improve income with compensation. 3. Employment opportunities	1. Concerns over little compensation. 2. Concerns over losses. 3. Concerns over damage to land.

14.3.2 Vulnerable Groups

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 89: 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.
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.
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 benefits as well as social development opportunities (e.g. employment) usually as a result of discrimination, economic and social disadvantage and other. 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. ▪ <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. ▪ <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. ▪ <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. ▪ <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. ▪ <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. 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.

People living in poverty / underprivileged communities	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.
The Aged	Could be considered vulnerable by limitations of access to participate in the Project related community decision-making process.
The Youth	Could be considered vulnerable due to their young adult, unmarried, non-asset owning status, yet likely to be savvier in 21st century technology than their elders, but may be unable to contribute to Project related community decision-making process, which will affect their generation more than most.
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.

Vulnerable Identification and Special Measures

Additional analysis has been undertaken on vulnerable identification. The below analysis has been based on a detailed socio-economic baseline that was undertaken as part of the Livelihood Restoration Plan (LRP for) for the OHTL component. Please refer to the LRP for additional details on the socio-economic baseline.

This section identifies vulnerable households from the sample of 107 of the 232 households that participated in the socio-economic baseline study. The number of vulnerable households has been extrapolated to the population, with a total estimated 54 vulnerable households. A total of 25 specific households have been identified as vulnerable households, representing 23% of the 107 households interviewed. There are an estimated 71 vulnerable individuals: 62 vulnerable individual adult persons and an additional 9 vulnerable children (disability/chronic illness). The 54 vulnerable households include an estimated total of 307 household members (including the 62 adult vulnerable individuals and 250 dependents). The 250 dependents are vulnerable by virtue of their dependence on vulnerable adults. The table below overleaf summarizes the vulnerable households by category, noting that none meet the definition of critically vulnerable.

Table 90: Vulnerable People Identification

Vulnerability Category	Number of Households	Number of adult vulnerable individual persons	Number of vulnerable children	Number of dependent individual persons
Critically Vulnerable Households	0	0	0	0
Vulnerable Households	54	62	9	250

The table below presents a summary of the specific vulnerable households within the Project Area. The households in the table below are anonymized through the allocation of an identity number for privacy reasons.

Table 91: Vulnerable Household Identification

Anonymous HH ID	Type of Vulnerability	Vulnerable Status
1	Elderly female Headed Household	Vulnerable
2	Elderly female Headed Household	Vulnerable
3	Elderly Headed Household	Vulnerable
4	Elderly Headed Household	Vulnerable
5	Widow	Vulnerable

6	Chronic illness	Vulnerable
7	Chronic illness	Vulnerable
8	Diabetes mellitus	Vulnerable
9	Physical mobility	Vulnerable
10	Female Headed Household	Vulnerable
11	Female Headed Household	Vulnerable
12	Female Headed Household	Vulnerable
13	Female Headed Household	Vulnerable
14	Female Headed Household	Vulnerable
15	Female Headed Household	Vulnerable
16	Female Headed Household	Vulnerable
17	Female Headed Household	Vulnerable
18	Female Headed Household	Vulnerable
19	Female Headed Household	Vulnerable
20	Female Headed Household	Vulnerable
21	Female Headed Household	Vulnerable
22	Single Headed Household	Vulnerable
23	Single Headed Household	Vulnerable
24	Single Headed Household	Vulnerable
25	Single Headed Household	Vulnerable

Regarding vulnerable individuals from the survey data, these are the individuals that are not household heads but are living within a household within the Project area, there are a total of 33 individuals who are suffering from a chronic illness or disability. Of the 33 individuals, 29 are above the age of 18, whilst 4 individuals are considered to be children. The table below provides a breakdown of the individual vulnerability from the survey data.

Table 92: Vulnerable Individuals

Type of disability	No of Individuals in non-vulnerable HH	Extrapolation	Adults	Extrapolated	Children (u/18)	Extrapolated
Chronic Illness	11	23,54	10	21,4	1	2,14
Physical Mobility	8	17,12	8	17,12		0
Sight	5	10,7	4	8,56	1	2,14
Diabetes mellitus	2	4,28	2	4,28		0
Hypertension	2	4,28	2	4,28		0
Anemia	1	2,14		0	1	2,14
Choose not to say	2	4,28	2	4,28		0
Intellectual Learning	2	4,28	1	2,14	1	2,14
Total	33	71	29	62	4	9

14.3.3 Indigenous Populations

A common consideration across the two main Project components of the windfarm and the OHTLs, is a consideration of potential impacts on Indigenous Peoples (IPs). This section is applicable to both components. It is noted however, that there is no human settlement or economic activities with the

windfarm site or within a 100kms of that site. Consequently, there are no IPs that may be impacted by that component of the Project of this issue. By contrast there are people resident and conducting economic activities within and the OHTL site areas and surrounding areas. The assessment is presented in this subsection.

The architecture of international law and conventions on indigenous peoples is framed by the United Nations Declaration on the Rights of Indigenous Peoples, adopted by the General Assembly on 13 September 2007.⁴⁵ The multilateral international financial institutions such as the Asian Development Bank, the World Bank, the International Finance Corporation and the European Bank of Reconstruction and Development, have incorporated considerations of indigenous peoples into their performance standards and guidance to developers and practitioners addressing involuntary resettlement and its associated impacts on project affected people. In this project the ADB's requirements are the primary reference.

ADB Safeguard Requirement

The ADB's Safeguard Policy Statement Safeguard Requirement 3, Indigenous Peoples (SR 3), outlines the scope of application of this requirement. "For operational purposes, the term Indigenous Peoples is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees:

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

The overall Project is located within the Republic of Karakalpakstan, which is an autonomous republic in the northwestern region of Uzbekistan. The republic has a population of approximately 2 million people, and the people are largely split between the ethnic groups of Uzbek or Karakalpak - Uzbek – 40.4 %; Karakalpak – 37 %; Kazakh – 15.4 %; other – 7.2 %. Within Uzbekistan as a whole, Uzbeks constitute 83.8 % and Karakalpaks 2.2 % of the population⁴⁶

A first step is to determine whether or not there is an Indigenous population in Karakalpakstan in general and in the project sites and surrounding areas where they may be impacted by the Project (both the windfarm and the OHTL components.) Note that if there are no indigenous People in Karakalpakstan then there will not be any within the Project area and surrounding areas.

To establish whether there were any indigenous groups in the Project area and context, regard was had to statements by specialist non-governmental organizations such as the World Rights Group International (WRGI). In its World Directory of Minorities and Indigenous Peoples, ⁴⁷WRGI notes that "according to official estimates updated in 2017, out of a total of 32.1 million people, the ethnic Uzbek majority totaled

⁴⁵ https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

⁴⁶ Section 15.2.2 Autonomous Republic of Karakalpakstan in this Windfarm ESIA report.

⁴⁷ <https://minorityrights.org/country/uzbekistan/> (accessed online 17 December 2023)

just over 26.9 million (83.8 per cent of the population) while ethnic Tajiks made up 1,544,700 (4.8 per cent).

Other sizable minorities include Kazakhs 803,400 (2.5 per cent), Russians 750,000 (2.3 per cent), Karakalpaks 708,800 (2.2 per cent), Kyrgyz 274,400 (0.9 per cent), Tatars 195,000 (0.6 per cent), Turkmens 192,000 (0.6 per cent), Koreans 176,900 (0.6 per cent) and Ukrainians 70,700 (0.2 per cent). Other minorities include Meskhetian Turks and Jews.”

Karakalpaks are stated as being a minority group even in the Republic of Karakalpakstan: “Ethnic Karakalpaks represent about a third of Karakalpakstan’s population, and a very slight proportion of the country’s total population.” WRGI notes that many of the minorities “such as Russians, Crimean Tatars” are recent migrants to the country. Hence not all minority ethnic group are indigenous.

It is important to note that the WRGI, in a section on Karakalpaks states “Because of a special autonomy arrangement granted to the Republic of Karakalpakstan, the Turkic-speaking Karakalpaks have in legal and practical terms much greater protection of their rights and in the use of their language.”

The WRGI identifies the Karakalpaks as “native to the region” and “a threatened minority” people who have high levels of poverty and low levels of health. Their circumstances are mainly due to the “ecological catastrophe” of the reduction in the South Aral Sea by 90 %, dispersal of salts across the agricultural lands and local effects of climate change.

A second important source referenced in answering the question of whether there is an Indigenous population in Karakalpakstan is the social safeguards study undertaken for the Uzbekistan Surgil Natural Gas Chemicals project and issued as the Social Safeguards Audit Report dated January 2012.⁴⁸ It explores “the extent to which the Karakalpaks could be considered to meet the ADB definition of Indigenous Peoples (IPs) and therefore the potential for triggering ADB SR3 on IPs”.

The Audit Report contains a review of the Karakalpak ethnic group against an assessment of the applicability of each of the characteristics of Indigenous Peoples as defined in SR 3 and quoted above. Its conclusions are summarized below:

1. Self-identification – “the Karakalpaks meet the defining ADB characteristic of cultural distinctiveness, whilst recognizing that that this cultural identity is not reflected in nationalist ambitions or segregation from other ethnic groups on a day-to-day basis. Although Karakalpaks are considered to be culturally distinct they are socio-economically integrated with other ethnic groups within Uzbek society.”⁴⁹

2. Collective attachment – “whilst the Karakalpaks do have a collective attachment to Karakalpakstan as a whole, and in some cases specific areas, this attachment does not translate into cultural practices and or pilgrimages to these areas away from their homes (which are largely in urban or semi-urban areas). Furthermore, Karakalpaks do not have a collective attachment to any of areas in the Project footprint. In conclusion, Karakalpaks are not thought to meet this characteristic of IPs in relation to this Project, and therefore the Project would not trigger ADB SR3 on the grounds of having impacts on the ‘territories or natural or cultural resources’ that Karakalpaks ‘own, use, occupy or claim as their ancestral domain’ (ADB SR3 Paragraph 9”).⁵⁰

⁴⁸ UZB: Surgil Natural Gas Chemicals Social Safeguards Audit Report January 2012.

<https://www.adb.org/sites/default/files/project-documents/44944-01-uzb-sa.pdf>

⁴⁹ Section 3.2.1 Identification as Members of a Distinct Indigenous Cultural Group

⁵⁰Section 3.2.2 Collective Attachment to Geographically Distinct Habitats or Ancestral Territories

3. Separate customary cultural, economic, social, or political institutions – “the Karakalpaks are considered to share and participate in the same socioeconomic and governance institutions of mainstream society, within which a number of ethnic groups are politically and economically integrated in accordance with Soviet traditions. The clan and tribe is the distinctive socio-cultural institution of Karakalpaks, which has different practices from modern Uzbek society, the most notable of which is exogamy. However, other ethnic minorities in the project area, such as Kazakhs also share the practice of exogamy and it is not considered uncommon or unusual. Overall, it is concluded that the Karakalpaks do not meet this third defining characteristic of IPs. The one area where there could potentially be grounds for triggering SR3 in relation to the presence of this characteristic would be if the project would affect the socio-cultural institution of the tribe or the clan, however such potential impacts are not considered to be likely as a result of the Project.”⁵¹

4. A distinct language – “Specialists consulted to inform this ESIA stated that having a separate language does differentiate the Karakalpaks from other ethnic groups and mainstream society, and that this language is used in day-to-day interactions between Karakalpaks.¹⁹ However Karakalpaks can all speak Uzbek and or Russian, and in some cases in urban areas they cannot speak Karakalpak.”⁵²

The overall conclusion of the Social Safeguards Audit Report is that “the Karakalpaks meet the fourth defining characteristic of ADB’s definition of indigenous people as they have a distinct language that is different from the official language of the country. Karakalpaks meet the first and the fourth defining ADB characteristics of IPs in relation to having a distinct cultural identity and language respectively, however the project is not expected to affect either of these characteristics and therefore SR3 is not triggered on these grounds. In relation to the second defining ADB characteristic of collective attachment to geographically distinct territories in the project area; whilst Karakalpaks have a collective attachment to Karakalpakstan as a whole and to the homelands of their forefathers, they do not have a collective attachment to any specific area within Karakalpakstan. Therefore, overall, the Karakalpaks do not meet this defining characteristic.

Considering the third defining ADB characteristic, it is concluded that the Karakalpaks do not have separate economic or political institutions. They do have distinct socio-cultural and customary institutions in the form of the tribe and clan and the related practices, most notably of exogamy. However, the practice of exogamy is also shared by other members of society in the project area such as ethnic Kazakhs. The project is not expected to affect the tribe or clan structure, or the related socio-cultural practices, therefore SR3 will not be triggered on the grounds of this characteristic.

Overall, the Karakalpaks do not meet all four of the ADB’s defining ADB characteristics of IPs as defined in paragraph 6 of SR3 and it is therefore concluded that they are not IPs according to the ADB definition.”⁵³

The OHTL project site

The Livelihoods Restoration Plan for the OHTL component of the Project notes that the OHTLs run within the Khorazm Region and the Bukhara Region of Uzbekistan. With regard to the Khorazm Region, “95.5% of people in Khorazm call themselves Uzbek; the highest percentage in Uzbekistan.”⁵⁴ Similarly in the Bukhara Region, Karakalpaks are not noted as a significant ethnic minority: “The Bukhara region has always been ethnically diverse in origin, mainly populated by Uzbeks and Tajiks. Other notable minorities of the

⁵¹Section 3.2.3 Separate Customary Cultural, Economic, Social, or Political Institutions

⁵²Section 2.4 Distinct language that is Different from the Official Language of the Country or Region

⁵³Section 3.2.5 Conclusion

⁵⁴<http://www.khiva.info/gb/people/people.htm#:~:text=Nowadays%2095.5%25%20of%20people%20in,descendants%20of%20other%20races%20predominate.>

region include the Bukharan Jews and the Iranians (Persian-speaking Shia descendants of residents of Merv expelled in late 18th century)".⁵⁵

No indigenous groups have been identified in the areas through which the OHTLs will be constructed.

The overall conclusion is that there are no indigenous groups within the Project sites and the surrounding areas. Consequently, it is concluded that the Windfarm and OHTL components of the Project will not impact Indigenous People as defined under ADB Social Safeguards Policy SR 3.

14.4 Assessment of Potential Impacts

Employment and Procurement

14.4.1 Employment and Procurement Opportunities

During the construction phases, the Project is expected to create around 1,000 job opportunities at peak during the construction phase for a duration of approximately 24 months. This will mainly include 450 skilled job opportunities (to include engineers, technicians, consultants, surveyors, etc.) and 550 semi-skilled and unskilled job opportunities (such as laborers, security personnel, housekeeping, etc.).

During operation there will be no employment opportunities given that all O&M activities are expected to be handed by internal staff from NEGU as applicable.

Taking the above into account, the Developer is aiming to hire local community members to the greatest extent possible throughout the construction phase for skilled and unskilled jobs. The Developer is committed to adhering to transparent recruitment procedures which includes local community members.

However, the EPC Contractor has not been selected at this stage, and therefore there are no details available on the number of job opportunities targeted to local communities, type of jobs, duration, etc. In addition to the above, the local communities could also be engaged in procurements such as local contractors, local supply of equipment and machinery, cleaning services, etc.

Taking the above into account, the Developer is committed to ensuring that priority for job opportunities and procurement activities where relevant are targeted to the local communities.

The above could also entail other indirect positive benefits to the local community from increase in demand for local services, supplies, and businesses. This could include for example possible engagements for supplies and service providers (accommodation services, food, etc.). Such demands could improve the existing local economic activities and impact certain sectors, such as wholesale/retail trade.

Taking all of the above into account, this to some extent could contribute to enhancing the living environment for its inhabitants. The creation of job and procurement opportunities in specific is of crucial importance especially since, as discussed earlier, the local community in general suffers from high unemployment and poverty rates.

However, it is understood that the socio-economic development of the area is not hinged on a single project but rather on implementing collective and coordinated actions, including other development projects and investment within the area.

⁵⁵https://en.wikipedia.org/wiki/Bukhara_Region#:~:text=The%20Bukhara%20region%20has%20always,expelled%20in%20late%2018th%20century

Nevertheless, proper planning and local community engagement from the start is crucial to understand issues and opportunities which in turn would enable the Project build true sustainable links which will bring maximum benefits to the local communities. Given the above, such impacts are anticipated to be positive.

However, it is important to note that there are potential for negative impacts in relation to employment and procurement from issues such as those identified below. Such issues could result in the creation of distrust and resentment between the local communities and the Developer and EPC Contractor. In extreme cases this could lead to other escalated events such as strikes, riots or blocking access roads to the Project site, or other incidents that are similar in nature.

- If local community engagement in relation to employment and procurement is not implemented properly, openly and in a transparent manner; or
- If expectations on number and amount of employment and procurement opportunities are not properly managed and addressed; or
- If procurement and employment is coming primarily from another region or abroad specifically for opportunities where local capacity is available.

Construction Phase		
Type	Negative	
Duration	Medium-term	Limited to construction
Magnitude	Medium	They could entail issues related to strikes and in worst-case scenario riots.
Reversibility	Reversible	
Sensitivity	High	
Likelihood	Medium	Such incidents typically occur with such development projects.
Frequency	Rare	Expected to occur in rare occasions
Timing	Not relevant	
Extent	Low	Relevant within community settlement as applicable
Significance	Major	

Mitigation Measures

The Developer and EPC Contractor are required to undertake the following:

- Project Updates to local communities in accordance with identified measures in the Stakeholder Engagement Plan (SEP) which also includes measures related to management of local stakeholder expectations on jobs during the construction phase. This should include the following in particular:
 - Undertake continuous and ongoing consultations (at least monthly) with local communities to: (i) manage expectations on employment and procurement opportunities for the Project; (ii) emphasize that job opportunities for this Project will be met throughout various entities that will include local communities, Districts and Regions; (iii) provides updates on Project implementation and overall schedule; and (iv) other as appropriate.
 - Provide updates on implementation of the local recruitment and procurement procedure to date (e.g., number of locals employed to date from each village as appropriate)
 - All communication / updates to the local communities should be provided through the following channels in particular: (i) Notifications and advertisements with Khokimiyat and Mahallas

- (including Mahalla Community Union); (ii) Telegram Channel; (iii) Youth Union; and (iv) Family and Women's Committee; (iv) Nannouz which forms the umbrella association for all NGOs in Uzbekistan
- Adopt and implement a Local Employment and Recruitment Procedure as part of the Labor and Working Conditions Management Plan (LWCMP). The procedure must take into account the following:
 - As a first step, the procedure must undertake a comprehensive analysis of local skills and businesses availability and gaps within Karakalpakstan, Khorazm and Bukhara Region in order to make an informed approach when recruiting and procuring requirements locally. This should include in particular the youth.
 - Number of job and procurement opportunities targeted for local communities to include skilled and unskilled workers, (ii) details on how job and procurement opportunities will be announced; (iii) a selection process that is fair and transparent and provides equal opportunities for all including females; and (iv) order of priority with respect to employment and procurement subject to availability of qualifications and skills where the following order of priority can be considered: (i) local communities; (ii) Karakalpakstan / Khorazm / Bukhara Region; and (iv) finally Uzbekistan.
 - All communication / updates to the local communities should be provided through the following channels in particular: (i) Notifications and advertisements with Khokimiyat and Mahallas (including Mahalla Community Union); (ii) Telegram Channels; (iii) Youth Union; and (iv) Family and Women's Committee; (v) Nannouz which forms the umbrella association for all NGOs in Uzbekistan.
 - Based on the outcomes of the availability analysis above, consider undertaking a capacity building and training program for selected local community workforce members. This could be undertaken in coordination with key and prominent NGO's and/or research and academic institutions such as the National University of Karakalpakstan that already demonstrated interest in this aspect in particular.
 - The local recruitment process will be conducted in an inclusive, fair, equitable and diverse manner, and it will be ensured that there is no bias or discrimination and will be open to all community members regardless of their class, race, color, gender, age, disability, civil status, etc.
 - Recruitment will be based on competency and skill.
 - Efforts and resources will be allocated to make sure that women are also fairly targeted and recruited and are provided opportunities for learning skills to participate equally as men.
 - Gender inclusive advertising will be identified, in consultation with female stakeholders (such as women's groups and CBOs) and will be utilized in the announcement of job opportunities.
 - Candidate selection (recruitment) will be conducted by a mixed-sex panel (comprising of at least two people). Candidate promotion selection will always be carried out by a gender diverse and balanced panel (more than one person and never by a single-sex panel). All candidates will be informed about this.
 - It will be prohibited to terminate the contract of a female worker during her maternity leave.
 - Considering implementing a Community Development Plan which aims to benefit the local communities to the greatest extent possible. It is recommended that a structured approach is developed for such a program that takes into account the community's needs and priority development projects which could benefit local communities (which logically should also take into

account other factors such as allocated budget by the Developer, timeline for implementation of such projects, etc.)

- Stakeholder grievance mechanism should be implemented in relation to implementation of the requirements of the Stakeholder Engagement Plan (SEP) and the Local Employment and Recruitment Procedure. Any grievances submitted should be handled fully in accordance with the mechanism that is included within the SEP. Please refer to the SEP for additional details.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the Developer / EPC Contractor:

- Submission of stakeholder engagement log sheets that summarize local community engagement activities and their objectives for the reporting period along with evidence (e.g. photos of sessions or announcements). This should be submitted monthly during both construction and operation.
- Submission of local community employment and procurement register by area/district/region along with evidence for announcements and selection process. This should be undertaken on a monthly basis during construction and on a semi-annual basis during operation.
- Submission on an annual basis a summary of community development plans undertaken.
- Documentation of submitted grievances related to local community engagement or employment/procurement and measures undertaken to resolve such grievances. This should be submitted monthly during both construction and operation.

Community Health, Safety and Security

14.4.2 Potential Impacts from Noise during Operation

According to the “IFC EHS Guidelines for Electric Power Transmission and Distribution” (IFC, 2007) noise in the form of buzzing or humming can be often heard around high voltage power lines producing corona – however noise produced by power lines does not carry any known health risks. In addition, such noise quickly dissipates with distance and is easily drowned out by typical background noises and beyond the 30m security and sanitary protection zone this is expected to be negligible. **Therefore, this impact will be scoped out.**

14.4.3 Potential Impacts from Electric and Magnetic Fields (EMF) during Operation

Electric and magnetic fields (EMF) are radiation associated with the use of electric power such as household wiring, electric appliances and also from OHTL. Electric fields are produced from the voltage in the transmission line while magnetic fields are produced from the electric current. While electric fields can be shielded by objects (such as buildings or trees), magnetic field pass through most objects. Such fields are strongest at the source and decrease significantly with increasing distance from the source.

Electric fields (ELF) are produced by voltage and increase strength as the voltage increases. Electric field strength is measured in volts per meter (V/m). Magnetic fields are produced by the current, which measures the flow of electricity, which increases in strength as the current increases. Electromagnetic

fields are measured in units of tesla (T). Most electric power operates at 50 or 60 cycles per second or hertz (Hz), termed ‘extremely low frequency (ELF)’.⁵⁶

Extensive scientific research and studies have been undertaken to address potential human health impacts from long term exposure to EMF from transmission lines. The consensus is that the overall scientific evidence for human health risk from EMF exposure is weak however EMF exposure could not yet be recognized as entirely safe.

Similarly, the “EHS Guidelines for Electric Power Transmission and Distribution” issued by the IFC also states that although there is public and scientific concern over the potential health effects associated with exposure to EMF (not only high voltage power lines and substations, but also from everyday household uses of electricity), there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment. However, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern.

The IFC EHS Guideline also requires that exposure level limits to the public should remain below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) limits provided in the table below.

Table 93: ICNIRP Exposure Limits for General Public Exposure to Electric and Magnetic Fields

Frequency	Electric Field (V/m)	Magnetic Field (μT)
50 Hz	5000	100
60 Hz	4150	83

A study undertaken by Western Area Power Administration (responsible for electric power functions in Central and Western States of the USA), known as the “Electric and Magnetic Field Facts”⁵⁷ included measuring fields for 321 power lines for 1990 annual mean loads. The table below presents the outcomes of the study including typical values for electric and magnetic fields for a 500kV OHTL at various distances – with values of 1000 V/m and 1.26μT, respectively. As noted, within the 30 m (the sanitary protection zone required by “Sanitary Norms No. 0236-07: Sanitary Standards and Regulations to Ensure Safety for Populations Living near High Voltage Power Lines” as discussed previously, the values are significantly lower than the ICNIRP limits referenced above.

Table 94: Typical 60 Hz electric and magnetic field levels from overhead power lines

500 kV OHTL	Centerline	100 feet (30.5 m)	200 feet (60.96 m)	300 feet (91.44 m)
Electric field V/m	7000	1000	3000	1000
Magnetic field μT	8.67	1.26	0.32	0.14

In addition to the above, a study conducted by the National Institute of Environmental Health Sciences⁵⁸ further reinforces the findings mentioned above. The figure below presents the typical EMF levels for 500kV power transmission lines based on the study. As noted, the measured fields at a distance of 30m from the OHTL line are significantly lower than the ICNIRP guidelines as well.

⁵⁶ [Radiation: Electromagnetic fields \(who.int\)](http://www.who.int/radiation/electromagnetic-fields)

⁵⁷ [EMF book for pdf.idd \(wapa.gov\)](http://www.wapa.gov/emf-book-for-pdf.idd)

⁵⁸ [EMF Electric and Magnetic Fields Associated with the Use of Electric Power \(nih.gov\)](http://www.nih.gov/emf)

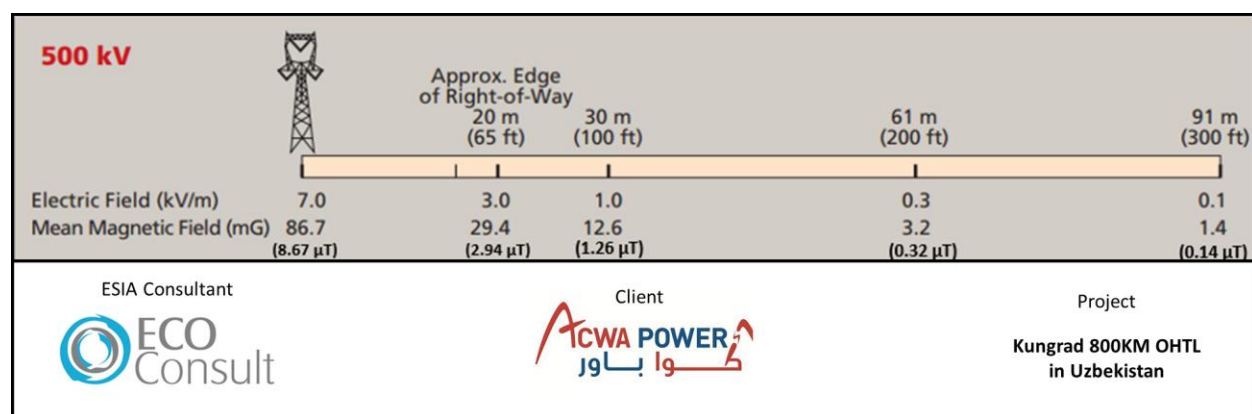


Figure 101: Typical EMF Levels for Power Transmission Lines

Finally, a study undertaken by ICNIRP⁵⁹ specifically for magnetic fields with one year's recorded load data with averages for a representative sample of 43 different lines further supports the findings earlier. This study enhances the credibility of the conclusion that the 30-meter buffer zone is adequate in ensuring public safety and well-being. As noted below, at 30m the magnetic fields are significantly lower than the limits required.

Table 95: Magnetic Field values for different OHTLs

Typical Magnetic Field (μT) values for OHTL					
Type of line	Usage	Distance from line			
		15m	30m	61m	91m
115kV	Average	0.7	0.2	0.04	0.02
	Peak	1.4	0.4	0.09	0.04
230kV	Average	2.0	0.7	0.18	0.08
	Peak	4.0	1.5	0.36	0.16
500kV	Average	2.9	1.3	0.32	0.14
	Peak	6.2	2.7	0.67	0.30

Finally, based on consultations with the Republican Sanitary Epidemiological Service, it was indicated that a 30m buffer zone from the OHTL is sufficient to ensure local limits for EMF are met (which is also applicable for ICNIRP limits). Please refer to "Chapter 6" of the Wind Farm ESIA for additional details on the stakeholder consultation and engagement activities undertaken for the Project.

As discussed previously, the LRP will take into account all physical (i.e. houses in particular) and economic structures within the servitude (ROW) which includes the 30m.

Any physical structures (e.g. houses) within the 30m sanitary zone will be included within the Livelihood Restoration Plan (LRP). Refer to "Section 8" for additional details. **Therefore, this impact will be scoped out.**

⁵⁹ [EHC 238 Front pages final.fm \(icnirp.org\)](https://www.icnirp.org/publications/EHC_238_Front_pages_final_fm)

14.4.4 Potential Impacts from Trespassing of Unauthorized Personnel during Construction

Potential impacts during construction are mainly limited to trespassing of unauthorized personnel which could come from the local communities into the OHTL towers which could result in potential risks from several hazards.

During construction this could include but not limited to the following:

- Falls within excavation areas;
- Electric shocks and thermal burns from electrical components and equipment;
- Roads and pedestrian accidents and injuries from internal traffic; and
- Exposure to chemicals and hazardous materials.
- unauthorized climbing of the transmission tower, which could result in safety hazards (electric shock, thermal burn hazards and other).

Construction Phase		
Type	Negative	
Duration	Medium-term	Limited to construction which is 24 months
Magnitude	Medium	Extreme cases they could entail permanent impacts
Reversibility	Irreversible	
Sensitivity	Medium	
Likelihood	Low	No or minimal local community activity in the area
Frequency	Rare	Expected to occur in rare occasions
Timing	Not relevant	
Extent	Low	Relevant within project footprint only
Significance	Moderate	

Mitigation Measures

The EPC Contractor is responsible for preparing the detailed design for the Project. However, as discussed earlier the EPC Contractor has not yet been selected. Nevertheless, it is expected that as part of the detailed design the security measures for the Project site during both the construction and operation phase will be identified.

Those will be emphasized within a Security Management Plan (SMP) that will be prepared by the EPC Contractor. This is expected to include but not limited to the following measures:

- Key construction areas will be fenced off and will have signs with warning notices in English, Russian, Uzbek, and Karakalpak language;
- The Stakeholder Engagement Plan (SEP) that will be implemented will include measures to engage with local communities to inform them about the start of construction works in advance, to educate them on the dangers inside the fenced-off area, and the danger of approaching construction works at other locations and emphasize importance of avoiding trespassing at all times.;
- Upon completion of construction activities, post informative signs on the transmission towers about public safety hazards and emergency contact information in both Russian, English, Uzbek and Karakalpak language. Signs, especially warnings need to be pictorial as well as written to ensure they are understood by those unable to read.

- Stakeholder grievance mechanism should be implemented in relation to any grievances related to security incidents and/or security personnel code of conduct. Any grievances submitted should be handled fully in accordance with the mechanism that is included within the SEP. Please refer to the SEP for additional details.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor:

- Reporting of any trespassing incidents and the measures undertaken in such cases to control the situation and prevent it from occurring again.
- Submission of stakeholder engagement log sheets that summarize local community engagement activities and their objectives for the reporting period along with evidence (e.g. photos of sessions or announcements). This should be submitted monthly during both construction and operation.
- Documentation of submitted grievances related to the SMP (if applicable) as part of the SEP and measures undertaken to resolve such grievances. This should be submitted monthly during construction and operation.

14.4.5 Potential Impacts from Worker Influx during Construction

During the construction phase of the Project a maximum of 1,000 workers (at peak) that will be involved for a duration of approximately 24 months. As discussed earlier, at this point it is still unclear how many of these workers will be expatriates, Karakalpak, Uzbek, and/or from local communities and it is still unclear where the accommodation of these works will take place. For the OHTL component, given its linear nature, influx poses an increased risk for communities.

Nevertheless, the influx of workforce to the area could result in certain community health, safety and security impacts which are discussed below.

Risk of Diseases

Influx of workers may introduce new reservoirs of diseases such as vector-related diseases, water-borne diseases, etc. In addition, there is also a risk of spreading communicable diseases, including sexually transmitted ones. The risk of catching or exchanging communicable diseases (e.g., Virus B, Virus C, and HIV/AIDS) and the lack of awareness on transmission disease can represent a high risk to workers and community health and safety.

Inappropriate Code of Conduct

Other risks from worker influx include inappropriate code of conduct by workers towards local communities which might result in hostilities and resentment. Such inappropriate conduct could include also disrespecting the traditional culture and social norms of the area and local communities.

Increase in Social Vices

Population influx could result in an increase of social vices including alcoholism, drug abuse, and other.

Increase in Competition for Public Services

The sudden increase in population due to the influx of workers and their families can put substantial pressure on existing local infrastructure, particularly water, electricity, and transportation systems. These services might not have been designed to handle such a rapid or substantial increase in use, leading to overloads and service disruptions.

Local Inflation of Prices

The arrival of a large labor force can drive up the demand for goods and services, potentially leading to higher local prices and displacing regular consumers in the local community.

Increased Risk of Crime

The influx of workers in communities could lead to a rise in criminal activities or create a feeling of insecurity among local residents. Potential issues may include theft, physical assaults, substance abuse, prostitution and human trafficking. The local police force might be unprepared to handle the surge in population and associated challenges.

Construction Phase		
Type	Negative	N/A
Duration	Medium-term	Limited to construction which is 24 months
Magnitude	Medium	Medium magnitude and sensitivity given that it could entail some impacts on local resources, spread of serious diseases which could impact community H&S, and other.
Reversibility	Reversible	
Sensitivity	Medium	
Likelihood	Medium	Accommodation likely to occur onsite due to distant location
Frequency	Frequent	Throughout construction phase
Timing	Not relevant	Throughout the construction phase
Extent	Medium	Relevant within local community areas
Significance	Moderate	

Mitigation Measures

The EPC Contractor will be required to prepare and submit a Worker Accommodation Plan (WAP) and a Labor and Working Conditions Management Plan (LWCMP).

The above plans, should include specific sections on worker influx that should include the following measures:

- It is recommended to manage workers in a centralized location / approach that are not located within local communities. Depending on project phasing, for example, this could include two (2) central locations along the OHTL route located near (but not within) local communities. If accommodation is to be located within local communities, then it is highly recommended to manage in a centralized location / approach (e.g. within 1 apartment building or several located next to each other and not several apartments / hotels located in various dispersed areas
- Medical examination programs. All workers must be subject to a preliminary medical examination before commencement of any job tasks in accordance with local applicable requirements. In addition, routine medical examination for worker (bi-annually) must be undertaken. Such medical examinations must be undertaken at certified centers. Copies of medical examination results of all workers must be retained onsite. Medical examinations should be consistent amongst all worker to ensure no discriminatory implication;

- Details and procedures for ensuring and maintaining hygienic conditions onsite at all times specifically related to the toilet and washing facilities, eating areas, etc. This should be applicable onsite and within worker accommodation;
- Development of a code of conduct and associated disciplinary procedures for workers which takes into account appropriate behaviors by workers at all times, religious customs, traditional cultures and social norms in the area. In addition, it must include specific requirements for social vices including gender-based violence, sexual harassment, alcoholism, drug abuse, etc.; and
- Induction training and self-awareness raising sessions on risks associated to the most common contagious diseases (e.g. influenza virus), communicable diseases, general measures for hygiene, code of conduct expected to be implemented and other as appropriate.
- Stakeholder grievance mechanism should be implemented in relation to any grievances related to worker influx. Any grievances submitted should be handled fully in accordance with the mechanism that is included within the SEP. Please refer to the SEP for additional details.
- Stakeholder engagement activities with local communities must provide information on worker influx expected and measures that will be undertaken to control such impacts. Stakeholder engagement activities are provided in further details in the SEP.
- Investigate potential cumulative impacts on local communities where worker influx could occur taking into account timeline/schedule of other development projects. Refer to “Section 17” for additional details.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor:

- Inspection, monitoring and reporting on all mitigation measures included within the plan Documentation of copies of medical examination results and approvals for workers
- Visual inspections and investigation on hygienic conditions to include offices, rest areas, sanitary and toilet facilities and other
- Documentation of signed code of conduct by workers and associated disciplinary measures as applicable
- Documentation of induction training modules and Toolbox Talks on hygiene and code of conduct expected to be implemented.
- Reporting on the following: (i) worker influx incidents/accidents; (ii) health conditions to include epidemic outbreaks, diseases or infections; and (iii) submitted grievances related to visibility (if applicable) as part of the SEP and measures undertaken to resolve such grievances. This should be done on a monthly basis.
- Submission of stakeholder engagement log sheets that summarize local community engagement activities and their objectives for the reporting period along with evidence (e.g. photos of sessions or announcements). This should be done on a monthly basis.

Worker Welfare, Health and Safety

14.4.6 Occupational Health and Safety Impacts during Construction and Operation

Throughout the construction and operation phase there will be generic occupational health and safety risks to workers, as working onsite increases the risk of injury or death due to accidents. The following risks are generally associated with OHTL development projects:

- Slips and falls;
- Working at heights;
- Working with powered and hand-held tools;
- Struck-by objects;
- Moving machineries;
- Working in confined spaces and excavations;
- Exposure to chemicals, hazardous or flammable materials and fire;
- Exposure to electric shocks and burns when touching live components;
- Covid-19 risks; and
- Of particular importance within some sections of the OHTL are also:
 - Risks related to remoteness of the Project site (e.g. in case of a medical emergency)
 - Risks from sand and salt storms including windy conditions
 - Risks from extreme hot and cold weather and conditions and low/high temperatures

Construction Phase			Operation Phase		
Type	Negative	In extreme cases could entail permanent impacts (e.g. permanent disability) however such impacts are controlled through implementation of general best practice.	Type	Negative	In extreme cases could entail permanent impacts (e.g. permanent disability) however such impacts are controlled through implementation of general best practice.
Duration	Medium-term		Duration	Long-term	
Magnitude	Medium		Magnitude	Medium	
Reversibility	Irreversible		Reversibility	Irreversible	
Sensitivity	Medium		Sensitivity	Medium	
Likelihood	Medium		Likelihood	Medium	
Frequency	Frequent		Frequency	Frequent	
Timing	Not relevant		Timing	Not relevant	
Extent	Low		Extent	Low	
Significance	Moderate		Significance	Moderate	

Mitigation Measures

Occupational Health and Safety Plan (OHSP)

The EPC Contractor has not been selected at this stage for the Project. However, at a later stage once selected, it is expected that an Occupational Health and Safety Plan (OHSP) is prepared and submitted regarding the Project's construction, installation and commissioning works as well as the general construction site operations.

The objective of the OHSP should be as follows:

- Prevent all occupational incidents to the greatest extent possible for all workers;
- Zero fatal accidents, injuries and lost time accidents;
- Zero occupational disease;
- Zero major incidents;
- Providing a place of work that is safe for workers and communities;
- Full compliance with legal and contractual requirements related to occupational health and safety;
- Maintain safe working areas and good housekeeping.
- The OHSP should be Project and site specific and must take into account the national OHS legislation. In addition, it must also be compliant with international E&S standards and requirements to include in particular IFC PS2 (Labor and Working Conditions), EBRD PR 2 (Labor and Working Conditions) – all of which recognize the importance of avoiding or mitigating adverse health and safety impacts on workers and require the development of a project-specific health and safety plan that is in accordance with Good International Practice (GIP).

In general, the OHSP should address the following components:

- Risk assessment and job safety planning procedure;
- Permit to Work (PTW) system procedure;
- Lock Out/Tag Out (LOTO) Procedure;
- Site control occupational health and safety procedure to include requirements for: Personal Protective Equipment (PPE), requirements for site risks (fall protection, powered and hand tools, compressed air / gas cylinders, fire prevention, hot works, electrical works, material handling, machinery use and safety, excavation/concrete works/civil works, confined space activity, storage, medical requirements, and communicable disease management);
- Occupational health and safety signage requirements;
- Tower construction, erection and conductor / line connection OHS procedure;
- Identify OHS training requirements to include but not limited to induction training, specialized trainings, and other as applicable. Specialized trainings will be required for the following;

- Safe rigging and lifting	- Heat Stress
- Welding and Hot Works	- Permit to work
- Ladders and scaffolding	- Defensive driving
- Electrical works	- Lifting and rigging safety
- Fall protection	- Banksman

- Lock-out/tag-out
 - Excavation
 - Hot Works
 - Power and Hand Tool Safety
 - Extreme weather conditions (e.g. sand and salt storms, windy conditions, hot and cold weather and conditions and low/high temperatures)
 - Manual handling
 - Confined Spaces
 - Excavations
 - Working at heights
- Identify monitoring and reporting requirements;
 - Identify roles and responsibilities of the personnel involved in implementation of the plan; and
 - Exposure and risk of transmission of COVID-19 throughout the workforce and measures to reduce such risks (e.g., awareness session on symptoms, isolation measures for confirmed cases, utilizing masks and sanitizers, social distancing where applicable, etc.).
 - A worker grievance mechanism should be implemented and that should handle any grievances related to OHSP. Requirement for worker grievance mechanism is included within “Section 14.4.8” below.

The Project Operator (NEGU) is expected to have a detailed OHSP for all operation and maintenance works undertaken for high voltage lines (500kV) throughout the country.

The EPC Contractor and Project Operator are expected to adopt and implement the provisions of the OHSP throughout the Project construction and operation phase.

Emergency Preparedness and Response Plan (EPRP)

The EPC Contractor must submit a project and site-specific Emergency Preparedness and Response Plan (EPRP). The objective should be as follows:

- Identify emergency response procedure to be implemented with the objective of establishing a series of organization, operational and preventive measures in, which in turn will ensure the safety of workers and property within the specific Project site; and
- Identify emergency control measures for key expected emergency incidents.

The plan for the construction phase should be Project and site specific. In general, the EPRP should address the following components:

- Identify of a communication and management process with external authorities to include in particular firefighting services and health providers
- Identify an emergency procedure and an onsite notification process
- Identify emergency control measures for key expected emergency incidents to include but not limited to fire, accidents, spillage, traffic accidents, natural disasters and other. Of particular importance within the Project area are also:

- Risks related to remoteness of the Project site (e.g. in case of a medical emergency) . This must include a comprehensive medical emergency response, including robust on-site infrastructure and a helicopter response to appropriate medical facilities in Karakalpakstan when required.
- Risks from sand and salt storms including windy conditions
- Risks from extreme hot and cold weather and conditions and low/high temperatures
- Identify requirement for emergency kits
- Identification of onsite assembly points
- Identification of emergency signs
- Identify training requirements to include but not limited to induction training, emergency responders training, and emergency drills.
- Identify monitoring and reporting requirements;
- Identify roles and responsibilities of the personnel involved in implementation of the plan;
- A worker grievance mechanism should be implemented and that should handle any grievances related to emergency preparedness and response. Requirement for worker grievance mechanism is included within “Section 14.4.8 “ below.

The Project Operator (NEGU) is expected to have a detailed EPRP for all operation and maintenance works undertaken for high voltage lines (500kV) throughout the country.

The EPC Contractor and Project Operator are expected to adopt and implement the provisions of the EPRP throughout the Project construction and operation phase.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor during the construction phase:

- Inspection to ensure the implementation of the provisions of the OHSP and assess compliance with its requirements;
- Submission of training records.
- Submission of worker grievances related to OHSP and grievances close-out forms.
- Inspections and audits on OHSP requirements identified earlier; and
- Reporting on the following: (i) number of near misses per month; (ii) number of injuries per month; (iii) number of medical evacuations per month; (iv) number of working condition complaints per month; (v) lost working hours per month; (vi) number of working days since the last accident; (vii) number of HS audit/inspections; (viii) number of HS training/toolbox talks; (ix) number of HS meetings per month; (x) number of unsafe acts/conditions per month.

Inspection to ensure the implementation of the provisions of the EPRP and assess compliance with its requirements;

- Inspections and audits on EPRP requirements identified earlier; and
- Submission of drill reports and TBT training records.
- Submission of worker grievances relate to EPR and grievances close-out forms.
- Reporting on the following: (i) number of emergency responders assigned with required certification; (ii) number of ambulances; (iii) number of clinics; (iv) number of fire extinguishers; (v) number of fire alarms; (vi) number of doctors / nurses; (vi) number of emergency drills conducted; (vii) number of emergency incidents triggered.

14.4.7 Worker Accommodation Impacts during Construction

In relation to worker accommodation, as discussed earlier the EPC Contractor has not been selected yet (nor any other sub-contractor which might be involved in the Project). Therefore, it is not clear at this point whether there will be any onsite accommodation for workers, or whether they will be accommodated at the closest villages/cities.

In general, inappropriate accommodation facilities entail impacts on worker welfare that could include but not limited to:

- Workers could be provided with accommodation facilities that do not meet basic services. This includes security arrangements, appropriate work temperature, safe food, drinking water, access to safe exit in emergency conditions, segregated toilets, washing facilities and sleeping areas for women and men, and access to means of communication with areas outside the project boundary.
- Disturbance issues arising from construction, including traffic (dust, noise and vibration).
- Workers could be provided with accommodation that does not account for social and cultural considerations, which would have major consequences for those affected.

There could also be other impacts on siting of the accommodation facilities such as involuntary resettlement issues (including physical and economical displacement) when the erecting of workers' accommodation (although highly unlikely given the Project location).

If workers are accommodated within local communities, then there could be impacts related to:

- Workers' influx in the vicinity of a community may strain existing infrastructure, in particular the water and sanitation, electricity and transport systems.
- Impacts of workers on local medical, social, educational and recreational services and facilities.
- Community health and safety risks such as increased spread of communicable diseases, road accidents, increased traffic, etc.
- Community cohesion risks related to the presence of workers with different lifestyles or cultural backgrounds on the host community.
- Potential for increase in local prices, crime, prostitution or alcohol consumption.

- Inappropriate code of conduct by the workers with such local community members. This in turn could cause conflicts which if improperly managed could result in escalation of events potentially affecting the safety of workers. Such conduct could include:
 - Disrespect of local traditions and norms
 - Disrespect religious customs
 - Disrespect of community goodwill
 - Harassment
 - Trespassing into nearby private properties and lands

Taking the above into account, the table below presents the overall impact assessment criteria.

Construction Phase		
Type	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Medium-term	
Magnitude	Medium	
Reversibility	Reversible	
Sensitivity	Medium	
Likelihood	Medium	
Frequency	Frequent	
Timing	Not relevant	
Extent	Medium	
Significance	Moderate	

There will be no need for accommodation during operation given that it will be limited to day trip maintenance activities. Therefore, such impacts are irrelevant.

Mitigation Measures

The EPC Contractor must prepare a Worker Accommodation Plan (WAP). The objective of the plan is to identify the required management standards and specifications for accommodation that shall be met for the workforce.

The Plan must include the following components:

- It is recommended to manage workers in a centralized location / approach that are not located within local communities. Depending on project phasing, for example, this could include two (2) central locations along the OHTL route located near (but not within) local communities. If accommodation is to be located within local communities, then it is highly recommended to manage in a centralized location / approach (e.g. within 1 apartment building or several located next to each other and not several apartments / hotels located in various dispersed areas)
- Identify the workforce requirements including all subcontractor requirements;
- Identify workforce transportation requirements to/from accommodation facilities;
- Identify accommodation procedures to ensure that workers are provided with a decent accommodation which meets the basic worker's needs. In specific, onsite and/or offsite accommodation must be compliant with good international industry practices – mainly the "Workers'

accommodation: process and standards” (EBRD/IFC Guidance Note, 2009). The document provides guidance notes on general living facilities, room facilities, medical facilities, management of accommodation units, etc.;

- Worker accommodation must take into account climatic conditions of the area given the location (e.g. extreme heat and extreme cold) and it must be equipped with suitable measures such as air conditioning, heating, etc.
- The accommodation should consider the social and cultural backgrounds of the workers, providing spaces that respect cultural practices and promote social interaction in a positive manner. This includes considerations for gender segregation where culturally appropriate and facilities for religious practices.
- Accommodation facilities and specifications must take into account site-specific conditions to include in particular: (i) sand and salt storms, (ii) windy conditions, (iii) extreme hot and cold weather, and (iv) conditions and low/high temperatures;
- In relation gender requirement the following should be considered:
 - Separate sleeping rooms for men and women will be provided in shared accommodations;
 - Means of securing bedroom doors from inside and out will be provided; and
 - Finally, female sanitary and toilet facilities will be kept separate from men.
- Identify housing rules and regulations including code of conduct;
- Identify training requirements;
- Identify monitoring and reporting requirements; and
- Identify roles and responsibilities of the personnel involved in implementation of the plan.
- A worker grievance mechanism should be implemented and that should handle any grievances related to worker accommodation. Requirement for worker grievance mechanism is included within “Section 14.4.8 “ below.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor during the construction phase:

Inspection on workers accommodation to ensure its compliance with the requirements of “EBRD/IFC’s Guidance Note – Workers’ accommodation: process and standards” to include the following.

- Inspections and audits on standards of worker accommodation to include but not limited to room/dormitory facilities sanitary and toilet facilities, canteen, cooking and laundry facilities, medical facilities, leisure and social facilities; and
- Inspections and audits on management of worker’s accommodation to include management of staff, health and safety, security, etc.

- Reporting on: (i) worker accommodation incidents/accidents; (ii) health conditions to include epidemic outbreaks, diseases or infections; and (iii) worker accommodation grievances and complaints.
- Submission of worker grievances and worker grievance close-out forms.

14.4.8 Worker Human Rights Impacts during Construction

Inappropriate management of the workforce during both the construction phase could entail several human right risks and violations by employing entities such as the EPC Contractor. This could include but not limited to violations against core labor standards (e.g. engaging child workers, confiscation of passports of foreign workers, unsuitable working hours, and other).

One key impact / issue of concern is related to the distant Project location and the long-term location onsite for workers which could result in isolation of workers, and which could therefore entail key mental and physical health risks on the workers' and their overall wellbeing.

In addition, it is expected that the workforce will include a team from various backgrounds, ethnicities, nationalities and cultures. Therefore, there could be risks and impacts within the workforce related to discrimination, harassment, abuse and other based on ethnicities, cultures, and nationalities.

Please note that a standalone gender and human rights risk assessment has been undertaken as part of the Wind Farm ESIA. Please refer to "Section 18" of the Wind Farm ESIA for additional details.

Taking the above into account, the table below presents the overall impact assessment criteria.

Construction Phase		
Type	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Medium-term	
Magnitude	High	
Reversibility	Reversible	
Sensitivity	High	
Likelihood	High	
Frequency	Frequent	
Timing	Not relevant	
Extent	Low	
Significance	Major	

Mitigation Measures

The EPC Contractor is required to develop and implement a Labor and Working Conditions Management Plan (LWCMP). Objective will be as follows:

- Provide an overview of the labor use on the project throughout the construction phase;
- Provide a Human Resources (HR) policy;
- Identify an HR management procedure for the workforce that will ensure decent and humane working conditions, worker rights, and enhance constructive work floor relations. This should be guided by the Local Labor Law as well as the IFC PR 2 and EBRD PR 2 as well as the ILO Fundamental Labor Conventions covering the following in particular:

- Ensuring all workers onsite are provided with a contract. Each worker will be provided with a signed copy of the contract and another copy will be retained with the HR Manager.
- Providing reasonable working conditions and terms of employment to include but not limited to contract management, working hours, salaries/wages, annual and medical leaves, bereavement leaves, accommodation, etc.
- Recognizing workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference
- Prohibition of child labor within the workforce
- Overall management of young workers within the labor force. The recruitment of children under the age of 18 in illegal and hazardous work should be explicitly prohibited. However, if children between the ages of 15-18 are to be employed at any stage throughout the construction or operation stages, the following should apply: (i) an official letter with the approval of their parents or guardian should be provided; (ii) young workers must provide valid identification that presents proof of age at the recruitment stage; (iii) minor workers are not allowed to work onsite and are only allowed to work in the Project's worker camp; (iv) they are not to be employed in any kind of work which by its nature is likely to harm their health and safety or expose them to risks and hazards; and (v) in accordance with the Labor law, young workers shall not work for more than six hours a day, during which one or more break periods totaling not less than one hour shall be granted for meals and rest. They shall not be made to work overtime hours or required to come to work on weekends and official holidays. They shall not be made to work between 7:00 pm and 7:00 am.
- Prohibition of forced labor and human trafficking including confiscation of employees' passports
- Non-discrimination throughout the entire work cycle in all its forms
- Providing equal opportunities for all throughout procurement and employment opportunities including women groups
- Overall management of daily workers, migrant workers and third-party workers
- Given the expected long-term location onsite employment contracts must include regular off-site breaks for rest and relaxation.
- Ensure the following on wages: (i) wages to be determined on a case-by-case basis and must be fair and should meet the basic needs to maintain a safe and decent standard of living; (ii) must be established based on qualifications and competencies, professional experience, job responsibilities, and wages at equivalent positions; (iii) must be for work of equal value should be provided for female and male workers; and (iv) should not be below the nationally established minimum wage.
- Ensure the following on working hours: (i) in accordance with the Labor law, working hours should be set to a maximum of 40-hours a week over 5 or 6 days including at least one hour break every 4 hours; (ii) overtime is allowed with appropriate need, but in all cases, working hours should not exceed 10 per day; (iii) workers should have a 24-hour period of rest after 6 days of work; and (iv) all workers will be notified of their schedule for the weekly day's rest, working hours, break periods and any changes introduced to such a schedule.

- Ensure the following on leaves: (i) workers should be entitled to annual and sick leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract; and (ii) workers should be entitled to annual and temporary disability leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract.
- All workers should be required to read and sign a Worker Code of Conduct which will be explained verbally. The code of conduct should prohibit the following and which is subject to disciplinary action: (i) harassment and abuse of any kind will not be tolerated; (ii) discrimination based on personal characteristics is prohibited to include but not limited to gender, race, nationality, ethnic, social and indigenous origin, religion or belief, disability, age, or sexual orientation.
- Ensure privacy and protection of workers is maintained at all times. This will include limiting access to the below data and information to the EPC Contractor HR Manager only:
 - Contracts
 - HR files and databases
 - Payment register
 - Worker grievance forms and registers
 - Disciplinary action register
 - This information will be properly handled and stored, saved online through password protected files, and in secured cabinets with a fitted lock in case of hardcopies.
 - Identify a disciplinary procedure for the workforce to be implemented;
 - Identify a worker welfare procedure related to drinking water, rest areas, sanitary facilities, changing rooms and other
 - Identify a worker grievance procedure to manage all worker related complaints and grievances that should consider the following:
 - Outlining the measures for escalation of grievances by workers
 - Identify training requirements related to the plan;
 - Identify monitoring and reporting requirements related to the plan; and
 - Identify roles and responsibilities related to the plan.

Following the implementation of these mitigation measures, the significance of the residual impact 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 EPC Contractor and Project Operator:

- Submit signed contracts for all workers once appointed.
- Submit signed worker code of conduct for all workers once appointed.

- Submit payment register on a monthly basis.
- Submit disciplinary action register on a monthly basis.
- Submit training and TBT records on a monthly basis.
- Submit worker grievance logs with close-out forms on a monthly basis.
- Undertake monitoring, inspection and reporting on all requirements of the plan on a monthly basis during construction and quarterly during operation.
- Reporting on: (i) total number of working hours / total overtime; (ii) % of workers receiving salary payment on time; (iii) % of workforce with written contract; (iv) % of workforce with age verification (child labor); (v) % of workforce above minimum wage; (vi) % of forced labor onsite verified; (vii) number of disciplinary actions issued; (viii) number of drinking water units; (ix) number of rest areas provided; and (x) number of sanitary facilities provided; and (xi) number of worker grievances submitted; (xii) number of outstanding grievances.

14.4.9 GBVH and SEAH Impacts to Workers and Community Members during Construction

Inappropriate management of the workforce (some of which could be from the local communities) during the construction phase could entail gender related issues such as Gender Based Violence and Harassment (GBVH) or Sexual Exploitation, Abuse and Harassment (SEAH).

In addition, inappropriate behavior of workforce within local community settlements could also entail similar risks and impacts. This could be related to worker accommodation within local communities (if applicable to the Project) or as part of worker time-off / leisure trips to local community areas.

Taking the above into account, the table below presents the overall impact assessment criteria.

Construction Phase		
Type	Negative	Such impacts are controlled through implementation of general best practice.
Duration	Medium-term	
Magnitude	Medium	
Reversibility	Irreversible	
Sensitivity	Medium	
Likelihood	Medium	
Frequency	Frequent	
Timing	Not relevant	
Extent	Low	
Significance	Moderate	

Mitigation Measures

The EPC Contractor is required to develop and implement a Labor and Working Conditions Management Plan (LWCMP). The Plan should include at a minimum the following:

- Safe transport will be provided to female and male workers, given the remote area of the Project. The codes of conduct, which prohibit gender-based violence, harassment and abuse, will apply to transportation modes.

- All workers should be required to read and sign a Worker Code of Conduct which will be explained verbally. The code of conduct should prohibit be subject to disciplinary action and should prohibit harassment, gender-based violence and abuse of any kind.
- All workers should be provided with a copy of the Gender Based Violence and Harassment (GBVH) Code of Conduct and will be required to sign it.
- Identify a worker welfare procedure related to drinking water, rest areas, sanitary facilities, changing rooms and other that should include take into account the following in particular:
 - Female sanitary, toilet facilities, and prayer rooms will be kept separate from men.
 - All such facilities will have lockable doors with adequate numbers provided.
 - Separate changing rooms and cabinets will be provided for men and women both of which have locking mechanisms.
- Identify a worker grievance procedure to manage all worker related complaints and grievances that should consider the following:
 - Prohibiting gender-based violence and harassment in the workplace and will outline that a suitably trained male and female person is designated to process grievances in which male / female workers might feel uncomfortable discussing with a person of the opposite sex. The grievance mechanism also includes a procedure to deal with Gender Based Violence and Harassment (GBVH) grievances.
- Stakeholder Grievance Mechanism as part of the SEP also includes a procedure for GBVH grievances. Please refer to the SEP for additional details.

Monitoring and Reporting Requirements

The following identifies the monitoring and reporting requirements that must be adhered to by the EPC Contractor and Project Operator:

- Submission of signed GBVH Code of Conduct for all workers.
- Undertake monitoring, inspection and reporting on all requirements of the plan on a monthly basis during construction and quarterly during operation.
- Documentation of submitted grievances related to GBVH and SEAH as part of the SEP and worker grievance mechanism and measures undertaken to resolve such grievances.

15. SUBCONTRACTOR AND SUPPLIER MANAGEMENT

This section provides an assessment of baseline conditions within the Project site and surrounds in relation to subcontractors and suppliers. 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.

Note: impacts related to subcontractors and suppliers during operation will not be considered given that those will be undertaken by NEGU as part of their entire operations within Uzbekistan.

15.1 Assessment of Baseline Conditions

Subcontractors refer to any entity, whether international or local, appointed directly by the EPC Contractor through contractual agreements to carry out construction activities within the project area or provide specific services for the project. These services could encompass various tasks such as security, cleaning, water supply, waste collection, and more.

Suppliers, on the other hand, are entities appointed directly by the EPC Contractor through contractual agreements to provide necessary products, including equipment, materials, or components, essential for the project's development. This could include but not limited to towers, cables, etc.

As noted earlier, the EPC Contractor has not been appointed at this stage. Therefore, there is no information on the required subcontractor(s) and supplier(s) that will be appointed for this Project.

15.2 Assessment of Potential Impacts

Improper management of subcontractors could entail key E&S risks on the Project as identified throughout all previous sections earlier. Such risks could also cascade to the subcontractor's subcontractor. This could include but not limited to:

1. Environmental risks such as for example inappropriate management of dust from construction activities which could impact air quality (as discussed previously under "Section 12";
2. Occupational health and safety risks such as for example inappropriate Personal Protective Equipment (PPE) which could lead to risk of injury or death as discussed previously under "Section 14.4.6"
3. Other labor risks such as inappropriate management of worker accommodation or worker influx into local communities, or human rights risks and violations and other as discussed in "Section 14.4"
4. Social risks such as for example inappropriate management of local recruitment and procurement opportunities as discussed previously under "Section 14.4.1"

In relation to suppliers, key risks are related to offsite risks and within the suppliers' premises. This most importantly includes human right abuses concerning workers and employees such as discrimination, child labor, forced labor and other similar violations.

Construction Phase		
Type	Negative	
Duration	Short-term	Limited to construction

Magnitude	Medium	Contractors and suppliers could result in key E&S risks for the project.
Reversibility	Reversible	
Sensitivity	High	
Likelihood	High	
Frequency	Periodic	
Timing	Not Relevant	
Extent	Low	
Significance	Moderate	

Mitigation Measures

The Developer is required to develop and implement a Subcontractor and Supplier Management Plan that must also be enforced on the second-tier subcontractors and suppliers as applicable. The objective will be as follows:

- Identify the key subcontractors and suppliers that will be involved in the Project;
- Subcontractor and Supplier Management Procedure to ensure that Environmental and Social (E&S) requirements are adhered to. This could include but not limited to the following:
 - a. Screening Process: during the tendering process the key E&S requirements applicable to the scope of work should be identified and included within the tender documents. This may include adherence to International Financial Institution (IFI) E&S requirements, national E&S regulations, ESIA and ESMS requirements and other. In addition, tenders will be required as part of the tender to specify how they intend to comply with such requirements as part of their scope of work.

In the case there is no tendering process subcontractor/supplier will be required to respond to an E&S prequalification questionnaire and will be required to submit company HSSE policies.

Finally, as part of the screening process, an online desktop review (including media research) on the list of companies bidding, their owners and shareholders on E&S reputational issues.

- b. Selection Process: where selected subcontractor / supplier risks have been identified, Developer / EPC Contractor will assess these risks further with the subcontractor / supplier concerned to understand their capacity to avoid and manage such risks and to understand the controls the subcontractor / supplier has in place. This could include but not limited to: (i) submission of E&S policies and procedures as relevant for subcontractor / supplier (e.g. for suppliers' focus would be on human resources and labor policies and procedures), (ii) traceability, (iii) cascading E&S requirements, (iv) undertaking auditing protocols, etc. Where this is not possible, alternative suppliers will be sought.
- c. Contractual Controls: Developer / EPC Contractor will put in place controls to avoid and manage potential risks. This will include but not limited to contractual controls, including corrective actions and exit mechanisms, to avoid and manage potential risks. This would depend on the level of risk identified and the leverage over the subcontractor / supplier concerned. Contractual controls could include but not limited to the following: (i) requirement to comply with IFI E&S requirements and national E&S requirement as applicable; (ii) requirements to comply with the project ESMS MS and associated manual; (iii) include clauses that enable the undertaking of inspections and/or audits to ensure compliance with the requirement above; (iv) include clauses allowing imposition of contractual penalties as applicable.
- d. Proactive management and a system of contractor accountability.

Following the implementation of these mitigation measures, the significance of the residual impact 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 Developer:

- Submission of a subcontractor and supplier management plan
- Submission of outcomes of screening processes for all selected subcontractors and suppliers (e.g. tender E&S requirements, reputational assessments).
- Submission of risk assessment for subcontractor / supplier selected and E&S controls for risks identified.
- Submission of E&S contractual controls.
- For all appointed subcontractors, detailed monitoring and reporting requirements are identified (e.g. inspections, audits) throughout the construction and operation phases. This is discussed in further details within the institutional arrangement requirements under “Section 18.1”.
- For suppliers Developer / EPC contractor will, depending on the risks associated with a supply plan, put in place monitoring approach including reports from suppliers, ad hoc audits, etc. to the extent this is feasible. Monitoring will seek to ensure compliance with the mitigation defined, and in cases of non-compliance, help define corrective actions with the supplier concerned. Developer / EPC Contractor will maintain appropriate records of its supply chain assessment and risk management. Where this is conducted by EPC contractors it will be reported to Developer on a regular basis.

16. SUMMARY OF ANTICIPATED IMPACTS

It is also important to note that the table below presents the worst-case scenario for the impacts. As included in further details within the relevant sections, some impacts have a range of significance (e.g. moderate to major) however the table below presents the worst-case scenario.

Table 96: Summary of Anticipated Impacts during the Planning Phase

Environmental Attribute	Likely Impact – Planning Phase	Impact Assessment											
		Nature	Duration	Reversibility	Magnitude	Sensitivity	Likelihood	Frequency	Timing	Extent	Significance	Management Action	Residual Significance
Infrastructure Utilities and	Potential Impacts on Civil and Military Aviation. Any tall structure, such as OHTL towers 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.										Additional requirements	N/A
	Improper planning and site selection of the Project could damage/disturb existing railway which would affect its operation, and it could also entail serious safety risks to workers.	Negative	Medium-term	Irreversible	Medium	High	Low	Rare	Not relevant	High	Moderate	Mitigation available	Not significant
	Improper planning and site selection of the Project could damage/disturb existing oil and gas infrastructure which would affect its operation, and it could also entail serious safety risks to workers.	Negative	Medium-term	Irreversible	Medium	High	Low	Rare	Not relevant	High	Moderate	Mitigation available	Not significant
	Improper planning and site selection of the Project could damage/disturb/pollute existing water bodies and infrastructure elements (e.g. water canals).	Negative	Medium-term	Irreversible	Medium	Medium	Medium	Rare	Not relevant	Low	Moderate	Mitigation available	Not significant
	Improper planning and site selection of the Project could damage/disturb other unidentified infrastructure elements and it could also entail serious safety risks to workers.	Negative	Medium-term	Irreversible	Medium	High	Low	Rare	Not relevant	Low	Moderate	Mitigation available	Not significant

Table 97: Summary of Anticipated impacts during the Construction Phase

Environmental Attribute	Likely Impact – Construction Phase	Impact Assessment											
		Nature	Duration	Reversibility	Magnitude	Sensitivity	Likelihood	Frequency	Timing	Extent	Significance	Management Action	Residual Significance
Landscape and Visual	Visual and landscape impacts due to presence of typical elements of a construction site such as equipment and machinery (e.g. cranes, excavators, etc.).	Negative	Medium- term	Reversible	Medium	Low	Medium	Frequent	Not relevant	Medium	Minor	Mitigation available	Not significant
Land Use	Economic Displacement – Agriculture activities. Project will result in economic displacement on 203 affected households and 20 informal land users.	Negative	Medium-term	Irreversible	Medium	High	High	Periodic	Seasonal	Low	Moderate	Mitigation available	Not significant
	Economic Displacement – Land Fragmentation and Land Access. Project will result in economic displacement on 203 affected households and 20 informal land users.	No anticipated impacts.											
	Economic Displacement – Grazing and Livestock Herders. Project could result in economic displacement impacts on livestock herders.	Negative	Medium-term	Reversible	Low	Low	Low	Rare	Not relevant	Low	Not significant	Mitigation compensation available /	Not significant
	Physical Displacement.	No anticipated impacts.											
Geology, Hydrology and Hydrogeology	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.).	Negative	Medium-term	Reversible	Medium	Medium	Medium	Frequent	Not relevant	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	Medium-term	Reversible	Medium	Medium	Medium	Periodic	During rain events	Medium	Moderate	Mitigation available	Not significant
Biodiversity	Habitat loss, fragmentation, and degradation	Negative	Medium-term	Both	Low	Medium	High	Rare	Not relevant	Low	Minor	Mitigation & Offset	Not significant
	Impacts on sensitive receptors (habitats and flora) – non-native species and introduced flora	Negative	Long-term	Reversible	Medium	Medium	Medium	Periodic	Not relevant	Medium	Moderate	Mitigation available	Not significant
	Mortality Central Asian Tortoise	Negative	Medium-term	Irreversible	Medium	High	High	Periodic	Not relevant	Low	Moderate	Mitigation available	Not significant
	Mortality Other reptiles	Negative	Medium-term	Irreversible	Medium	Medium	High	Periodic	Not relevant	Low	Moderate	Mitigation available	Not significant
	Mortality and Reduction in Habitat Quality – Mammals	Negative	Medium-term	Irreversible	High	High	High	Periodic	Not relevant	Low	Major	Mitigation available	Not significant
	Disturbance / Direct Mortality, Loss of Nesting Sites and Reduction in Habitat Quality – MacQueen’s Bustard	Negative	Medium-term	Irreversible	High	High	Low	Periodic	Mar – Jul	Low	Major	Mitigation available	Not significant
	Direct Mortality lower sensitivity Ground and Tree Nesting Birds (passerines etc.)	Negative	Medium-term	Irreversible	Medium	High	High	Periodic	Mar – Jul	Low	Moderate	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – vehicle collisions	Negative	Medium-term	Irreversible	High	High	Medium	Periodic	Not relevant	Low	Major	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – poaching, collection, etc.	Negative	Medium-term	Irreversible	High	High	Medium	Periodic	Not relevant	High	Major	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – disturbance	Negative	Medium-term	Reversible	High	High	High	Periodic	Not relevant	Low	Major	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – reduced air quality / dust	Negative	Medium-term	Reversible	Medium	High	Medium	Periodic	Not relevant	Medium	Moderate	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – noise and vibration	Negative	Medium-term	Reversible	Medium	High	Medium	Periodic	Not relevant	Medium	Moderate	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – lighting	Negative	Medium-term	Reversible	Medium	High	Medium	Periodic	Not relevant	Low	Moderate	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – littering, waste management	Negative	Medium-term	Reversible	Medium	High	Medium	Periodic	Not relevant	Medium	Moderate	Mitigation available	Not significant
	Impacts on sensitive receptors (vertebrates) – pest species	Negative	Medium-term	Both	High	High	Medium	Periodic	Not relevant	Medium	Major	Mitigation available	Not significant
Archaeology and Cultural Heritage	Improper management could potentially disturb or damage potential archaeological remains on the surface as well as some of which could be buried in the ground (if any).	Negative	Medium-term	Irreversible	High	Medium	Medium	Rare	Not relevant	Low	Moderate	Mitigation available	Not significant
Air Quality and Noise	Construction activities will likely result in an increased level of dust and particulate matter emissions as well as noise emission to surrounding environment which in turn will directly impact ambient air quality. This could entail indirect impacts on workers’ health and safety.	Negative	Medium-term	Reversible	Medium	Low	High	Frequent	Not relevant	Medium	Minor	Mitigation available	Not significant

Infrastructure and Utilities	Waste Utilities. Ensure that waste utilities will be able to handle the waste requirements that are generated from the Project.	Negative	Medium-term	Reversible	Medium	Medium	High	Periodic	Not relevant	High	Moderate	Additional requirements	Not significant
	Road network. Transportation requirements of the Project could affect level of service and capacity of existing highways and road networks.	Negative	Medium-term	Reversible	Medium	Low	High	Frequent	Not relevant	Medium	Minor	Mitigation available	Not significant
	Road network. Improper transportation activities could result in traffic related accidents on roads which in turn could affect the health and safety of users on the roads, workers and other.	Negative	Medium-term	Reversible	Low	High	High	Frequent	Not relevant	Low	Minor	Mitigation available	Not significant
	Water Resources. Water requirements of the Project could entail constraints on existing users such as local communities or industrial establishments.	Negative	Medium-term	Reversible	Medium	High	High	Frequent	Not relevant	High	Moderate	Additional requirements	Not significant
Socio-economic	<u>Employment and Procurement.</u> 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.										
	<u>Employment and Procurement.</u> If: (i) local community engagement is not implemented properly; OR (ii) if priority on all employment and procurement opportunities are not provided to local communities; OR (iii) if expectations are not properly managed and addressed – this could result in distrust and resentment with the Developer and might eventually lead to other potential escalated events (e.g. demonstrations, blockage of access road, etc.).	Negative	Medium-term	Reversible	Medium	High	Medium	Rare	Not relevant	Low	Major	Recommendations	Not significant
	Impact on Indigenous Populations	Not applicable											N/A
	<u>Community Health, Safety and Security.</u> Influx of huge number of workers to the area could result in community impacts such as pressure on infrastructure elements, increase in social vices, risk of spread of disease, and other.	Negative	Medium-term	Reversible	Medium	Medium	Medium	Frequent	Not relevant	Medium	Moderate	Mitigation available	Not significant
	<u>Community Health, Safety and Security.</u> Trespassing of unauthorized personnel into construction active areas could result in health and safety impacts.	Negative	Medium-term	Irreversible	Medium	Medium	Low	Rare	Not relevant	Low	Moderate	Mitigation available	Not significant
	<u>Worker Welfare, Health and Safety.</u> Inappropriate management of the workforce could entail human rights violations (e.g. engaging child workers, confiscation of passports of foreign workers, unacceptable working hours, and others).	Negative	Medium-term	Reversible	High	High	High	Frequent	Not relevant	Low	Major	Mitigation available	Not significant
	<u>Worker Welfare, Health and Safety.</u> Generic occupational health and safety risks to workers, as working onsite increases the risk of injury or death due to accidents	Negative	Medium-term	Irreversible	Medium	Medium	Medium	Frequent	Not relevant	Low	Moderate	Mitigation available	Not significant
	<u>Worker Welfare, Health and Safety.</u> Inappropriate accommodation facilities for workers will entail impacts on worker welfare as well as their overall health and safety.	Negative	Medium-term	Reversible	Medium	Medium	Medium	Frequent	Not relevant	Medium	Moderate	Mitigation available	Not significant
	<u>Community and Worker Health and Safety.</u> Inappropriate management of the workforce (which could be from the local community) as well as inappropriate conduct of workers within local community areas could entail gender related risk and impacts such as Gender based violence, and harassment (GBVH) or Sexual Exploitation, abuse, and harassment (SEBH)	Negative	Medium-term	Irreversible	Medium	Medium	Medium	Frequent	Not relevant	Low	Moderate	Mitigation available	Not significant
Subcontractor and Supplier Management	Improper management of subcontractors and supplier poses risks of major environmental impacts, human right abuses, criminal abuses or other	Negative	Short-term	Reversible	Medium	High	High	Periodic	Not relevant	Low	Moderate	Mitigation available	Not significant

Table 98: Summary of Anticipated Impacts during the Operations Phase

Environmental Attribute	Likely Impact – Operation Phase	Impact Assessment											
		Nature	Duration	Reversibility	Magnitude	Sensitivity	Likelihood	Frequency	Timing	Extent	Significance	Management Action	Residual Significance
Landscape and Visual	Impacts related to interaction of OHTL towers and conductors within the overall landscape and visual character of the area including any potential sensitive visual receptors.	Negative	Long-term	Reversible	Low	High	High	Frequent	Not relevant	Medium	Minor	Mitigation available	Not Significant
Biodiversity	Impact on sensitive receptors (birds) – collision with OHTL	Negative	Long-term	Irreversible	High	High	Low	Periodic	Not relevant	High	Major	Mitigation by design, adaptive management, off-setting	Minor
	Impacts on Sensitive Receptors (terrestrial mammals and breeding / resident birds) – Disturbance	Negative	Short-term	Reversible	Low	Medium	Low	Rare	Not relevant	Low	Minor	Mitigation available	Not significant
Archaeology and Cultural Heritage	Improper management could potentially disturb or damage potential archaeological remains recorded on the surface.	Negative	Long-term	Irreversible	High	Medium	Medium	Rare	Not relevant	Low	Moderate	Mitigation Available	Not significant
Infrastructure and Utilities	Waste Utilities. Ensure that waste utilities will be able to handle the waste requirements that are generated from the Project.	Negative	Long-term	Reversible	Low	Medium	High	Periodic	Not relevant	High	Minor	Additional requirements	Not significant
Socio-economics	Impacts on Indigenous Populations	Not applicable											N/A
	<u>Community Health, Safety and Security.</u> OHTLs could be associated with noise in the form of buzzing or humming which could be a source of disturbance and nuisance to noise sensitive receptors.	No anticipated Impacts.											N/A
	<u>Community Health, Safety and Security.</u> OHTLs are associated with Electric and Magnetic Fields (EMFs) which can entail health and safety concerns for sensitive receptors.	No anticipated impacts.											N/A
	<u>Worker Welfare, Health and Safety.</u> Generic occupational health and safety risks to workers, as working onsite increases the risk of injury or death due to accidents	Negative	Long-term	Irreversible	Medium	Medium	Medium	Frequent	Not relevant	Low	Moderate	Mitigation available	Not Significant

17. ASSESSMENT OF CUMULATIVE IMPACTS

17.1 Cumulative Impact Assessment

The cumulative impact assessment presented within this section focuses on other similar projects (i.e. wind farms and associated OHTLs) within Uzbekistan. A number of existing and proposed future wind farm projects will occur which for the purpose of this assessment includes and which are also presented in the figure that follows:

- Kungrad 4 Wind Farm Project and OHTL
- Nukus Wind Farm
- Bash Wind Farm and OHTL
- Dzhankeldy Wind Farm and OHTL
- Zarafshan Wind Farm

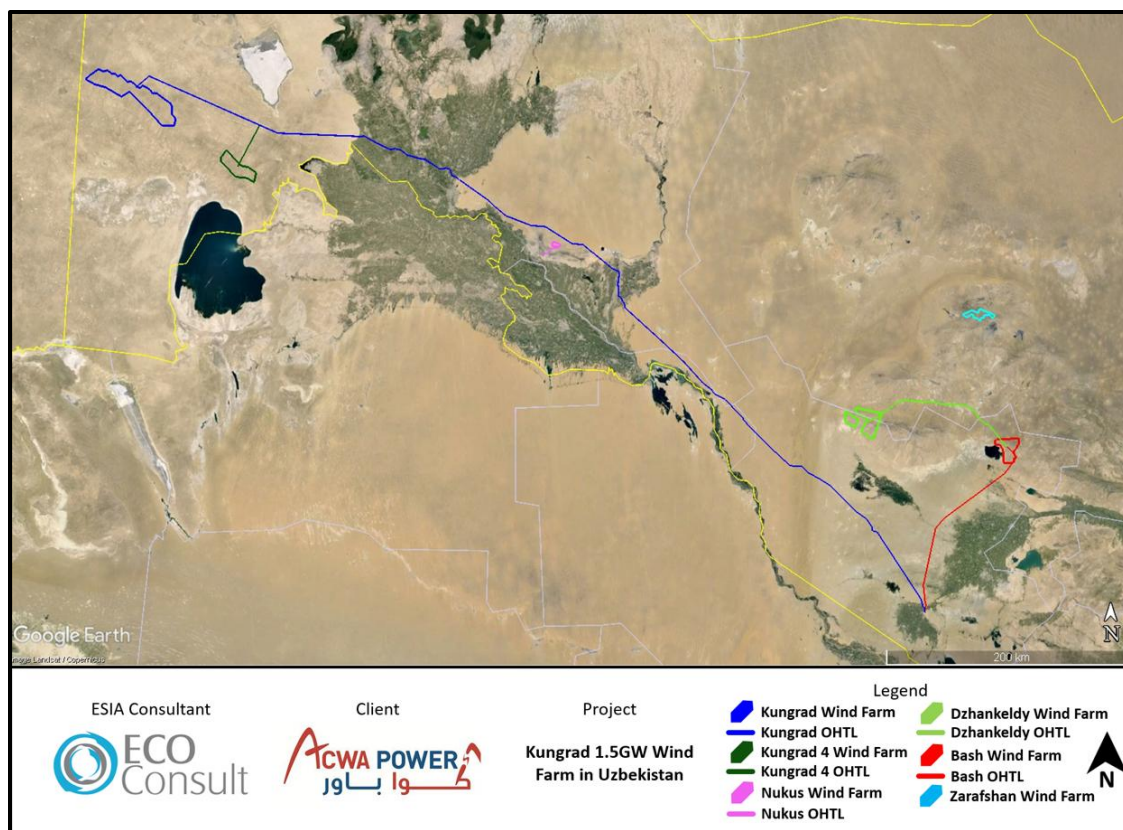


Figure 102: Wind Farm and OHTL Developments for Cumulative Assessment

The table below presents an analysis on cumulative impacts. As noted within the table below, the key issue to be investigated further is related to biodiversity for which an additional analysis has been undertaken within the section that follows.

E&S Attribute	Issue	Additional Requirement
Land Use	Land use impacts (physical and/or economical displacement) are considered project and site-specific. Therefore, cumulative impacts in this case are irrelevant.	None
Geology, Hydrology and Hydrogeology	Key impacts are related to flood risks, onsite waste management and erosion and sediment control. Such impacts are considered project and site-specific. In addition, given the distance of other projects, cumulative impacts are considered irrelevant.	None
Biodiversity	This is considered one of the key issues to be investigated further as part of the cumulative assessment. Refer to section below detailing the Rapid Cumulative Impact Assessment (RCIA) for Biodiversity.	Refer to section below.
Archeology and Cultural Heritage	This includes impacts on surface sites of importance and/or chance finds. Both impacts are considered Project and site-specific. Therefore, cumulative impacts in this case are irrelevant.	None
Air Quality and Noise	Key impacts from the Project are mainly related to dust and noise generation from construction activities. Such impacts are considered project and site-specific. In addition, given the distance of other projects cumulative impacts are considered irrelevant.	None
Infrastructure and Utilities	<u>Water Resources.</u> As part of the Wind Farm and OHTL ESIA study, a water availability assessment has been undertaken to determine the water source for this Project. None of the other projects (with the exception of possibly Kungrad 4) will rely on such identified water sources due to their distance from Project area, and therefore cumulative impacts are considered irrelevant.	Water resources availability assessment should be updated as part of the Kungrad 4 ESIA project to take into account cumulative impacts of Kungrad 123 and Kungrad 4.
	<u>Waste Utilities.</u> As required in the Wind Farm and OHTL ESIA, consultations with State Unitary Enterprise is required for dispose of final waste streams generated from the project and ensure facilities are able to accept such waste streams (to include solid waste, wastewater and hazardous waste). It is expected that other projects will undertake such consultations and verifications for their project respectively.	None
	<u>Traffic and Transport.</u> As discussed within the WF and OHTL ESIA, no detailed information is available at this stage on specific and final routes that will be utilized for traffic and transportation for key activities (e.g. WTG transportation). Taking into account the traffic and scheduling of other projects, traffic and transportation requirements of other projects, cumulative impacts could be relevant.	Traffic and Transport Management Plan is required to be developed by the EPC Contractor prior to commencement of any transportation related activities to the Project. The detailed requirements of this plan is included within "Section 14.2.6". The Plan includes requirement for

		consultations with governmental entities, identification of traffic routes, identification of traffic requirements, etc. In addition, it requires consideration of traffic and transport scheduling / requirements of the other identified development projects within this section.
Worker Welfare, Health and Safety	Key impacts from the Project are related to occupational health and safety, worker accommodation, and labor and working conditions of workforce. Such impacts are considered Project and site-specific. Therefore, cumulative impacts in this case are irrelevant.	None
Community Health, Safety and Security	Impacts from worker influx is not expected to be relevant given that the affected communities for other projects are likely to differ from those related to this Project. However, the exception to the above is Kungrad 4 (as it is possible that the same affected communities of Kungrad 123 WF will be that for Kungrad 4) and Bash OHTL particularly within the Bukhara region (given that both the Kungrad OHTL and Bash OHTL connect at the same end point).	Cumulative impacts related to worker influx must be taken into account and considered as part of the Kungrad 4 ESIA. Worker Accommodation Plan (WAP) and a Labor and Working Conditions Management Plan (LWCMP) is required to be developed by the EPC Contractor. The plans require specific measures to address worker influx as included within “Section 15.5.7” including cumulative impacts of the other identified development projects within this section (particularly Bash OHTL).
	Impacts from trespassing and interaction with security personnel are considered Project and site-specific. In addition, given the distance of other projects, cumulative impacts are considered irrelevant.	None
	Positive impacts related to local community engagement in employment and procurement opportunities and potential negative impacts related to distrust and resentment with the Developer. Such impacts are not expected to be relevant given that (with the exception of Kungrad 4) the affected communities for other projects are likely to differ from those related to this Project.	Cumulative impacts related to local community engagement must be taken into account and considered as part of the Kungrad 4 ESIA

17.2 Rapid Cumulative Impact Assessment for Biodiversity

As mentioned above, the Rapid Cumulative Impact Assessment (RCIA) for Biodiversity is for both the Kungrad 1, 2, 3 WF and the associated OHTL, as the two projects are intrinsically dependent on one another.

This RCIA has been conducted following principles and steps of the IFC's Good Practice Handbook on the Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets⁶⁰.

Spatial boundaries and Temporal boundaries / other developments

The spatial boundaries of the RCIA are large, considering the length of the OHTL, and based on the type of development and impacts of the proposed projects the RCIA focused on other similar projects (i.e. wind farms and associated OHTLs) that would impact VERs in similar ways. In particular, migratory species that are likely to encounter one or more of these projects over various years or possibly even in the same year.

A number of existing and proposed future wind farm projects will occur in a Direct Area of Influence (DAI) which for the purpose of this assessment includes and which are also presented in the figure that follows:

- Kungrad 4 Wind Farm Project and OHTL
- Nukus Wind Farm
- Bash Wind Farm and OHTL
- Dzhankeldy Wind Farm and OHTL
- Zarafshan Wind Farm

⁶⁰ IFC, Good Practice Handbook, 2013

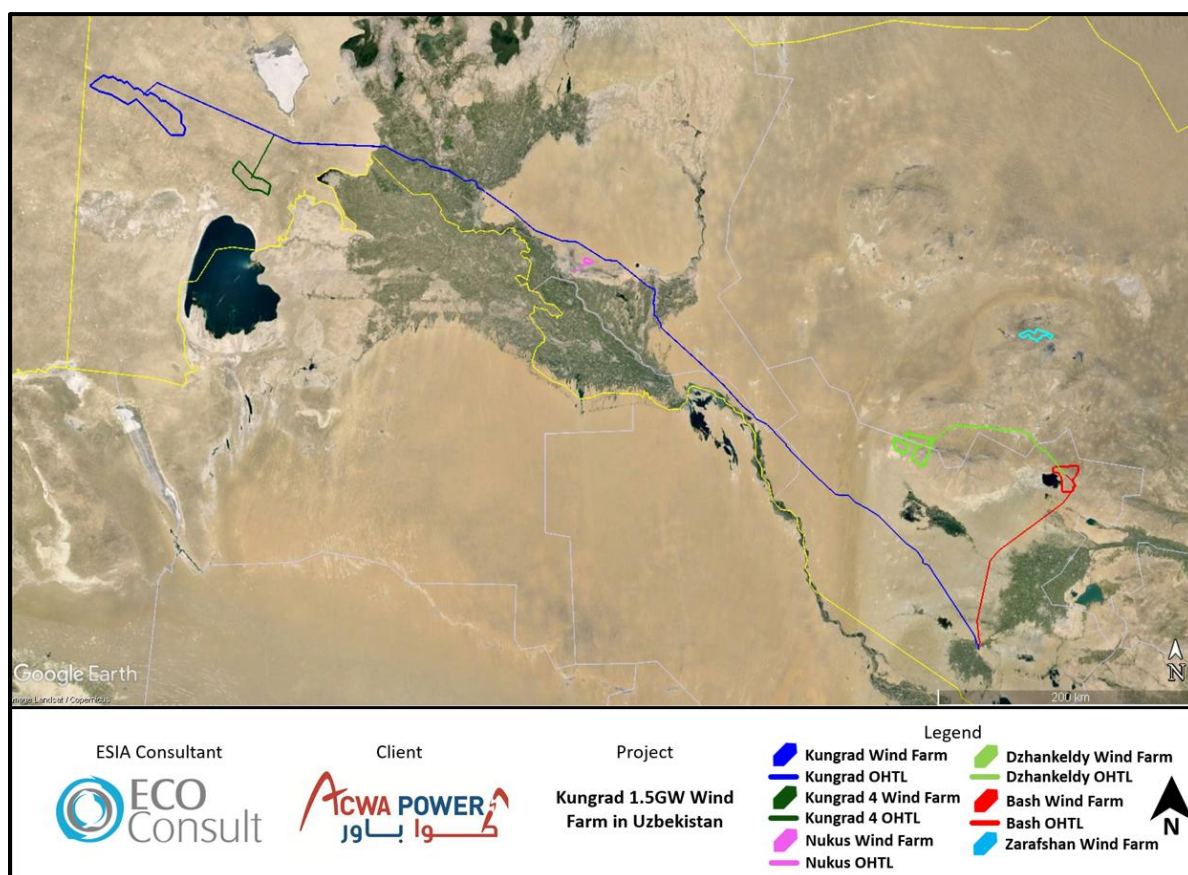


Figure 103: Wind Farm and OHTL Developments for Cumulative Assessment

The reason the above projects have been included in this assessment is that a number of Valued Environmental Components (VECs) are long distance migrants (e.g. trans-continental, trans-boundary populations) and as such the DAI must include all projects that they could potentially come in to contact with during their natural migrations within Uzbekistan. The cumulative assessment is therefore being undertaken on migrating birds, ungulates and bats.

The temporal boundaries are set as the time period of construction and the operational lifetime of the Kungrad 1,2,3 WF project. Expected to be 28 years, based on 3 years of construction and 25 years of operation. The operational lifetime of the OHTL is expected to be longer but is dependent on the operation of the WF (and the proposed Kungrad 4 WF).

VECs and Baseline Status of VECs

The ESIA for the Kungrad 1,2,3 Wind Farm and the Kungrad OHTL have identified biodiversity VECs, which are detailed and discussed in the Biodiversity sections (Section 10) of the ESIA. Baseline status of the VECs are discussed in the ESIA. These VECs are species that have been confirmed as exceeding criteria thresholds for Critical Habitat or Priority Biodiversity Features. For the purpose of RCIA the list of VECs has been refined to 17 species and bats as a group of species, that are typically long-range migratory species, most of which are trans-boundary species and that are more likely to be impacted by multiple projects or developments as discussed further below.

Receptor	Conservation Status		CH/PBF	Sensitivity
	IUCN	UZBDB		
Goitered Gazelle	VU	VU	PBF	High
Saiga	NT	CR	PBF (if present)	High (if present)
Bats	-	-	-	Low to Medium
Sociable Lapwing	CR	VU	PBF	High
White-headed Duck	EN	EN	CH	High
Steppe Eagle	EN	VU	PBF	High
Pallas's Fish Eagle	EN	EN	PBF	High
Egyptian Vulture	EN	VU:D	PBF	High
Saker Falcon	EN	NT	PBF	High
Lesser White-fronted Goose	VU	VU	PBF	High
Common Pochard	VU	-	PBF	High
Yellow-eyed Pigeon	VU	VU	PBF	High
Eastern Imperial Eagle	VU	VU:D	PBF	High
Greater-spotted Eagle	VU	VU:R	PBF	High
European Turtle Dove	VU	VU	PBF	High
Great Bustard	EN	CR	PBF	High
MacQueen's Bustard	VU	VU	CH	High
Red-crested Pochard	LC	-	CH	Low

Terrestrial receptors including habitats, flora, and non-migrating fauna are discounted from this RCIA as they are unlikely to be significantly affected by other projects or developments (due to the relatively small footprints of the projects), distance from them to the Kungrad 1,2,3 project and differing development timelines/years.

The Kungrad 4 WF is the closest project to Kungrad 1,2,3 however this is 45 km south-east of the project and as such significant cumulative impacts on terrestrial VECs is unlikely as each project area will affect distinct assemblages of plants and non-migratory animals (e.g. animals won't be displaced by one project to another project area where they will be displaced again). In addition, habitat loss for each of these projects is minimal (e.g. small project footprints) and all projects will be undertaking habitat rehabilitation and restoration in line with commitments for no net loss of natural habitat and or as a compensatory measure (e.g. Bash and Dzhankeldy). None of the existing projects are predicting residual negative impacts on habitats or non-migratory terrestrial receptors during their construction and operational phases and as such the cumulative impact assessment must conclude that in combination construction and operational impacts on non-migratory terrestrial VECs will not be significant.

Potential Cumulative Impacts pre-mitigation

Barrier impact for Migratory Birds

In isolation wind farms may deter migratory birds that exhibit macro-scale avoidance behaviour and longer migratory movements can increase stress and lower survivorship of migrants that expend more energy to navigate around wind farms.

The impact assessment for each wind farm concludes that there will be no impact or negligible barrier impacts. The cumulative significance for Bash and Dzhankeldy wind farms together was assessed as Moderate to Major for Threatened bird species and Moderate for Non-threatened bird species.

For Kungrad 1,2,3 and all other projects in combination cumulative barrier effects are unlikely to cause significant effects on populations of migratory bird species, due to the sizeable distances between each of the projects. Therefore barrier impacts are not assessed to pose a significant impact on migratory birds.

Wind Turbine Collision for Migrating Birds

The presence of multiple wind farms in the same migratory corridor may produce cumulative collision impacts, as migratory birds could pass through the multiple project areas during one year in different seasons or during multiple years.

The predicted rate of annual collision (from collision risk modelling) for bird species recorded at Kungrad 1,2,3 is shown in the table below, alongside the predicted rate of annual collision for the other wind farms (Kungrad 4 data is not currently available). Additionally, some other high-risk species that were recorded at other wind farms, but not recorded at Kungrad 1,2,3, are included as it is feasible for them to also migrate through the Kungrad 1,2,3 project area. This is shown alongside the cumulative predicted rate of annual collisions for all projects, the percentage of the cumulative total from Kungrad 1,2,3, and the PBR threshold for wind farms in Uzbekistan, as calculated for the BASH and Dzhankeldy wind farms⁶¹. Species with cumulative predicted rate of collisions that exceed the PBR threshold for wind farms in Uzbekistan are shown in bold.

Common Name	K1,2,3	BASH and Dzhankeldy combined	Nukus	Zarafshan	Cumulative total	K1,2,3 % of cumulative total	PBR for Uzbekistan wind energy
Cinereous Vulture	0.136	0.2205	-	0.825	1.1815	11.51	0[#]
Egyptian Vulture	0.003	0.1626	-	2.591	2.7566	0.11	0[#]
Pallas's Fish Eagle	0.009	-	-	-	0.009	100.00	not assessed assumed 0 [#] *
White-tailed Eagle	0.003	-	-	0.389	0.392	0.77	0 [#]
Steppe Eagle	0.429	0.232	0.00485	1.044	1.70985	25.09	0
Golden Eagle	0.028	0.0995	-	0.49	0.6175	4.53	0 [#]
Eastern Imperial Eagle	0.138	0.11059	0.00401	-	0.2526	54.63	0 [#]
Greater-spotted Eagle	0.002	-	-	-	0.002	100.00	0 [#]
Booted Eagle	0.001	-	-	0.183	0.184	0.54	0 [#]
European Honey Buzzard	0.008	-	-	-	0.008	100.00	not assessed / assumed to be high and not met* *
Long-legged Buzzard	0.08	0.922	0.188	0.809	1.999	4.00	70
Black Kite	0.06	-	-	-	0.06	100.00	not assessed / assumed to be high and not met* *
Pallid Harrier	0.017	-	-	-	0.017	100.00	not assessed / assumed to be high and not met* *

⁶¹ 5 Capitals, Bash WF PBR Analysis, 2023

Common Name	K1,2,3	BASH and Dzhankeldy combined	Nukus	Zarafshan	Cumulative total	K1,2,3 % of cumulative total	PBR for Uzbekistan wind energy
Western Marsh Harrier	0.007	0.677	0.242	-	0.926	0.76	750
Montagu's Harrier	0.004	-	-	-	0.004	100.00	not assessed / assumed to be high and not met* x
Hen Harrier	0.001	1.304	0.108	0.211	1.624	0.06	93
European Sparrowhawk	0.011	0.19	-	-	0.201	5.47	312
Common Kestrel	0.344	-	5	1.796	7.14	4.82	580
Lesser Kestrel	0.037	-	-	0.099	0.136	27.21	36
Hobby	0.001	-	-	-	0.001	100.00	not assessed / assumed to be high and not met* x
Merlin	0.001	-	-	-	0.001	100.00	not assessed / assumed to be high and not met* x
MacQueen's Bustard	0.026	0.92489	-	-	0.95089	2.73	12
Eurasian Griffon	-	0.03888	-	1.251	1.28988	0.00	0[#]
Saker Falcon	-	0.0285	-	0.11	0.1385	0.00	0 [#]
Common Buzzard	-	0.3225	0.033	0.133	0.4885	0.00	140
Rough-legged Buzzard	-	-	0.0733	-	0.0733	0.00	not assessed / assumed to be high and not met* x
Common Crane	-	2.23	0.223	-	2.453	0.00	1,125

* These species were not included in the PBR analysis but have relatively large population sizes and the very low predicted CRM outputs would not equal or exceed the PBR threshold.

[#] For any species that the PBR is 0, any one fatality will breach the threshold of significance

* A full and up to date project specific PBR analysis will be undertaken for all species that could be impacted by the project and will include PBR based fatality thresholds for those species not already assessed in the cited analysis - The PBR analysis will be undertaken as part of the Collision Risk Management Plan (CRMP) and Adaptive Management Plan (AMP) which will be submitted and approved by lenders 6 months prior to any impacts from line stringing (or turbine operation).

The cumulative impact of annual collision with turbines for birds is not significant for most species assessed against the PBR threshold for all wind projects in Uzbekistan. However, the predicted annual cumulative impacts for Cinereous Vulture, Egyptian Vulture, Steppe Eagle and Eurasian Griffon Vulture (although, note Griffon Vulture only recorded once at K1, 2 and 3⁶²) do exceed the PBR threshold and, if realized, will be significant. The percentages of the predicted annual cumulative impact that Kungrad 1,2,3, would add for these species are 11.51% for Cinereous Vulture, 0.11% for Egyptian Vulture and 25.09% for Steppe Eagle. The predicted annual collision risk for all of these species is most significant at Zarafshan WF, although Kungrad 1,2,3 would contribute a relatively large proportion of the overall predicted cumulative collision impact for Steppe Eagle.

Predicted annual collision of Pallas's Fish Eagle, White-tailed Eagle, Golden Eagle, Eastern Imperial Eagle, Greater-spotted Eagle, Booted Eagle, and Saker Falcon would also be significant in years where there is a collision event of a single bird, exceeding the PBR based fatality threshold of 0. The combined CRM output for these species does not however predict that this will be an annual event and specifically for Kungrad 1, 2 and 3 predicted collision of these species is very unlikely. Collision in these species would therefore

⁶² one registration of a single bird seen on the ground on the 26th April with two Cinereous Vultures. Not recorded during the Vantage Point surveys/in flight.

be monitored during the operation phase on all project sites (with data sharing between projects) and where collision is cumulatively significant additional mitigation and or off-setting (adaptive management) would be required and this will be detailed in the operational BMP/BAP.

OHTL Collision for Migrating Birds

The Kungrad 1,2,3 OHTL is huge and spans half the width of Uzbekistan. Because of this the aforementioned projects have been considered within this assessment as each project could potentially impact the same populations of migratory birds. For example, birds migrating through Kungrad site are likely to move across the OHTL and could also possibly migrate through Kungrad 4. Additionally, birds that are moving across southern sections of the OHTL could then potentially cross Bash, Dzhankeldy Wind Farm and their associated OHTLs or Zarafshan Wind Farm.

Predicting the likely collision with OHTL is very difficult to quantify and whilst with some species it may be less of a risk (based on natural avoidance) collisions are inevitable with such large scale OHTLs crossing a migratory flyway. With threatened species with small or threatened populations, even low levels of predicted collisions are likely to exceed PBR thresholds for some species. Other species such as MacQueen's Bustard are very unlikely to naturally avoid OHTLs and a significant number of collisions is very likely and are very likely to exceed the PBR threshold.

For individual project OHTLs, bird collisions have been assessed as a significant impact:

- Kungrad 1,2,3 – Major significance
- Nukus – Negligible to Major significance
- Bash and Dzhankeldy – Moderate to Major significance
- Zarafshan – only short sections of OHTL to connect to existing OHTL and no significant risk identified

The cumulative impact of all of the OHTLs can only be assessed as a Major significant impact, with collisions that will certainly exceed the PBR thresholds of some high sensitivity and high-risk species. The Kungrad 1,2,3 OHTL (being the longest and crossing a large portion of the migratory flyway) will certainly contribute the most towards that cumulative impact.

Barrier or Displacement for Migratory Mammals (ungulates)

Ungulates have been discussed in the Biodiversity Impact Assessment and it is very unlikely in-combination effects will result on mammals when taking into consideration the Kungrad 1,2,3 WF, Nukus, Bash, Dzhankeldy and Zarafshan Wind Farms, mainly due to the distribution of large ungulates within Uzbekistan and the sizeable distances between each of the projects.

It is possible that the Kungrad 1,2,3 and Kungrad 4 projects could affect similar populations of ungulates (Saiga and Goitered Gazelle) however, as discussed in the biodiversity chapter, surveys undertaken at Kungrad 1,2,3 did not record significant populations of Goitered Gazelle and Saiga were not recorded. Similar results are expected at the Kungrad 4 wind farm site as the habitats in both project areas are broadly similar.

The historic Saiga distributions in Uzbekistan (even before the Uzbek-Kazakh border fencing was erected) are in the north / west of the country and more recent records are limited to the Saigachi Nature Reserve or around the Aral Sea (e.g., well away from the two Kungrad wind farm Project areas). Saiga have not been recorded within the other Project areas, which are located outside of any historic ranges for this species. It is possible that wider conservation efforts will increase the amount of transborder movements of Saiga, as well as increasing populations of Goitered Gazelle within the Ustyurt Plateau, however it is unlikely that these projects will significantly change the populations of animals within the Project areas rapidly. The project sites are not located in optimal habitat areas for either species and are certainly not located in important wintering or calving habitat.

The distance between the Kungrad wind farm projects (approximately 45km) will allow movement between the wind farm areas and therefore barrier impacts are not assessed to pose a significant impact on migratory mammals.

Wind Turbine Collision for Migrating Bats

Many bat species and populations are known to migrate, although research and knowledge around bat migration in the region is relatively unknown. Of the five bat species confirmed at the Kungrad 1,2,3 project, one is known to be migratory *Nyctalus noctula* over long-distances and the others may be migratory or possibly only have local movements.

Bat populations impacted at the Kungrad 1,2,3 project are quite likely to also be impacted at the Kungrad 4 project during one year in different seasons or during multiple years. It is possible that some of the same long-distance migratory bat populations could also be impacted by the other wind farm projects on migration during different years and that could cause significant cumulative impacts on those populations. However, this is unknown and it would be incredibly difficult to confirm or quantify the impact. Considering the sizeable distances between each of the projects it is thought to be unlikely. Therefore, the cumulative collision impacts are not assessed to pose a significant impact on migratory bats.

Management of Cumulative Impacts

Wind Turbine Collision for Migrating Birds

Zarafshan WF has committed to technology led SDOD due to the predicted collision impact significance of sensitive species. This is predicted to be very efficient and reduce the residual impact of collision for the project to virtually zero. This is alongside PCFM and adaptive management and if required offsetting to ensure no residual impacts. If the mitigation for Zarafshan is successful as predicted, the cumulative impacts for the projects will be reduced significantly.

Kungrad 1,2,3 (and the other WF projects) have all committed to measures to reduce predicted mortality (such as livestock management at Bash), PCFM and adaptive management (to include SDOD if required). If the mitigation for Kungrad 1,2,3 and the other projects is successful as predicted, the cumulative impacts for the projects will be reduced significantly.

Additionally, offsetting strategies for Kungrad 1,2,3 for collision impacts of the OHTL to MacQueen's Bustard, as discussed in "Section 10.3.4" will cause residual cumulative impacts to be reduced to negligible impacts and not significant.

OHTL Collision for Migrating Birds

The Kungrad OHTL project has committed to installing bird flight diverters along its entire length, that will be monitored and replaced as required. PCFM monitoring and adaptive management will be undertaken to confirm actual collision rates and further mitigation and offsetting will be undertaken as required.

Collision impacts for some species will therefore be reduced as BFDs are known to be effective at significantly reducing collision in most species. However, it is unlikely that the BFDs will have much of a benefit in reducing collisions for some species (i.e. bustards) so offsetting is proposed. Offsetting as discussed in “Section 10.3.4 will be applied to ensure no net loss to these VECs.

The other projects have also committed to PCFM and adaptive management / offsets to ensure no residual impacts from the OHTLs. This includes installation of BFDs at all project OHTLs if required. Additionally, Bash wind farm has committed to a study into the effectiveness of BFDs to ensure the project, and future projects, can use the most effective BFDs to reduce collision impacts. Bash wind farm also has the offsetting strategy of releasing captive bred MacQueen’s Bustards to ensure no net loss.

All of this will ensure no residual cumulative impacts will remain and the cumulative impact will not be significant.

Wind Turbine Collision for Migrating Bats

Kungrad 1,2,3 (and the other WF projects) have all committed to PCFM and adaptive management (to include e.g. Turbine curtailment at low wind speeds or SDOD if required). If the mitigation for Kungrad 1,2,3 and the other projects is successful as predicted, the cumulative impacts on bats for the projects will be reduced significantly.

Therefore residual cumulative impacts will be reduced to negligible impacts and not significant.

Conclusion

Although cumulative impacts can occur on biodiversity as a result of multiple projects within the DAI, all existing and future projects within the DAI will incorporate stringent mitigation measures and offsetting to ensure that all residual impacts are not significant, and where residual impacts remain off-setting will be undertaken.

18. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

This section presents the Environmental and Social Management Plan (ESMP) for the various Project phases and the overall requirements for the Environmental, Social, Health and Safety (ESHS) Management System (MS).

18.1 Institutional Framework and Procedure Arrangements

Generally, two main pillars govern the successful implementation of any Environmental and Social Management Plan (ESMP) as well as the Environmental, Social, Health and Safety Management System (ESHS-MS) for the project that will be developed at a later stage (as discussed in further details in below). These pillars include:

- Proper identification of roles and responsibilities for the entities involved; and
- Effective control of the process.

All management practices are interlinked, and this section describes how these two pillar criteria could be fulfilled, which in turn helps ensure that the overall objectives are met.

A standalone ESMS Manual has been prepared and submitted that identified detailed requirement for institutional requirements and procedural arrangements. A summary is provided below but please refer to the ESMS Manual for additional details.

Staffing Requirements

Defining roles and responsibilities of the involved entities identifies where and when each entity should be engaged, their degree of involvement, and the tasks expected of the entity. This in turn eliminates any overlap of jurisdiction or authority and ensures proper communication and effective management of ESMP and ESHS-MS components.

The table below identifies the staffing requirements that are expected for the Project. This should be expanded further in the ESHS Manual that is required as part of the ESHS-MS (as discussed in further details below). This should include an organizational structure that identifies the lines of authority and roles and responsibilities of all involved entities.

Table 99: Roles and Responsibilities of Entities Involved in ESMP

Project Role	Entity	Responsibilities	Staffing Requirements
Project Developer	ACWA Power	▪ Selection of EPC Contractor and Project Operator; ▪ Implement mitigation and monitoring requirements as applicable for such entity as detailed in the ESMP; and ▪ Ensure overall compliance of EPC Contractor and Project Operator with the requirements of the ESMP and ESHS MS.	▪ Appoint competent E&S Manager ▪ Appoint a Community Liaison Officer (CLO) (male / female) ▪ Appoint Social and Labor Manager ▪ Appoint Livelihood Restoration Manager ▪ Appoint Biodiversity Manager with support team as required

EPC Contractor	TBD	- Appoint a competent HSE team; and - Implement mitigation and monitoring requirements as detailed in the ESMP and ESHS MS requirements.	- Appoint one E&S officer per 100 workers - Appoint Community Liaison Officer(s) - Appoint Biodiversity Manager with support team as required - Appoint Emergency response team (doctor, nurse, firefighters, etc.)
Project Operator	NEGU	Implement mitigation and monitoring requirements as detailed in the ESMP and ESHS MS requirements;	Expected to be undertaken through internal staff from NEGU
Ministry of Ecology, Environmental Protection, and Climate Change	Granting environmental clearance to the Project	Undertake compliance monitoring	N/A
IFIs	TBD	Appoint Lender Environmental and Social Advisor (LESA) to undertake monitoring on Developer, EPC Contractor and Project Operator to ensure compliance with IFI E&S requirements.	N/A
Owner's Engineer	TBD	Support Developer in implantation of mitigation and monitoring requirements and compliance of EPC Contractor with E&S requirements	Appoint competent E&S Officer to support Developer ESHS Manager

Training and Awareness

An ESHS training plan must be developed and maintained onsite which identifies the type of training that is required for each worker onsite. The plan will ensure that each worker is competent in relation to the tasks to be performed. In addition, signed attendance sheets and training material must be maintained onsite at all times. This should be completed by the EPC Contractor and Project Operator as applicable.

Training should include the following as applicable and as highlighted in the table that follows.

- Basic visitor ESHS induction training;
- Worker ESHS induction training for all workers onsite to include for example EPC Contractor and subcontractor crew;
- Emergency response training for all workers onsite to include for example EPC Contractor and subcontractor crew;
- Specialized training: there are other specific training requirements that must be adhered to and which are related to specific topics as applicable. This includes for example specific training for Occupational Health and Safety (OHS), waste, drivers, security workers, etc. is; and

- Toolbox Talks (TBT): regular TBT meetings must be undertaken with for example EPC Contractors respective crews and subcontractor crew. Topics and frequency are developed and distributed regularly.

Table 100: Training Elements

Training	EPC Contractor
Basic visitor HSE induction training	✓
Worker HSE induction training	✓
Emergency response training	✓
Specialized training	✓
Toolbox Talks (TBT)	✓

Inspection and Monitoring

ESHS inspection and monitoring must be undertaken to ensure compliance of involved entities with the mitigation and monitoring requirements as detailed in the ESMP and ESHS-MS requirements. This should be completed by the Developer, EPC Contractor, and Project Operator as applicable.

Inspection and monitoring should include the following as applicable and as highlighted in the table that follows.

- Daily HSE inspection and monitoring at the site and preparation of a daily observation report stating therein the corrective measures on observed safety deficiencies, unsafe acts and conditions;
- Weekly site inspections to be carried out using the weekly site inspection checklists template based on requirements of the ESMP and ESHS-MS; and
- ESHS and Labor & Working conditions to be undertaken by Developer on EPC Contractor to ensure compliance with ESMP requirement and ESHS-MS. ESHS and labor/working conditions audits should be undertaken quarterly during the construction phase.

Table 101: Inspection and Monitoring Elements

Inspection and Monitoring	Developer	EPC Contractor
Daily HSE Inspection and Monitoring		✓
Weekly Site Inspections		✓
ESHS Audits	✓	
HR Audits	✓	

Meetings

Regular ESHS meetings must be undertaken to discuss ESHS performance onsite, outstanding issues, key issues of concern and other as applicable. Signed attendance sheets and Minutes of Meeting (MoM) must be maintained onsite at all times. This should be completed by the Developer, EPC Contractor, and Project Operator as applicable.

Meetings should include the following as applicable and as highlighted in the table that follows.

- Weekly ESHS meetings
- Monthly ESHS meeting

- Quarterly management ESHS reviews

Table 102: Required Meetings

Meetings	Developer	EPC Contractor	
Weekly ESHS Meetings		✓	
Monthly ESHS Meeting	✓	✓	
Quarterly Management HSE reviews	✓	✓	

Reporting

ESHS reporting will be required to summarize the following:

- Progress in implementing the ESMP and ESHS MS plans as required;
- Findings of the monitoring programs, with emphasis on any breaches of the control standards, action levels or standards of general site management;
- Outstanding incident report forms;
- Relevant changes or possible changes in legislation, regulations and international practices;
- Reporting on Key Performance Indicators (KPI);
- Grievances (worker and stakeholder); and
- Security incidents.

Reporting should be submitted to the Developer as applicable by the relevant entities as identified below.

Table 103: Reports

Reporting	EPC Contractor
Reporting	Monthly

18.2 Environmental, Social, Health, and Safety Management System (ESHS-MS)

The ESIA is considered a key document in assessing and managing environmental and social risks related to the Project. The key output of the ESIA is the ESMP which aims to provide high level mitigations and requirements for managing the environmental and social risks anticipated from the Project.

Throughout the Project's construction and operation phase an Environmental, Social, Health, and Safety Management System (ESHS-MS) must be implemented by all relevant parties (i.e. Developer, EPC Contractor and Project Operator). The ESHS-MS must be project and site specific and must build on and take into account the requirements of the ESMP presented throughout this document.

Summarized below is the overall framework, structure and key requirements for the ESHS-MS for the key entities involved in the Project.

Developer

- ESIA including ESMP

- ESHS Manual that should include: (i) ESHS Policy; (ii) Human Resources Policy and Procedures; (iii) ESHS Organizational Structure and Responsibilities; (iv) ESHS Monitoring and Reporting Requirements; (v) ESHS Meeting Requirements; (vi) ESHS Training Requirements.
- Stakeholder Engagement Plan (SEP) including stakeholder grievance mechanism;
- Critical Habitat Assessment (CHA);
- Livelihood Restoration Plan (LRP);
- Subcontractor and Supplier Management Plan; and
- Biodiversity Management Plan (BMP) / Biodiversity Action Plan (BAP).

EPC Contractor

- ESIA including ESMP
- ESHS Manual (in line with Developer) that should include: (i) ESHS Policy; (ii) Human Resources Policy and Procedures; (iii) ESHS Organizational Structure and Responsibilities; (iv) ESHS Monitoring and Reporting Requirements; (v) ESHS Meeting Requirements; (vi) ESHS Training Requirements.
- Water Management Plan
- Hazardous Material and Waste Management Plan
- Air Quality and Noise Management Plan
- Traffic and Transport Management Plan
- Occupational Health and Safety Plan
- Emergency Preparedness and Response Plan
- Security Management Plan
- Archeology Management Plan and Chance Find Procedure
- Worker Accommodation Plan
- Subcontractor and Supplier Management Plan
- Labor and Working Conditions Management Plan

Project Operator (NEGU)

- ESIA including ESMP
- Occupational Health and Safety Plan
- Emergency Preparedness and Response Plan

18.3 Other ESHS Requirements for Temporary Facilities

This section identifies ESHS requirements for the temporary facilities which were identified earlier under “Section 2.3.5” earlier.

18.3.1 Borrow Pits

Borrow pits will be used to provide fill materials such as gravel, sand, clay for various construction requirements such as base for road networks, foundations for WTGs, and other. EPC Contractor will only import Cement, sand, aggregates and stone from borrow pits that are approved and certified local sources. Official governmental certification and licenses will be maintained onsite at all times by the EPC Contractor for such quarries supplying such materials.

In addition, borrow pit locations are to be subject to a botanical assessment to ensure that they are free of non-native or invasive species.

In addition, borrow pits might require a local environmental permit (OVOS) from Ministry of Ecology. This is to be undertaken by the EPC Contractor.

18.3.2 Batching Plant

It is unknown at this stage whether Project will require mobile concrete batching plants or whether it will rely on available batching plants with key areas.

Should mobile batching plants be considered, the EPC Contractor is required to prepare a batching plant procedure as part of the construction ESMS (discussed under “Section 18.2”) earlier that should consider the following requirements:

- The batching plant will be sited at a sufficient distance (minimum 50m) from any identified watercourses within the Project site including wadi systems and drainage lines;
- Cement storage silos need to be fitted with equipment to minimize dust emissions from the silo – this shall include a reverse pulse Fabric Filter Dust Collector (FFDC) or other dust control technology with an equivalent or better performance;
- Raw materials shall be loaded into the concrete truck agitators by either a telescopic chute (preferred) or a flexible sleeve to prevent spillage;
- Ensure truck agitators are not overfilled at any point;
- Wheel-wash facilities shall be implemented into design to prevent contaminants from being tracked out of the site by trucks leaving the batch plant;
- Dust seals shall be incorporated into batch plant design;
- A lined and bunded concrete washout area will be provided within the batching plant compound to ensure containment of any wash out water;
- A suitable concrete or bitumen lined evaporation ponds to collect concrete washout within the batching plant will be constructed;

- Appropriate drainage and mitigation against siltation/pollution of existing watercourses/drains shall be provided within the batching plant compound;
- Cement, sand and aggregate delivered to the batching plant must be stored away from storm water drains and watercourses, within an enclosed area without exposure to the elements. All cement and concrete materials shall be stored on pallets and under cover;
- Temporary bunds placed downslope of the batch plant are recommended to prevent the migration of any spillages;
- Concrete batching shall not be performed on bare ground but on artificial surfaces;
- It is recommended that all surface water runoff from the batch plant be directed to surface drains and a lined settlement pond equipped with a mobile pump such that water can be reused as far as possible; and
- The concrete washout shall be covered with plastic sheeting at the end of each day and prior to rain events.

In addition, batching plant might require a local environmental permit (OVOS) from Ministry of Ecology. This is to be undertaken by the EPC Contractor.

18.4 Compilation of the Framework Environmental and Social Management Plan (ESMP)

The tables below present the ESMP for the: (i) planning and construction, and (ii) operation phase respectively and which include the following:

- The E&S attribute (e.g. air quality) that is likely to be impacted;
- A summary of the potential E&S impact and/or likely issue;
- The identified management measures that aim to eliminate and/or reduce the potential impact to acceptable levels. Management measures include mitigation actions, further requirements, additional studies, etc.;
- Monitoring actions to ensure that the identified mitigation measures are implemented. Monitoring actions include: inspections, review of reports/plans, reporting, etc.;
- The frequency for implementing the monitoring actions, which include: once, continuously throughout the construction/operation period (depending on the mitigation measure identified this could include daily, weekly, or monthly), or upon occurrence of a certain issue;
- Parameters and location of monitoring actions as identified and applicable; and
- Responsible entity for implementing the mitigation measures and monitoring actions identified.

Table 104: ESMP for the Planning Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
Environmental planning	Additional local environmental requirement	Obtain an OVOS (local environmental permit) for other Project components for which details were not available at the ESIA stage – this includes (but not limited to) batching plant and burrow pits.	Additional requirement	Submit OVOS (environmental) approval	Not applicable	Once before commencement of construction activities.	EPC Contractor
	Other	Obtain all other required permits and non-objections from all relevant stakeholders to the Project as applicable.	Additional requirement	Submit permit register	Not applicable	Once before commencement of construction activities.	EPC Contractor
Geology, Hydrology and Hydrogeology	Construction activities could disturb soil, and result in erosion and runoff could result in siltation of surface water (during rain events)	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.	Mitigation	Submission of final detailed design	Not applicable	Once before commencement of construction activities	EPC Contractor
Biodiversity	Direct Impacts on Sensitive Receptors (Vertebrates) - Site Clearance and Earthworks	An exclusion zone of 500m will be incorporated around the Honey Badger burrows and single Marbled Polecat hole within the Aol.	Mitigation	Submission of Detailed design	Not applicable	Once before commencement of construction	EPC Contractor
		An exclusion zone of 2 km from the active and abandoned Steppe Eagle nest and 500m from all active Long-legged Buzzard nests has been factored into the design of the scheme and it is certain that there will not be a loss of active nesting sites for breeding raptors.	Mitigation	Submission of Detailed design	Not applicable	Once before commencement of construction	EPC Contractor
	Other	The Project will implement offset measures during construction and operations to address residual impacts and thus achieve no net loss for priority biodiversity features, and for Natural and Critical Habitat. In particular, the Project will – in collaboration with relevant stakeholders – support undergrounding of current or proposed Low Voltage Distribution Lines (LVDL), or removal of any such lines which are no longer necessary, within a priority area for MacQueen's Bustard in Bukhara Province. The detailed location, scale and schedule of this offset will be agreed in consultation with key stakeholders. While this offset is primarily targeted at MacQueen's Bustard, removal of LVDL in this area is likely to also have significant benefits to birds of prey by removing electrocution risks. Monitoring of current electrocution risks in the area would allow removal of LVDL to also function as an offset towards any unforeseen collisions of birds of prey with wind turbines. These offset measures are further detailed in the Project's Biodiversity Offset Plan (BOP). The scale of offsets necessary has currently been estimated on a precautionary basis, using existing data on bustard collisions with powerlines near part of the Project OHTL route. This estimate will be refined during Project implementation via a program of Post Construction Fatality Monitoring (PCFM). That Program will not only enable refinement of offsets for MacQueen's Bustard but also identify the need for any other adaptive management of mitigation or offsets owing to unforeseen impacts. It will be developed for both turbines and powerlines following good international industry practice and carried out for an initial minimum 3-year period, but the actual timeframe will depend on fatality results. If PCFM indicates collisions	Off-set	Refer to BAP	Refer to BAP	Once before commencement of construction	Developer

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		of other Critical Habitat-qualifying bird or bat species with turbines to levels that exceed PBR-based fatality thresholds, additional mitigation or offset actions will be implemented as part of adaptive measurement as contained in the ESIA. Those may include operational controls (such as turbine curtailment or shut-down-on-demand during high-risk periods) or the enhancement of mitigation and offset measures.					
Archaeology and Cultural Heritage	Improper management could potentially disturb or damage potential archaeological remains on the surface as well as some of which could be buried in the ground (if any).	Ensure that final detailed design to be prepared completely avoids placing towers within the location of the sites recorded as well as the buffer distance requirements. The overhead transmission line can pass above the recorded sites.	Mitigation	Submission of final detailed design	Not applicable	Once before commencement of construction	EPC Contractor
		Should the detailed design prepared include any additional areas outside of the current Project footprint that was surveyed in detail, follow inspections for these areas will take place by an archeology and cultural heritage expert.	Mitigation	Submission of addendum survey report			
Infrastructure and Utilities	Potential Impacts on Civil and Military Aviation. Any tall structure, such as OHTL towers, could impact aircraft safety if located near airports or known flight paths and routes – to include both civil aviation as well as military aviation.	As part of the detailed design, consult with CAA and Military Defense entity to obtain whether any technical conditions will be required for the OHTL including in particular the parts that run near Nukus airport (e.g. aviation lighting requirements).	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	EPC Contractor
	Improper planning and site selection of the Project could damage/disturb existing railway which would affect its operation, and it could also entail serious safety risks to workers.	As part of the detailed design, consult / engage with the relevant entity managing the railway to provide detailed design and obtain technical requirements or conditions for the OHTL intersections / crossings as well as overall construction management requirements. All consultations will include formal communications	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	EPC Contractor
		EPC Contractor will also obtain Occupational Health and Safety (OHS) requirements for works to be undertaken near the railway for consideration within the Occupational Health and Safety Plan (OHSP) and Emergency Preparedness and Response Plan (EPRP).	Additional Requirement	Submission of OHSP and EPRP	Not applicable	Once before the commencement of construction	EPC Contractor
		Detailed design will take into account all design requirements that will be considered for railways in accordance with the “Electrical Installation Rules” as well as any other legal requirements to be considered for such an issue and outcomes of consultations.	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	EPC Contractor
	Improper planning and site selection of the Project could damage/disturb existing oil and gas infrastructure which would affect its operation, and it could also entail serious safety risks to workers.	As part of the detailed design, consult / engage with the relevant entity managing the oil and gas infrastructure to provide detailed design and obtain technical requirements or conditions for the OHTL intersections / crossings as well as overall construction management requirements. All consultations will include formal communications	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	EPC Contractor
		EPC Contractor will also obtain Occupational Health and Safety (OHS) requirements for works to be undertaken near oil and gas infrastructure for consideration within the Occupational Health and Safety Plan (OHSP) and Emergency Preparedness and Response Plan (EPRP).	Additional Requirement	Submission of OHSP and EPRP	Not applicable	Once before the commencement of construction	EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Detailed design will take into account all design requirements that will be considered for oil and gas in accordance with the “Electrical Installation Rules” as well as any other legal requirements to be considered for such an issue and outcomes of consultations.	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	EPC Contractor
	Improper planning and site selection of the Project could damage/disturb other unidentified infrastructure elements and it could also entail serious safety risks to workers.	As part of the detailed design, consult / engage with the relevant entity managing such infrastructure elements to provide detailed design and obtain technical requirements or conditions for the intersections / crossings as well as overall construction management requirements. All consultations will include formal communications	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	EPC Contractor
		EPC Contractor will also obtain Occupational Health and Safety (OHS) requirements for works to be undertaken near such infrastructure elements for consideration within the Occupational Health and Safety Plan (OHSP) and Emergency Preparedness and Response Plan (EPRP).	Additional Requirement	Submission of OHSP and EPRP	Not applicable	Once before the commencement of construction	EPC Contractor
		Detailed design will take into account all design requirements that will be considered for such infrastructure elements in accordance with the “Electrical Installation Rules” as well as any other legal requirements to be considered for such an issue and outcomes of consultations.	Additional Requirement	Submission of formal letter	Not applicable	Once before the commencement of construction	EPC Contractor
	Improper planning and site selection of the Project could damage/disturb/pollute existing water bodies and infrastructure elements (e.g. water canals).	Confirm and verify all water streams, crossings, rivers, bodies or similar and all will be considered as part of the detailed design. The final detailed design by the EPC Contractor will ensure that no towers are placed within any of the identified water resources above, or any additional water bodies identified.	Additional Requirement	Submission of addendum report / detailed design	Not applicable	Once before the commencement of construction	EPC Contractor
		EPC Contractor is expected to properly plan construction activities to avoid any damage or disturbance to the water canals (to include but not limited to movement of equipment and machinery into the construction sites, worker code of conduct, excavation activities, etc.). Should any damage occur, restoration and/or compensation activities will be undertaken by the EPC Contractor as required with the LRP. Please refer to the LRP for additional details.	Mitigation	Submission of final construction schedule	Not applicable	Once before the commencement of construction	EPC Contractor
	<u>Water Resources.</u> Water requirements of the Project could entail constraints on existing users such as local communities or industrial establishments.	Undertake feasibility assessment to determine the optimal water supply option for the Project based on the options provided within the ESIA (Option 3 or Option 4) including ensuring no impacts on any potential existing water users. Based on the option selected, ensure all permits and requirements are obtained as applicable.	Additional Requirement	Submission of study Submission of permits	Not applicable	Once before the commencement of construction	EPC Contractor

Table 105: ESMP for the Construction Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
Landscape and Visual	Visual and landscape impacts due to presence of typical elements of a construction site such as equipment and machinery (e.g. cranes, excavators, etc.).	Ensure proper general housekeeping and personnel management measures are implemented which could include: (i) ensure the construction site is left in an orderly state at the end of each workday; (ii) possible construction	Mitigation	Visual inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		machinery, equipment, and vehicles that are not in use will be removed in a timely manner and kept in locations to reduce visual impacts to the area; (iii) ensure proper storage, collection, and disposal of waste streams generated.				Weekly site inspections	
		Implementation of 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).	Mitigation	Visual Inspections		Monthly reporting	ESHS
Land Use	Impacts related to economical and physical displacement of PAPs.	Refer to the Livelihood Restoration Plan (LRP) for additional details.					
		If, during the construction phase of the Project, for any reason additional lands are required for any permanent (e.g. switching stations, access roads,) or temporary facilities; this process will be assessed and covered by an addendum to the Livelihood Restoration Plan (LRP) currently being undertaken for the OHTL component, which also assessed temporary land impacts. Please refer to the OHTL LRP for additional details.	Mitigation	Submission of addendum LRP	Not applicable	Before commencement of construction activities	Developer / EPC Contractor
Waste Management	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Solid waste management</u>	Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the municipal approved landfill or for recycling	Mitigation	Submit Contract	Not applicable	Once before commencement of construction	EPC Contractor
		Prohibit fly-dumping of any solid waste to the land	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring	
		Distribute appropriate number of properly contained litter bins and containers properly marked as "Municipal Waste."				Weekly site inspections	
		Adhere to waste hierarchy principles with associated mitigation measures to include prevent, minimize, reuse, recycle, recover and dispose.				Monthly reporting	ESHS
		Distribute a sufficient number of properly contained containers clearly marked as "Construction Waste" for the dumping and disposal of construction waste.					
		Recycling measures must be implemented as follows: (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, ways to reduce construction waste must be undertaken by reusing materials (for example through recycling of concrete for road base coarse). This is a key requirement given that with the Project's workforce there could be huge amounts of waste that could be recycled.					
		Implement proper housekeeping practices on the construction site at all times.					
		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.	Mitigation	Submit manifests	Not applicable	Throughout entire construction period	
	Risk of soil and groundwater contamination during the various construction activities from improper	Coordinate with State Unitary Enterprise to hire a private contractor for the collection of wastewater from the site to the closest WWTP.	Mitigation	Submit contract	Not applicable	Once before commencement of construction	EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
	housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Wastewater management</u>	Ensure that constructed septic tanks during construction are well contained and impermeable to prevent leakage of wastewater into soil.	Mitigation	Submit detailed design			
		Prohibit illegal disposal of wastewater to the land.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE	
		Ensure that septic tanks are emptied and collected by wastewater contractor at appropriate intervals to avoid overflowing.				Weekly site inspections	
						Monthly ESHS reporting	
	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Hazardous waste management</u>	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.	Mitigation	Submit manifests	Not applicable	Throughout construction period	EPC Contractor
		Hire approved private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities.	Mitigation	Submit contract	Not applicable	Once before commencement of construction	
		Ensure that hazardous waste is disposed in a dedicated area that is enclosed, roofed, 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.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE	
		Ensure hazardous waste storage area is equipped with spill kit, fire extinguisher and anti-spillage trays and a hazardous waste inventory is available.				Weekly site inspections	
		Prohibit illegal disposal of hazardous waste to the land.				Monthly ESHS reporting	
		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.					
		Maintain records and manifests that indicate volume of hazardous waste generated onsite, collected by contractor, and disposed of at the hazardous waste disposal facilities.	Mitigation	Submit manifests	Not applicable	Throughout construction period	
	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Hazardous material management</u>	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 switching station components.	Mitigation	Submission of Equipment Data Sheet for review and approval	Not applicable	Throughout the Construction period	EPC Contractor
		Ensure that hazardous materials are stored in an area that is of hard impermeable surface, flame-proof, accessible to authorized personnel only, locked when not in use, and prevents incompatible materials from coming in contact with one another	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE	
		Maintain a register of all hazardous materials used and accompanying MSDS must present at all times. Spilled material will be tracked and accounted for.				Weekly site inspections	
		Incorporate dripping pans at machinery, equipment, and areas that are prone to contamination by leakage of hazardous materials (such as oil, fuel, etc.)				Monthly ESHS reporting	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		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.					
		If spillage on soil occurs, spill must be immediately contained, cleaned-up, and contaminated soil disposed as hazardous waste					
	Construction activities could disturb soil, and result in erosion and runoff could result in siltation of surface water (during rain events)	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.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE	EPC Contractor
		Salvage and store topsoil and subsoil before areas are excavated, with topsoil stripped and stockpiled separately.				Weekly site inspections	
		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.				Monthly ESMS reporting	
		Erect sediment 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.					
		Erect wind erosion control that could include: (i) water application on disturbed soils of the project to control dust; (ii) minimizing removal of topsoil; (iii) avoid deposits if loose spoils.					
		Return surfaces disturbed during construction to their original (or better) condition to the greatest extent possible.					
Biodiversity	Note: The below presents the mitigation and monitoring measures required for biodiversity as per the outcomes of the ESIA. However, a detailed and standalone Biodiversity Management Plan (BMP) is submitted which will expand on the mitigation and monitoring requirements included within the ESIA and highlighted below within this ESMP. Refer to the BMP for the full details on mitigation, monitoring and reporting requirements.						
	Potential impacts of Habitat Loss, Fragmentation and Degradation during the Construction Phase.	The EPC contractor will ensure that detailed consideration has been given to locating temporary works areas (laydown areas, workers camps, batching plants, access roads, etc.) are sited within areas that are already modified habitat or degraded, poor condition, natural habitat. The actual loss of natural habitat will therefore be very minor.	Mitigation	Submission of survey report for temporary facilities	At construction active areas	Once before commencement of construction	EPC Contractor
		All site workers will undertake a Project induction before working on site. The induction will include a comprehensive biodiversity element where the baseline ecological value and sensitivity of the site will be discussed.	Mitigation	Submit Induction Training Records Submit TBT records	At construction active areas	Throughout construction period	Developer / EPC Contractor
		Prior to construction works (habitat clearance, levelling or any other works), working areas will be clearly demarked so that site workers fully understand the working area. Encroachment into areas outside of agreed working areas	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		will be prohibited and working areas will be subject to regular check by the EPC Contractor Biodiversity Manager to check enforcement of working areas.				Weekly site inspections Monthly ESHS reporting	
		Prior to clearance of vegetation, pre-clearance surveys will be undertaken by a suitably qualified ecologist. Particular attention required to identify IUCN species listed in the UzRDB and non-native/invasive species. This will be undertaken by a botanical expert and at the appropriate time of year. Pre-clearance vegetation survey methods and habitat condition assessment metrics have been updated, and these are fully detailed in the Project BMP.	Mitigation	Submission of pre-clearance survey report	At construction active areas	Once before commencement of construction	
		On completion of construction works the EPC Contractor will be responsible for habitat rehabilitation works in all areas that have been subject to temporary disturbance. Habitat rehabilitation works will also be completed in areas adjacent to the substations and other temporary work areas where required. All habitat areas, including those subjects to rehabilitation, will be subject to Condition Score Assessments to calculate loss / gains of habitats across the Project Aol. The Project needs to demonstrate that there has been a no net loss in natural habitat and additional habitat rehabilitation will need to be completed if habitat areas do not recover to a high enough condition. It is worth noting that due to the fragility of the soil in some areas (e.g. the Ustyurt Plateau), habitats are likely to recover slowly. It is also possible that habitat recovery is not successful and off-site compensation / off-setting may be required which will be identified within the BMP/BAP.	Mitigation / Offset	Submission of habitat restoration plan Habitat and Flora monitoring within the Aol to measure the success of habitat rehabilitation work to reasonably demonstrate a net gain in Natural Habitat as well as to record the presence of invasive / non-native flora. Monitoring will be completed annually for the first five years and also in Years 10, 15, 20.	Refer to BMP/BAP	Refer to BMP/BAP	
		Longer-term post-construction monitoring will be required annually in the first five years post construction and then in Years 10, 15, and 20. post-construction surveys will be fully detailed in the Project BMP.					
	Sensitive Receptors (Habitats and Flora) - Non-native Species and Introduced Flora	Each and every vehicle, prior to coming to the site will be subject to a full clean down at a storage / plant yard so that is effectively clean. On arrival at the Project area (i.e. from yard to area) vehicle will go into a wheel-cleaning facility that will be established before entering the area. Such facilities will be established at key locations throughout the OHTL sections (e.g. near Kirkkiz for OHTL works within Ustyurt). At the facility the vehicle will run over a rumble strip to shake any loose debris from the tires. The vehicle will then be subject to a visual inspection and if necessary compressed air will be used to remove any other loose dirt debris. Once on site most vehicles and equipment will be on site for the duration of the construction period. Should any vehicle leave the leave area, it should undergo the same procedure above before entry into the access road.	Mitigation	Visual Inspections / site walkovers	At washing facilities	Daily HSE monitoring Weekly site inspections Monthly ESHS reporting	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Regular site walkover surveys throughout the construction period and post construction monitoring by a suitably qualified botanist to check for the presence and abundance of non-native or invasive species. In case such areas are identified, areas of non-native or invasive species will be mapped and a program of mechanical control will be completed over the construction period in order to remove these species from the AoI. Chemical control will be avoided however, if necessary, will be used but in accordance with national and international guidelines as well as proper risk assessment and will only be used with prior approval of the Lenders.	Mitigation	Visual Inspections / site walkovers Submission of mechanical control program report (if triggered and required)	At construction active areas relevant for period of construction	Daily monitoring Weekly site inspections Monthly ESHS reporting	
		Extensive pre-construction surveys are being completed to update the baseline habitat information, non-native species.	Mitigation	Submission of pre-construction survey report	At construction active areas	Once before commencement of construction	
	Direct Impacts on Sensitive Receptors (Vertebrates) - Site Clearance and Earthworks	All site workers will undertake a Project induction before working on site. The induction will include a comprehensive biodiversity element where the baseline ecological value and sensitivity of the receptors within the AoI will be discussed.	Mitigation	Submit Induction Training Records Submit TBT records	At construction active areas	Throughout construction period	
		Prior to construction works (habitat clearance, levelling or any other works), working areas will be clearly demarked so that site workers fully understand the working area. Working areas will be marked using orange netting fencing (or similar). Encroachment into areas outside of agreed working areas will be prohibited and working areas will be subject to regular check by the EPC Contractor Biodiversity Manager to check enforcement of working areas.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring Weekly site inspections Monthly ESHS reporting	
		Working areas will avoid trees / shrubs as these are likely, due to their sporadic distribution across the AoI to be of importance to breeding birds (e.g. passerines, raptors).	Mitigation				

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Construction of the OHTL will commence in Q2 2025. Pre-clearance works will include the following: (i) Pre-clearance mammal surveys will be undertaken in spring / summer 2024, 2025, 2026 to identify and map any Marbled Polecat, Honey Badger, Caracal and Corsac Fox burrows and if identified within or adjacent to working areas they will be recorded and mapped in detail.; (ii) Pre-clearance surveys and translocation will be completed for Central Asian Tortoise, Desert Monitor, Desert Sand Boa and Blotched Rat-snake prior to commencement of construction activities (i.e. during the tortoise active season (From mid-April up to mid / end of June each year) in any permanent or temporary works area with a tentative suggested approach below.; (iii) Pre-clearance surveys will be completed for MacQueen's Bustard. If the surveys in spring 2024, 2025, 2026 etc identify areas used by lekking or nesting MacQueen's Bustard they will be recorded and mapped in detail. An exclusion zone of 1 km from any areas where lekking MacQueen's Bustards have been identified and an exclusion of 750m from any MacQueen's Bustard nest sites will be applied. Where land acquisition limits allow (i.e. work can be moved within a larger plot of land where work is agreed) work can continue outside of the exclusion zone. Regular checks of active nests (from an appropriate distance and with optical aids as not to cause disturbance) will be completed by the EPC appointed ornithologist/s under the EPC Biodiversity Manager (with suitable qualifications and experience) and works (habitat clearance, levelling or any other works) will only be allowed to proceed if natural cessation of nesting activity can be proved (e.g. loss of eggs/chicks, abandonment of nest). Access to these areas will not be permitted in these areas and will be delayed during the lekking or nesting period (typically April to August) or until the lekking activity or nesting attempt ceases naturally; (iv) Limit the requirement to work in areas of natural habitat and areas that require vegetation clearance to avoid impacts on other nesting birds. Prior to clearance of vegetation, pre-clearance surveys will be undertaken by a suitably qualified ecologist for nesting birds, in particular to identify nesting sites of higher sensitivity and conservation status (e.g. European Turtle Dove and Yellow-eyed Pigeon). Should these species be identified as nesting within or very near to work areas (within 50m), where land acquisition limits allow (i.e. work can be moved within a larger plot of land where work is agreed) exclusion zones of 50m minimum will be set up so that work can continue but avoid the nest. If this is not possible the work in these areas will be delayed until the end of the nesting period (i.e. August/September) or until the nesting attempt ceases naturally.	Mitigation	Refer to BMP for additional details. Some measures include: Submission of pre-clearance and translocation report Visual Inspections on exclusion zones	Refer to BMP for additional details. Some measures include: At construction active areas relevant for period of construction At identified exclusion zones	Once before commencement of construction Weekly site inspections	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
	Direct Impacts on Sensitive Receptors (Vertebrates) – Vehicle Collisions	Appropriate speed limits will be enforced on access road (60kmph), internal road network and working areas (40kmph). Regular signage will be installed along the site access roads informing all drivers of the speed limit.	Mitigation	Speed and location tracking software / radar guns Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE
		Speed limits will also be communicated at the site induction as well as the possibility of reduction in speed limits during the construction period. Any changes in speed limits will be clearly communicated to all staff and evidence of such communication kept.				Weekly inspections	site
		Speed limits on any access roads or along the OHTL corridor will be reduced to 20 km/h (daytime) and 10 km/h (night-time) during the breeding bird season if MacQueen's Bustard are recorded nesting. Changes in speed limits will be enforced through updated signage and speed checks will be regularly completed in these areas. Speed limit changes will be enforced 2.5 km either side of any confirmed nesting location of this species (e.g. a 5 km zone of reduced speed limits in proximity to nesting MacQueen's Bustard).				Monthly reporting	ESHS
		Speed limits will be enforced by the installation of live speed and location tracking software in all EPC Contractor vehicles (e.g. cars and worker / equipment transport) and all Developer vehicles. Data will be analyzed monthly by the EPC Contractor Biodiversity Manager, and Developer data will also be analyzed monthly by the Developer Biodiversity Manager. Records of these checks will be kept and reported as well as being included in the annual reports. Any driver caught breaking the speed limit will be subject to disciplinary procedures including fines.					
		In addition to GPS units, regular random speed checks (using a radar gun or similar) will be completed monthly by the EPC Contractor and all vehicles (including non-project vehicles) will be checked. Vehicles breaking the speed limit will be stopped and the drivers will be informed of the correct speed limits. If the vehicle breaking the speed limit is a project vehicle disciplinary action including fines will be applied.					
		Regular signage will be installed along the site access road informing all drivers of the speed limit	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly ESHS reporting	Visual Inspections	
		A ban of driving at night will be enforced and if absolutely necessary the speed limit will be reduced to acceptable limits(e.g. 40 km/h on the access road and to 20 km/h on any internal roads).	Mitigation	GPS trackers Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE
		Ban against off-road (outside of designated access routes) driving at all times of the day	Mitigation	Visual Inspections		Weekly inspections	site
						Monthly reporting	ESHS
						Daily monitoring	HSE

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Regular checks of access roads for carcasses and if found these will be moved to at least 50m from the road to reduce the likelihood of hitting scavengers, including birds of prey.			At construction active areas relevant for period of construction	Weekly site inspections	
		An incidental / chance find procedure will be included in the BMP so that all workers report any road collisions so that any such incident can be investigated in full.				Monthly ESHS reporting	
	Direct Impacts on Sensitive Receptors (Habitats, Vertebrates) – Poaching, Collection etc.	The Project will enforce strict controls on hunting, gathering, poaching and otherwise disturbing flora and fauna within the Project Aol. Any breaches of this ban will be strictly enforced, and any workers found in breach of this control measure will be subject to disciplinary procedures which will entail instant dismissal where species of international conservation concern (IUNC CR/EN/VU) or high in-country conservation concern (UzRDB CR/EN) are affected. For more common species a formal warning will be issued, followed by dismissal if the offence is repeated.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE Weekly site inspections Monthly ESHS reporting	
		The ban on hunting etc. will be included in the site induction along with discussions about the sanctions for breaches of this control measure (and this will be further clarified by Developer / EPC Contractor).	Mitigation	Submit Induction Training Records Submit TBT records	At construction active areas	Throughout construction period	
		The EPC Contractor Biodiversity Manager will undertake monthly checks (walkovers) of the workers compound and any evidence of poaching will be fully investigated and reported in full.	Mitigation	Visual inspections	At construction active areas	Throughout construction period	
		A chance find procedure will be implemented should any site worker find a wild animal, especially one that has become a nuisance (e.g., scavenger in the works camp, presence of small mammals in worker accommodation, presence of snake or scorpion on the works site) and the EPC Contractor will arrange for an appropriately qualified person to capture and relocate. Where scavengers have been identified within the works site additional housekeeping measures may be required.	Mitigation	Submission of report	Not applicable	Throughout construction period	
		Specialists will be present on site to record species prior to and during the start of the construction work. The EPC contractor is to prepare a chance finds procedure prior to further works commencing in Q2 2025 and will be provided/updated for all subsequent work/years, which will be agreed with the Lenders 6 months in advance of the work commencing.	Mitigation	Submission of procedure	Not applicable	6 months in advance of work commencing each year	
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Disturbance	Site wide induction will be undertaken to include information regarding disturbance of ecological receptors.	Mitigation	Visual Inspections	At applicable area	Daily / weekly	
		Chance find procedure will be completed to report sightings of potentially sensitive receptor (e.g. Goitered Gazelle, MacQueen's Bustard) and investigation of any such sightings by the EPC Contractor in order that additional buffer areas can be agreed, where necessary.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE Weekly site inspections Monthly ESHS reporting	
		Continual monitoring of the site by the EPC Biodiversity Manager and Wind Farm Rangers will be undertaken to record sensitive receptors and any such information will be					

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		passed on to the EPC Contractor and buffer / exclusion zones would be updated if required.					
	Direct and Indirect Impacts on Sensitive Receptors – Reduced Air Quality / Dust	Speed limits will be altered on access roads if dust is a significant issue. This will be based on monitoring by the EPC Biodiversity Manager. Vehicles will be properly maintained to reduce emissions.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE
		Emissions from the batching plant will be monitored in line with control plans to minimize air pollution.				Weekly site inspections	
	Direct Impacts on Sensitive Receptors (Vertebrates) – Noise					Monthly reporting	ESHS
		Vehicles will be properly maintained to noise emissions.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE
		Timing of works to avoid sensitive periods of the year and maintain buffer zones around MacQueen's Bustard lekking sites and nests and known burrows of Marbled Polecat and Corsac Fox (as discussed earlier).				Weekly site inspections	
		Use of available technology and management practices with construction methodologies to reduce noise.				Monthly reporting	ESHS
		Regular monitoring of noise and vibration levels within works compounds and works areas as far as possible and apply corrective measures, as necessary.	Mitigation	Noise monitoring program & submission of report	At applicable areas	Quarterly	
	Direct Impacts on Sensitive Receptors (Vertebrates) – Lighting	Limit the amount of lighting, especially within the wider Aol (e.g. at transmission tower sites and working areas). This will be achieved by ensuring that night-time working is banned and is only completed when strictly necessary (i.e., emergency works are required).	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE
		Where lighting is required within lay-down areas and worker compounds etc. ensure that any lighting is shielded and protected to reduce light-spill and glare. Low UV intensity lighting will be used, where possible, to further reduce light spill.				Weekly site inspections	
		For external security lights PIR trigger units will be used and these should be timed to automatically switch off after five minutes.				Monthly reporting	ESHS
		No lighting will be installed along the access road.					
	Direct and Indirect Impacts on Sensitive Receptors (Vertebrates) – Littering, Waste Management	Waste Management will be included in the Site Induction so that all site workers understand their responsibilities to maintaining a clean and tidy site. Where possible all materials that can be recycled will be.	Mitigation	Submit Induction Training Records Submit TBT records	At construction active areas	Throughout construction period	
		Zero tolerance to littering in worker areas. This zero-tolerance approach should also be applied to smoking and workers must use appropriate smoking areas (supplied with 'butt bins') at all times, even when on construction sites. Litter must not be thrown out of vehicle windows when driving to and from or around the site.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE
		Daily inspections of working areas should be completed, and corrective actions applied, where necessary.				Weekly site inspections	
	Pest Species	Where pest species are identified the EPC Contractor and Biodiversity Manager will be notified and an appropriate course of action taken. For small mammal pest's live traps will be used, in order to reduce the risk of by-catch. Poison baits should be avoided, unless it can be certain that non-target species will be affected, and any such use should be	Mitigation	Visual Inspections Submission of pest control report	At construction active areas relevant for period of construction	Monthly reporting	ESHS
						Daily monitoring	HSE
						Weekly site inspections	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		in accordance with national and international best practice. If poison baits are to be used it must be certain that any poisoned animal cannot move out on to the wider Aol to reduce the risk of natural predators eating poisoned animals.				Monthly reporting ESHS	
		Where feral cats and dogs are identified the EPC Contractor Biodiversity Manager will be notified and efforts made to catch these animals and transport them to appropriate animal shelters away from the site. Guard dogs for the works site (e.g., security for site offices, workers accommodation) must not be used. No pets (cat, dogs, etc.) will be allowed on the site.					
Archaeology and Cultural Heritage	Improper management could potentially disturb or damage potential archaeological remains on the surface as well as some of which could be buried in the ground (if any).	All sites will be demarcated along with signage in English, Uzbek, Karakalpak, Russian indicating "Site of Archaeological / Cultural Heritage Importance – No Access Allowed".	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring HSE Weekly site inspections Monthly reporting ESHS	EPC Contractor
		No worker may possess or withdraw any archaeological item or remains from the Project Area and from the sites recorded in specific (to include above or below ground) such as ceremonial jars, pottery, or similar objects. If a worker were to find such a piece inside the Project, he/she shall immediately stop working and notify his supervisor to implement the chance find procedure.					
		Driving will only be permitted on formal site roads and off-road driving is prohibited, unless it is driving within a working area (e.g. moving equipment or infrastructure around the site or for maintenance operations)					
		Workers are only permitted within authorized working areas and moving to any offsite area is prohibited. This includes in particular movement into the sites recorded under any circumstances at any time of the day					
		Ensure all workers read, understand and sign the worker code of conduct which includes specific requirements related to such an issue and which include: (i) Respect religious sentiments and customs and traditions of co-workers, (ii) Respect the local religious and/or traditional days of celebration and their restrictions, (iii) Respect the religious shrines and burial sites and practices of the local population, (iv) Do not disturb shrines and other religious monuments, and (v) Recognize that shrines and sacred sites may include trees, sheds, piles of pebbles, and piles of offerings	Mitigation	Submission of signed worker code of conduct	Not applicable	Throughout entire construction phase	Developer/ EPC Contractor
		Induction training and Toolbox Talks (TBT) will be delivered to all workers to: (i) emphasize the presence and location of the sites and their overall importance; and (ii) explain chance find procedures to ensure clarity when archaeological and cultural heritage finds are encountered on site.	Mitigation	Submission of Induction Training records	Not applicable	Throughout entire construction phase	
		There is a chance that potential archaeological and/or cultural heritage remains in the ground might be discovered. It is expected that appropriate measures for such chance find procedures are implemented. Those mainly require that construction activities be halted, and	Mitigation	A report submitted to the Developer and the Ministry of Culture and Tourism	N/A	Upon occurrence	Developer/ EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		the area fenced along with proper signage, while immediately notifying the Ministry of Culture and Tourism. No additional work will be allowed before the Ministry of Culture and Tourism assesses the found potential archaeological site and grants a clearance to resume the work. Construction activities can continue at other parts of the site if no potential archaeological remains were found. If found, same procedures above apply.					
Air quality and Noise	Construction activities will likely result in an increased level of dust and particulate matter emissions as well as noise emission to surrounding environment which in turn will directly impact ambient air quality. This could entail indirect impacts on workers' health and safety.	If dust or pollutant emissions were found to be excessive due to construction activities, the source of such emissions will be identified, and adequate control measures will be implemented.	Mitigation	Dust and noise monitoring program Dust and Noise monitoring report	This will include at least one (1) monitoring point which represents activities undertaken. The monitoring will include TSP, PM10 and PM2.5 and noise levels. Results will be compared with national limits or IFC standards as included within the General EHS Guidelines or EU limits, whichever is more stringent	Quarterly	EPC Contractor
		Ensure that for activities associated with high dust and noise levels, workers are equipped with proper Personal Protective Equipment (PPE) to include dust masks, respirators (if required), and earmuffs.	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily monitoring	HSE
		Apply basic dust control and suppression measures which will include: (i) regular watering of roads for dust suppression; (ii) proper planning of dust causing activities to take place simultaneously in order to reduce the dust incidents over the construction period; (iii) proper management of stockpiles and excavated material (e.g. watering, containment, covering, bundling); (iv) proper covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin); and (v) adhering to a speed limit of: (a) 30km/h at the main access road; (b) 20 km/h within the Project area; and (c) 10km/h within working areas; (vi) Where practical, compact the ground in areas that are heavily used by vehicles and machinery; (vii) Limit or suspend earthworks during extreme weather conditions; (viii) Ensure periodic washing of vehicles in order to remove any dusty material in a dedicated area.				Weekly site inspections	
		Ensure that vehicles and trucks comply with the limits for exhaust emissions. This will be through: (i) ensure all vehicles and trucks are equipped with a catalytic convertor; (ii) ensuring that all vehicles and trucks utilized onsite are properly licensed for operation with relevant authorities.				Monthly reporting	ESHS
		Apply adequate general noise suppressing measures. This will include the use of well-maintained mufflers and noise suppressants for high noise generating equipment and machinery.					
		Develop a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the construction phase for early					

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		detection of issue to avoid unnecessary pollutant and noise emissions					
		Turn off any equipment, machine or vehicle not in use					
		For worker accommodation onsite the following will be undertaken: (i) the site will be appropriately sited at a sufficient distance (i.e., 2-3 km at least) from any construction related activities onsite; (ii) accommodation specifications will ensure that all opening (e.g., doors, windows) as well as façade is of suitable quality that would provide sufficient insulation from outside dust and noise.	Mitigation	Submission of detailed design	Not applicable	Once before commencement of construction	
Infrastructure and Utilities	Operations of existing railway could entail serious safety risks to workers.	As part of induction training, it must be emphasized to all workers the presence of the railway within the Project site. It must also be emphasized that all activities will be restricted to designated areas and that it is strictly prohibited to approach the railway or its buffer area.	Mitigation	Submission of Induction Training records	Not applicable	Throughout entire construction phase	
	Operations of existing oil and gas infrastructure could entail serious safety risks to workers.	As part of induction training, it must be emphasized to all workers the presence of the oil and gas within the Project site. It must also be emphasized that all activities will be restricted to designated areas and that it is strictly prohibited to approach the oil and gas or its buffer area.	Mitigation	Submission of Induction Training records	Not applicable	Throughout entire construction phase	
	Operations of existing other infrastructure elements could entail serious safety risks to workers.	As part of induction training, it must be emphasized to all workers the presence of such infrastructure elements within the Project site. It must also be emphasized that all activities will be restricted to designated areas and that it is strictly prohibited to approach such elements or its buffer area.	Mitigation	Submission of Induction Training records	Not applicable	Throughout entire construction phase	
	<u>Waste Utilities.</u> Ensure that waste utilities will be able to handle the waste requirements that are generated from the Project	Coordinate with the State Unitary Enterprise and obtain list of authorized contractors for collection of wastewater from the site to closest authorized wastewater treatment plant.	Additional Requirement	Submit formal communication letters from the relevant entities.	Not applicable	Once before commencement of construction	EPC Contractor
		Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the closest authorized landfill (or obtain list of authorized private contractors).					
		Coordinate with State Unitary Enterprise to obtain list of authorized contractors for collection of hazardous waste from the site to the closest approved facility for final disposal.					
	<u>Water Resources.</u> Water requirements of the Project could entail constraints on existing users such as local communities or industrial establishments.	Implement erosion and sediment control measures identified earlier for all construction activities to be undertaken within 1km from any water body / stream	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly water consumption reports	
		Document water consumption of the Project during construction.	Additional requirement	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections	
		Develop a water management plan. The plan will emphasize on water conservation and efficiency such as the following in particular: (i) Utilizing the dry-cleaning methods wherever applicable; (ii) Utilizing water saving fittings where applicable (taps, urinals, toilets, trigger					

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		guns, etc.); (iii) Consider utilizing treated wastewater/grey water for dust suppression and any irrigation requirements as applicable; (iv) Ensure that washing/cleaning activities (e.g. vehicle and equipment washing, toilets flushing/cleaning, etc.) are carried out using appropriate methods requiring low water consumption or dry (water-less) cleaning techniques where possible; (v) Awareness about resource efficiency, in particular concerning water use, shall be reinforced to all workers through signage and posters as appropriate; and (vi) Undertake weekly inspections for potable and non-potable water storage tanks and water supply connections to ensure there are no leaks. If any are located, they will be fixed immediately.				Monthly water consumption reports	
	<u>Traffic and Transport.</u> Transportation requirements of the Project could affect level of service and capacity of existing highways and road networks. <u>Traffic and Transport.</u> Improper transportation activities could result in traffic related accidents on roads which in turn could affect the health and safety of users on the roads, workers and other.	Develop a Traffic and Transport Plan that must take into account the following: (i) local legislations related to traffic and transport; (ii) undertake consultation and engagement activities as part of preparation of this plan with the Ministry of Transport / Logistics Center under the Road Use Unitary Enterprise and the General Department of Automobiles Roads to arrange for the logistics of the transportation requirements (iii) update traffic requirements of the Project related to materials, equipment, machinery, project workers, services, etc.; (iv) update and identify final traffic routes required; (v) identify the final traffic routes required for the Project. The plan must analyze and study the entire route for transportation of the Project components. The assessment must take into account worst case scenarios for transportation of Project components. The study must investigate any constraints which need to be considered along the highways leading to the Project site such as bridges, overhead utility cables, slants in roads, etc. and identify accommodations which need to be taken into account (bypasses, adjustments to roads, etc.); (vi) identification of types of vehicles to be utilized; (vii) identify in detail procedures for onsite management of traffic. This could include but not limited to: optimization of internal traffic layout so that delivery and other vehicles will be able to access site easily; identification of requirements for controlling access to the site (e.g. security checkpoint, registration, etc.); providing appropriate lighting for roads and pedestrian walk and ensure they are segregated; utilization of appropriate and sufficient traffic signs onsite (e.g. speed limits); barricading of open trenches and excavated pits; utilization of banksmen and flaggers and other; (viii) identify procedures for transportation activities under extreme weather conditions including conditions for suspicion of activities to include in particular: sand and salt storms, windy conditions, extreme hot and cold weather, and conditions and low/high temperatures; (viii) identify requirements to be adhered to and enforced on all haulage suppliers such as licensing, driving instructions	Additional requirement	Submit Traffic and Transport Plan	Not applicable	Once; before commencement of construction	EPC Contractor
			Additional requirement	Submit consultation record with Ministry of Transport / Logistics Center under the Road Use Unitary Enterprise and the General Department of Automobiles Roads	Not applicable	Once; before commencement of construction	
			Additional requirement	Submit detailed design	Not applicable	Once; before commencement of construction	
			Mitigation	Submit signed code of conduct for drivers	Not applicable	Throughout entire construction period	
			Mitigation	Submit TBT records	Not applicable	Throughout entire construction period	
			Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly ESHS reports (including traffic / transport KPIs)	
			Mitigation	Submit abnormal load permits	Not applicable	For all abnormal loads	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		and code of conduct, speed limits, accident management, monitoring and reporting, etc. (ix) identification of a code of conduct to be adhered to and enforced on all drivers in the Project; (x) identification of speed limits onsite and identification of all traffic signage requirement onsite (xi) identification of a procedure for management of onsite/offsite traffic accidents; (xii) reflect the procedural actions for traffic management in induction training material; and repeated/refresher Toolbox Talks (TBT); (xiii) identify Key Performance Indicators (KPI) for implementation of plan; (xiv) identify roles and responsibilities for implementation of plan; (xv) identify abnormal loads and obtain permits to carry these loads on highways; (xvi) ensure all vehicles are subject to a regular inspection / maintenance program.					
Socioeconomics	<u>Employment and Procurement.</u> If: (i) local community engagement is not implemented properly; OR (ii) if priority on all employment and procurement opportunities are not provided to local communities; OR (iii) if expectations are not properly managed and addressed – this could result distrust and resentment with the Developer and might eventually lead to other potential escalated events (e.g. demonstrations, blockage of access road, etc.).	Project Updates to local communities in accordance with identified measures in the SEP which also includes measures related to management of local stakeholder expectations on jobs during the construction phase. This will include the following in particular: (1) undertake continuous and ongoing consultations (at least monthly) with local communities to: (i) manage expectations on employment and procurement opportunities for the Project; (ii) emphasize that job opportunities for this Project are huge and will be met throughout various entities that will include local communities, Districts and Regions; (iii) provides updates on Project implementation and overall schedule; and (iv) other as appropriate; (2) provide updates on implementation of the local recruitment and procurement procedure to date (e.g. number of locals employed to date from each village as appropriate); (3) all communication / updates to the local communities will be provided through the following channels in particular: (i) Notifications and advertisements with Khokimiyat and Mahallas (including Mahalla Community Union); (ii) Telegram Channel; (iii) Youth Union; and (iv) Family and Women's Committee; (iv) Nannouz which forms the umbrella association for all NGOs in Uzbekistan.	Additional requirement	Submission of stakeholder engagement log sheets	Not applicable	Monthly	Developer / EPC Contractor
		Adopt and implement a Local Employment and Recruitment Procedure as part of the Labor and Working Conditions Management Plan (LWCMP). The procedure must take into account the following: (1) comprehensive analysis of local skills and businesses availability and gaps within Karakalpakstan, Khorazm and Bukhara Region in order to make an informed approach when recruiting and procuring requirements locally. This will include in particular the youth. (2) (i) Number of job and procurement opportunities targeted for local communities to include skilled and unskilled workers, (ii) details on how job and procurement opportunities will be announced; (iii) a selection process that is fair and transparent and provides equal opportunities for all	Additional requirement	Submission of Local Employment and Recruitment Procedure	Not applicable	Once; before commencement of construction	Developer / EPC Contractor
			Additional requirement	Submission of local community employment and procurement register by area/district/region along with evidence for announcements and selection process.	Not applicable	Monthly	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		including females; and (iv) order of priority with respect to employment and procurement subject to availability of qualifications and skills where the following order of priority can be considered: local communities; Karakalpakstan/Khorazm/Bukhara Region; and finally Uzbekistan. (3) as required by the local communities all communication / updates to the local communities will be provided through the following channels in particular: (i) Notifications and advertisements with Khokimiyat and Mahallas (including Mahalla Community Union); (ii) Telegram Channels; (iii) Youth Union; and (iv) Family and Women's Committee; and (v) Nannouz which forms the umbrella association for all NGOs in Uzbekistan. (4) Based on the outcomes of the availability analysis above, consider undertaking a capacity building and training program for selected local community workforce members. This could be undertaken in coordination with key and prominent NGO's and/or research and academic institutions; (5) local recruitment process will be conducted in an inclusive, fair, equitable and diverse manner, and it will be ensured that there is no bias or discrimination and will be open to all community members regardless of their class, race, color, gender, age, disability, civil status, etc. (6) Recruitment will be based on competency and skill. (7) Efforts and resources will be allocated to make sure that women are also fairly targeted and recruited and are provided opportunities for learning skills to participate equally as men. (8) Gender inclusive advertising will be identified, in consultation with female stakeholders (such as women's groups and CBOs) and will be utilized in the announcement of job opportunities. (9) Candidate selection (recruitment) will be conducted by a mixed-sex panel (comprising of at least two people). Candidate promotion selection will always be carried out by a gender diverse and balanced panel (more than one person and never by a single-sex panel). All candidates will be informed about this. (10) It will be prohibited to terminate the contract of a female worker during her maternity leave.					
		Considering implementing a Community Development Plan which aims to benefit the local communities to the greatest extent possible. It is recommended that a structured approach is developed for such a program that takes into account the community's needs and priority development projects which could benefit local communities (which logically will also take into account other factors such as allocated budget by the Developer, timeline for implementation of such projects, etc.)	Additional requirement	Submission of community development plan	Not applicable	Once; during 1 st year quarter of construction	Developer / EPC Contractor
			Additional requirement	Submission of community development plan update report	Not applicable	Annually	Developer / EPC Contractor
		Stakeholder grievance mechanism will be implemented in relation to implementation of the requirements of the Stakeholder Engagement Plan (SEP) and the Local Employment and Recruitment Procedure. Any grievances submitted will be handled fully in accordance with the	Mitigation	Submission of stakeholder grievance log sheet Submission of grievance close-out forms	Not applicable	Monthly	Developer / EPC Contractor

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
	<u>Community Health, Safety and Security.</u> Trespassing of unauthorized personnel into construction active areas could result in health and safety impacts.	mechanism that is included within the SEP. Please refer to the SEP for additional details.					
		Prepare and submit a security Management Plan (SMP)	Additional requirements	Submission of SMP	Not applicable	Once; before commencement of construction	EPC Contractor
		Key construction areas will be fenced off and will have signs with warning notices in English, Russian, Uzbek, and Karakalpak language	Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly ESHS reports (including SMP KPIs)	
		Upon completion of construction activities, post informative signs on the transmission towers about public safety hazards and emergency contact information in both Russian, English, Uzbek and Karakalpak language. Signs, especially warnings need to be pictorial as well as written to ensure they are understood by those unable to read.	Mitigation	Installation of informative signs	Not applicable	Once; before commencement of operation	
		The Stakeholder Engagement Plan (SEP) that will be implemented will include measures to engage with local communities to inform them about the start of construction works in advance, to educate them on the dangers inside the fenced-off area, and the danger of approaching construction works at other locations and emphasize importance of avoiding trespassing at all times.	Mitigation	Submission of stakeholder engagement log sheets	Not applicable	Monthly	
		Stakeholder grievance mechanism will be implemented in relation to implementation of the requirements of the SMP. Any grievances submitted will be handled fully in accordance with the mechanism that is included within the SEP. Please refer to the SEP for additional details.	Mitigation	Submission of stakeholder grievance log sheet Submission of grievance close-out forms	Not applicable	Monthly	
	<u>Community Health, Safety and Security.</u> Influx of huge number of workers to the area could result in community impacts such as pressure on infrastructure elements, increase in social vices, risk of spread of disease, and other.	Prepare and submit a Worker Accommodation Plan (WAP) and a Labor and Working Conditions Management Plan (LWCMP). The above plans will include specific sections on worker influx that will include the following measures: (i) It is recommended to manage workers in a centralized location / approach that are not located within local communities. Depending on project phasing, for example, this could include two (2) central locations along the OHTL route located near (but not within) local communities. If accommodation is to be located within local communities, then it is highly recommended to manage in a centralized location / approach (e.g. within 1 apartment building or several located next to each other and not several apartments / hotels located in various dispersed areas; (ii) Medical examination programs. All workers must be subject to a preliminary medical examination before commencement of any job tasks in accordance with local applicable requirements. In addition, routine medical examination for worker (bi-annually) must be undertaken. Such medical examinations must be undertaken at certified centers. Copies of medical examination results of	Additional requirement	Submission of WAP and LWCMP	Not applicable	Once; before commencement of construction	
			Mitigation	Submission of medical examination records	Not applicable	Bi-annual	
			Mitigation	Submission of signed code of conduct and associated disciplinary measures	Not applicable	Throughout entire construction period	
			Mitigation	Submit induction training modules and Toolbox Talks on hygiene and code of conduct.	Not applicable	Throughout entire construction period	
			Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly ESHS reports (including SMP KPIs)	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		all workers must be retained onsite. Medical examinations will be consistent amongst all worker to ensure no discriminatory implication; (iii) details and procedures for ensuring and maintaining hygienic conditions onsite at all times specifically related to the toilet and washing facilities, eating areas, etc. This will be applicable onsite and within worker accommodation; (iv) development of a code of conduct and associated disciplinary procedures for workers which takes into account appropriate behaviors by workers at all times, religious customs, traditional cultures and social norms in the area. In addition, it must include specific requirements for social vices including gender-based violence, sexual harassment, alcoholism, drug abuse, etc.; and (v) induction training and self-awareness raising sessions on risks associated to the most common contagious diseases (e.g. influenza virus), communicable diseases, general measures for hygiene, code of conduct expected to be implemented and other as appropriate.					
		Stakeholder engagement activities with local communities must provide information on worker influx expected and measures that will be undertaken to control such impacts. Stakeholder engagement activities are provided in further details in the SEP.	Mitigation	Submission of stakeholder engagement log sheets	Not applicable	Monthly	
		Stakeholder grievance mechanism will be implemented in relation to any grievances related to worker influx. Any grievances submitted will be handled fully in accordance with the mechanism that is included within the SEP. Please refer to the SEP for additional details.	Mitigation	Submission of stakeholder grievance log sheet Submission of grievance close-out forms	Not applicable	Monthly	
	<u>Worker Welfare, Health and Safety.</u> Generic occupational health and safety risks to workers, as working onsite increases the risk of injury or death due to accidents	Prepare an Occupational Health and Safety Plan (OHSP). Adopt and implement the recommendations/provisions of the OHSP which includes: (i) Risk assessment and job safety planning procedure, (ii) PTW system procedure, (iii) LOTO procedure, (iv) Site control occupational health and safety procedure, (v) Occupational health and safety signage requirements, (vi) Tower construction, erection and conductor / line connection OHS procedure, (viii) Identification of OHS training requirements, (ix) Identification of monitoring and reporting requirements, (x) Identification of roles and responsibilities, and (xi) Identification of measures to reduce the risk of COVID-19 exposure and transmission.	Mitigation	Submit OHSP	Not applicable	Once before commencement of construction	
			Mitigation	Submission of OHS training records	Not applicable	Throughout construction period	
			Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly ESHS reports (including OHSP KPIs)	
		Prepare an Emergency Preparedness and Response Plan (EPRP) which will include: (i) communication and management process, (ii) emergency response procedure, (iii) emergency control measures to include but not limited to fire, accidents, spillage, traffic accidents, natural disasters and other. In addition, of particular importance within the Project area are also risks related to remoteness of the Project site (e.g. in case of a medical emergency), risks from sand and salt storms including windy conditions,	Mitigation	Submit EPRP	Not applicable	Once before commencement of construction	
			Mitigation	Submission of EPRP drills and EPRP TBT records	Not applicable	Throughout construction period	
			Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		risks from extreme hot and cold weather and conditions and low/high temperatures, (iv) requirements for emergency kits, (v) onsite assembly points, (vi) emergency signs, (vii) training requirements, (vii) monitoring and reporting requirements, and (viii) roles and responsibilities of the personnel involved in implementation of the plan				Weekly site inspections Monthly ESHS reports (including EPRP KPIs)	
		Establish a comprehensive medical emergency response, including robust on-site infrastructure and a helicopter response to appropriate medical facilities in Karakalpakstan when required.	Mitigation	Submit detailed design	Not applicable	Once before commencement of construction	
		A worker grievance mechanism will be implemented and that will handle any grievances related to OHSP.	Mitigation	Submit worker grievance sheet along with grievance close-out forms	Not applicable	Monthly	
	Worker Welfare, Health and Safety. Inappropriate accommodation facilities for workers will entail impacts on worker welfare as well as their overall health and safety.	Prepare a Worker Accommodation Plan (WAP) that must include the following components: (i) It is recommended to manage workers in a centralized location / approach that are not located within local communities. Depending on project phasing, for example, this could include two central locations along the OHTL route located near (but not within) local communities. If accommodation is to be located within local communities, then it is highly recommended to manage in a centralized location / approach (e.g. within 1 apartment building or several located next to each other and not several apartments / hotels located in various dispersed areas; (ii) identify the workforce requirements including all subcontractor requirements; (iii) identify workforce transportation requirements to/from accommodation facilities; (iv) identify accommodation procedures to ensure that workers are provided with a decent accommodation which meets the basic worker's needs. In specific, onsite and/or offsite accommodation must be compliant with good international industry practices – mainly the “Workers’ accommodation: process and standards” (EBRD/IFC Guidance Note, 2009). The document provides guidance notes on general living facilities, room facilities, medical facilities, management of accommodation units, etc.; (v) worker accommodation must take into account climatic conditions of the area given the location (e.g. extreme heat and extreme cold) and it must be equipped with suitable measures such as air conditioning, heating, etc. (vi) accommodation will consider the social and cultural backgrounds of the workers, providing spaces that respect cultural practices and promote social interaction in a positive manner. This includes considerations for gender segregation where culturally appropriate and facilities for religious practices (vii) accommodation facilities and specifications must take into account site-specific conditions to include in particular: (1) sand and salt storms, (2) windy conditions, (3) extreme hot and cold weather, and (4) conditions and low/high temperatures; (viii) in relation gender requirement the following will be considered: (1) separate sleeping rooms for men and women will be provided in shared accommodations; (2)	Additional requirement	Submit WAP	Not applicable	Once; before commencement of construction	
			Mitigation	Submit detailed design for accommodation	Not applicable	Once; before commencement of construction	
			Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly Audits Monthly ESHS reports (including WAP KPIs)	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		means of securing bedroom doors from inside and out will be provided; and (3) finally, female sanitary and toilet facilities will be kept separate from men; (ix) identify housing rules and regulations including code of conduct; (x) identify training requirements; (xi) identify monitoring and reporting requirements; and (xii) identify roles and responsibilities of the personnel involved in implementation of the plan.					
		A worker grievance mechanism will be implemented and that will handle any grievances related to WAP.	Mitigation	Submit worker grievance sheet along with grievance close-out forms	Not applicable	Monthly	
	<u>Worker Welfare, Health and Safety.</u> Inappropriate management of the workforce could entail human rights violations (e.g. engaging child workers, confiscation of passports of foreign workers, unacceptable working hours, and others).	Prepare and submit a Labor and Working Conditions Management Plan (LWCMP) that will include: (1) an overview of the labor use on the project throughout the construction phase; (2) Human Resources (HR) policy; (3) identify an HR management procedure for the workforce that will ensure decent and humane working conditions, worker rights, and enhance constructive work floor relations. This will be guided by the Local Labor Law as well as the IFC PR 2 and EBRD PR 2 as well as the ILO Fundamental Labor Conventions covering the following in particular: (i) ensuring all workers onsite are provided with a contract. Each worker will be provided with a signed copy of the contract and another copy will be retained with the HR Manager.; (ii) providing reasonable working conditions and terms of employment to include but not limited to contract management, working hours, salaries/wages, annual and medical leaves, bereavement leaves, accommodation, etc. (iii) recognizing workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference; (iv) prohibition of child labor within the workforce; (v) overall management of young workers within the labor force. The recruitment of children under the age of 18 in illegal and hazardous work will be explicitly prohibited. However, if children between the ages of 15-18 are to be employed at any stage throughout the construction stages, the following will apply: (a) an official letter with the approval of their parents or guardian will be provided; (b) young workers must provide valid identification that presents proof of age at the recruitment stage; (c) minor workers are not allowed to work onsite and are only allowed to work in the Project's worker camp; (d) they are not to be employed in any kind of work which by its nature is likely to harm their health and safety or expose them to risks and hazards; and (e) in accordance with the Labor law, young workers shall not work for more than six hours a day, during which one or more break periods totaling not less than one hour shall be granted for meals and rest. They shall not be made to work overtime hours or required to come to work on weekends and official holidays. They shall not be made to work between 7:00 pm and 7:00 am. (vi) prohibition of forced labor and human trafficking including confiscation of employees' passports; (vii) non-	Additional Requirement	Submit LWCMP	Not applicable	Throughout entire construction period	
			Mitigation	Submit signed contracts for all workers			
			Mitigation	Submit signed worker code of conduct for all workers			
			Mitigation	Submit payment register			
			Mitigation	Submit disciplinary action register			
			Mitigation	Submit training and TBT records			
			Mitigation	Submit worker grievance logs with close-out forms			
			Mitigation	Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Monthly Audits Monthly ESHS reports (including KPIs for LWCMP)	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		discrimination throughout the entire work cycle in all its forms; (viii) providing equal opportunities for all throughout procurement and employment opportunities including women groups; (ix) overall management of daily workers, migrant workers and third-party workers; (x) given the expected long-term location onsite employment contracts must include regular off-site breaks for rest and relaxation; (xi) ensure the following on wages: (a) wages to be determined on a case-by-case basis and must be must be fair and will meet the basic needs to maintain a safe and decent standard of living; (b) must be established based on qualifications and competencies, professional experience, job responsibilities, and wages at equivalent positions; (c) must be for work of equal value will be provided for female and male workers; and (d) will not be below the nationally established minimum wage. (xii) ensure the following on working hours: (a) in accordance with the Labor law, working hours will be set to a maximum of 40-hours a week over 5 or 6 days including at least one hour break every 4 hours; (b) overtime is allowed with appropriate need, but in all cases, working hours will not exceed 10 per day; (b) workers will have a 24-hour period of rest after 6 days of work; and (b) all workers will be notified of their schedule for the weekly day's rest, working hours, break periods and any changes introduced to such a schedule. (xiii) ensure the following on leaves: (a) workers will be entitled to annual and sick leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract; and (b) workers will be entitled to annual and temporary disability leaves as well as any other social benefits as stipulated in the Labor law. These will be included in the worker's contract; (xiv) all workers will be required to read and sign a Worker Code of Conduct which will be explained verbally. The code of conduct will prohibit the following and which is subject to disciplinary action: (a) harassment, and abuse of any kind will not be tolerated; (b) discrimination based on personal characteristics is prohibited to include but not limited to gender, race, nationality, ethnic, social and vulnerable people, religion or belief, disability, age, or sexual orientation. (xv) ensure privacy and protection of workers is maintained at all times. This will include limiting access to the below data and information to the EPC Contractor HR Manager only; (4) Contracts; (5) HR files and databases; (6) Payment register; (7) identify a disciplinary procedure for the workforce to be implemented; (8) identify a worker welfare procedure related to drinking water, rest areas, sanitary facilities, changing rooms; (9) identify a worker grievance procedure to manage all worker related complaints and grievances that will outline the measures for escalation of grievances by workers; (10) identify training requirements related to the plan; (11) identify monitoring and reporting requirements related to the					

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		plan; and (12) identify roles and responsibilities related to the plan.					
	<u>Community and Worker Health and Safety.</u> Inappropriate management of the workforce (which could be from the local community) as well as inappropriate conduct of workers within local community areas could entail gender related risk and impacts such as Gender based violence, and harassment (GBVH) or Sexual Exploitation, abuse, and harassment (SEBH)	Develop and implement a Labor and Working Conditions Management Plan (LWCMP). The Plan will include at a minimum the following: (1) safe transport will be provided to female and male workers, given the remote area of the Project. The codes of conduct, which prohibit gender-based violence, harassment and abuse, will apply to transportation modes.(2) all workers will be required to read and sign a Worker Code of Conduct which will be explained verbally. The code of conduct will prohibit be subject to disciplinary action and will prohibit harassment, gender-based violence and abuse of any kind; (3) all workers will be provided with a copy of the Gender Based Violence and Harassment (GBVH) Code of Conduct and will be required to sign it; (4) identify a worker welfare procedure related to drinking water, rest areas, sanitary facilities, changing rooms and other that will include take into account the following in particular: (i) female sanitary, toilet facilities, and prayer rooms will be kept separate from men; (ii) all such facilities will have lockable doors with adequate numbers provided; (iii) separate changing rooms and cabinets will be provided for men and women both of which have locking mechanisms.	Additional requirement	Submit LWCMP	Not applicable	Once; before commencement of construction	
			Mitigation	Submit signed GBVH Code of conduct for all workers	Not applicable	Throughout construction period	
			Mitigation	Visual Inspections	Entire project footprint	Daily HSE monitoring Weekly site inspections Quarterly Audits Monthly ESHS reports (including KPIs for LWCMP)	
			Mitigation	Submission of worker grievance logs with close-out forms	Not applicable	Monthly	
			Mitigation	Submission of stakeholder grievance logs with close-out forms	Not applicable	Monthly	
Subcontractor and Supplier Management	Improper management of subcontractors and supplier poses risks of major environmental impacts, human right abuses, criminal abuses or other	Develop a Subcontractor and Supplier Management Plan which will: (i) identify the key subcontractors and suppliers that will be involved, (ii) identify a screening process where during the tendering process the key E&S requirements will be identified and included within the tender documents. This may include adherence to	Mitigation	Submit Subcontractor and Supplier Management Plan	Not applicable	Once before commencement of construction	Developer / EPC Contractor
			Mitigation	Submission of outcomes of screening processes for all selected subcontractors and	Not applicable	Throughout entire construction period	

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		International Financial Institution (IFI) E&S requirements, national E&S regulations, ESIA and ESMS requirements and other. In addition, tenders will be required as part of the tender to specify how they intend to comply with such requirements as part of their scope of work. In the case there is no tendering process subcontractor/supplier will be required to respond to an E&S prequalification questionnaire and will be required to submit company HSSE policies. Finally, as part of the screening process, an online desktop review (including media research) on the list of companies bidding, their owners and shareholders on E&S reputational issues; (ii) selection process where selected subcontractor / supplier risks have been identified, Developer / EPC Contractor will assess these risks further with the subcontractor / supplier concerned to understand their capacity to avoid and manage such risks and to understand the controls the subcontractor / supplier has in place. This could include but not limited to submission of E&S policies and procedures as relevant for subcontractor / supplier (e.g. for supplier's focus would be on human resources and labor policies and procedures), traceability, cascading E&S requirements, undertaking auditing protocols, etc. Where this is not possible, alternative suppliers will be sought; (iii) contractual control will put in place controls to avoid and manage potential risks. This will include but not limited to contractual controls, including corrective actions and exit mechanisms, to avoid and manage potential risks. This would depend on the level of risk identified and the leverage over the subcontractor / supplier concerned. Contractual controls could include but not limited to the following: requirement to comply with IFI E&S requirements and national E&S requirement as applicable; requirements to comply with the project ESMS MS and associated manual; include clauses that enable the undertaking of inspections and/or audits to ensure compliance with the requirement above; include clauses allowing imposition of contractual penalties as applicable; (iv) proactive management and a system of contractor accountability.		suppliers (e.g. tender E&S requirements, reputational assessments)			
			Mitigation	Submission of risk assessment for subcontractor / supplier selected and E&S controls for risks identified	Not applicable	Throughout entire construction period	
			Mitigation	Submission of E&S contractual controls	Not applicable	Throughout entire construction period	
			Mitigation	For subcontractors - Visual Inspections	At construction active areas relevant for period of construction	Daily HSE monitoring Weekly site inspections Quarterly Audits Monthly ESHS reports (including KPIs for SSMP)	
			Mitigation	For suppliers and depending on the risks associated with a supply plan, put in place monitoring approach including reports from suppliers, ad hoc audits, etc. to the extent this is feasible. Monitoring will seek to ensure compliance with the mitigation defined, and in cases of non-compliance, help define corrective actions with the supplier concerned. Developer / EPC Contractor will maintain appropriate records of its supply chain assessment and risk management. Where this is conducted by EPC contractors it will be reported to Developer on a regular basis	Off-site	Throughout entire construction period	

Table 106: ESMP for the Operation Phase

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
Landscape and Visual	Impacts related to interaction of OHTL towers within the overall landscape and visual character of the area including any potential sensitive visual receptors.	A Stakeholder Engagement Plan (SEP) along with a grievance mechanism will be implemented. In the case grievances are received from any of the sensitive receptors in relation to tower visibility, consider planting native vegetation or trees around the receptor location to screen the view through creating buffer zones of natural or landscaped features to help blend the OHTL into the landscape.	Mitigation	Submission of grievance log sheets and grievance close-out forms as per SEP	Not applicable	Throughout entire operational period	Wind Farm Project Operator
Waste Management	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Solid waste management</u>	Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the municipal approved landfill or for recycling	Mitigation	Submit contract	Not applicable	Once before commencement of operation	NEGU
		Prohibit fly-dumping of any solid waste to the land	Mitigation	Visual Inspections	Entire project footprint	Daily HSE monitoring Weekly site inspections Monthly ESHS reporting	
		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					
		Implement proper housekeeping practices onsite at all times					
		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	Mitigation	Submit manifests	Not applicable	Throughout operational period	
	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Wastewater management</u>	Coordinate with State Unitary Enterprise to hire a private contractor for the collection of wastewater from the site to the closest WWTP	Mitigation	Submit contract	Not applicable	Once before commencement of operation	
		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	Mitigation	Submit manifests	Not applicable	Throughout operational period	
		Prohibit illegal disposal of wastewater to the land	Mitigation	Visual Inspections	Entire project footprint	Daily HSE monitoring Weekly site inspections Monthly ESHS reporting	
		Ensure that septic tanks are emptied and collected by wastewater contractor at appropriate intervals to avoid overflowing					
	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Hazardous waste management</u>	Coordinate and hire a private contractor for the collection of hazardous waste from the site to the approved hazardous waste disposal facilities	Mitigation	Submit contract	Not applicable	Once before commencement of operation	
		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	Mitigation	Visual Inspections	Entire project footprint	Daily HSE monitoring Weekly site inspections Monthly ESHS reporting	
		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					
		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					

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
	Risk of soil and groundwater contamination during the various construction activities from improper housekeeping activities (e.g. spillage of hazardous material, random discharge of waste and wastewater to surrounding environment, etc.). <u>Hazardous Material Management</u>	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 switching station components	Mitigation	Review of Data Sheet	Not applicable	Throughout operational period	
		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	Mitigation	Visual Inspections	Entire project footprint	Daily HSE monitoring Weekly site inspections Monthly ESHS reporting	
		Maintain a register of all hazardous materials used and accompanying Material Safety Data Sheet (MSDS) must present at all times. Spilled material will 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.)					
		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					
		If spillage on soil occurs, spill must be immediately contained, cleaned-up, and contaminated soil disposed as hazardous waste					
Biodiversity	Note: The below presents the mitigation and monitoring measures required for biodiversity as per the outcomes of the ESIA. However, a detailed and standalone Biodiversity Management Plan (BMP) is submitted which will expand on the mitigation and monitoring requirements included within the ESIA and highlighted below within this ESMP. Refer to the BMP for the full details on mitigation, monitoring and reporting requirements.						
	Direct Impacts on Sensitive Receptors (Birds) – Collision with OHTL	Mitigation is being installed to reduce the operational impact of the OHTL on migrating birds including birds of prey, waterbirds, and other large soaring birds. Bird Flight Diverters (BFDs) are to be installed along the entire length of the OHTL on the shield wire. The BFDs installed will be ones that glow or light up at night and are dynamic (e.g. move with the wind) to increase visibility for diurnal and nocturnal migrants (e.g. FireFly diverters). The Project Developer and EPC Contractor is committed to install diverters that meet the required long-term guarantee and specifications that are equal to FireFly diverters. Installation of earthing wire and attached BFDs will be completed at the same time (within 1 week). BFDs will be installed to the manufacturer’s guidance and assessment of the OHTL, taking into consideration number and spacing, at a minimum of 1 every 10m. The installation of BFDs will need to be recorded by the O&M Contractor Biodiversity Manager and these checks need to be included in the annual reports. BFDs will be checked every 6 months before the spring and autumn migration seasons so that they are in place and operational for higher risk periods. Any damaged or defective BFDs will need to be replaced within 2 months of being reported as faulty. However the need for and extent of replacing damaged / defective BFDs will be undertaken following a review of the outcomes of the PCFM studies (discussed in further details below). This issue will be discussed in agreement with lenders and other relevant stakeholders, including most importantly NEGU to whom the OHTL will be handed over upon completion of construction and as the owner of the OHTL.	Mitigation	Refer to BMP	Refer to BMP	Refer to BMP	Developer / EPC Contractor / NEGU
		Operational monitoring will be completed for at least the first three years of operation to monitor actual levels of mortality. Post construction fatality monitoring will be completed along the whole OHTL and the program of post construction monitoring will include carcass searching, searcher efficiency trials and carcass persistence trials. Additionally, Bird Strike Indicators (BSIs) will be	Mitigation	Refer to BMP	Refer to BMP	At least first 3 years of operation after which to be discussed and agreed with lenders	Developer

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		used to detect bird strikes with the OHTL. The results of the post-construction fatality monitoring will be used to inform a GenEst Analysis. Post-construction monitoring will follow the latest international best practice including the recently published PCFM Handbook (EBRD, IFC, KFW 2023). Full details of the PCFM Protocol will be included in an Operational BMP/BAP documents. PCFM survey areas will also include OHTLs that are adjacent to the Project Aol, especially in areas that may be subject to greater movement of high-risk species (e.g. MacQueen's Bustard).					
		An adaptive management strategy will be developed (in line with the PCFM Handbook), and additional mitigation will be undertaken if the results of the post-construction fatality monitoring indicate higher than predicted mortality, especially in relation to species of elevated conservation concern. Adaptive management could include retrofitting of BFDs on unmarked lines (including adjacent OHTL) where PCFM surveys indicate areas of elevated mortality or provision of additional BFDs on marked lines if the installed BFDs are not preventing (or reducing) mortality. This could include installation of additional BFDs or those that are shown to increase avoidance / reduce collision in species susceptible to OHTL impacts (e.g. bustards). Installation of BFDs can be undertaken using a drone and would not require powerlines to be disconnected. Installed mitigation could also be changed if additional research into the effectiveness of BFDs comes to light during the construction period which would be agreed with lenders.	Mitigation	Refer to BMP	Refer to BMP	Upon occurrence to be discussed and agreed with lenders	
		A chance find procedure will be implemented and any carcasses seen by site workers will be reported to the O&M Contractor Biodiversity Manager so that they can investigate.	Mitigation	Refer to BMP	Refer to BMP	Refer to BMP	
		In the case that operational monitoring demonstrates mortality and residual impacts above PBR thresholds, the Developer commits to implementing offset measures which will be identified and assessed as part of the BAP/BMP.	Off-set	Refer to BMP/BAP	Refer to BMP/BAP	Refer to BMP/BAP	
	Indirect Impacts on Sensitive Receptors (terrestrial mammals and breeding / resident birds) – Disturbance	Ban on off-road driving, especially during sensitive periods of the year (e.g. breeding bird season) and if off-road driving is required a check of the working area will be completed by the Project's Ecologist	Mitigation	Visual Inspections	Entire project footprint	Daily HSE monitoring	
		Speed limits will be enforced				Weekly site inspections	
		Sensitive species are to be included in the site induction for all operational staff where additional control measures will be discussed including allowing animals to move around the site, not chasing after them in vehicles or approaching them on foot and what to do if they observe breeding birds within their works areas.	Mitigation	Submit Induction Training Records Submit TBT records	Not applicable	Throughout operation period	
Archeology and Cultural Heritage	Improper management could potentially disturb or damage potential archaeological remains recorded on the surface.	Induction training and Toolbox Talks (TBT) will be delivered to all workers to emphasize the presence and location of the sites and their overall importance	Mitigation	Submission of Induction Training records	Not applicable	Once before commencement of operation	NEGU
		Driving will only be permitted on formal site roads and off-road driving is prohibited, unless it is driving within a working area (e.g. moving equipment or infrastructure around the site or for maintenance operations)	Mitigation	Visual Inspections	Entire Project footprint area as applicable	Daily HSE monitoring	
		Workers are only permitted within authorized working areas and moving to any offsite area is prohibited. This includes in particular movement into the sites recorded under any circumstances at any time of the day				Weekly site inspections	
		No worker may possess or withdraw any archaeological item or remains from the Project Area and from the sites recorded in specific (to include above or below ground) such as ceremonial jars, pottery, or similar objects				Monthly ESHS reporting	
Infrastructure and Utilities	<u>Waste Utilities</u> . Ensure that waste utilities will be able to handle the waste requirements that are generated from the Project.	Coordinate with the State Unitary Enterprise and obtain list of authorized contractors for collection of wastewater from the site to closest authorized wastewater treatment plant	Additional requirement	Submit formal communication letter with relevant entities	Not applicable	Once before commencement of operation	NEGU

Environmental Attribute	Potential Impact	Management Action (mitigations, additional requirements, additional studies, compensation measures, etc.)	Type of Action	Monitoring & Reporting Action	Parameters to be monitored / location	Frequency	Responsible Entity
		Coordinate with State Unitary Enterprise for the collection of solid waste from the site to the closest authorized landfill (or obtain list of authorized private contractors)					
		Coordinate with State Unitary Enterprise to obtain list of authorized contractors for collection of hazardous waste from the site to the closest approved facility for final disposal					
Socioeconomics	Worker Welfare, Health and Safety. Generic occupational health and safety risks to workers, as working onsite increases the risk of injury or death due to accidents	Prepare an Occupational Health and Safety Plan (OHSP). Adopt and implement the recommendations/provisions of the OHSP which includes: (i) Risk assessment and job safety planning procedure, (ii) PTW system procedure, (iii) LOTO procedure, (iv) Site control occupational health and safety procedure, (v) Occupational health and safety signage requirements, (vi) Identification of OHS training requirements, (vii) Identification of monitoring and reporting requirements, (ix) Identification of roles and responsibilities, and (x) Identification of measures to reduce the risk of COVID-19 exposure and transmission.	Mitigation	Submit OHSP	Not applicable	Once before operation of construction	NEGU
		Prepare an Emergency Preparedness and Response Plan (EPRP) which will include: (i) communication and management process, (ii) emergency response procedure, (iii) emergency control measures to include but not limited to fire, accidents, spillage, traffic accidents, natural disasters and other. In addition, of particular importance within the Project area are also risks related to remoteness of the Project site (e.g. in case of a medical emergency), risks from sand and salt storms including windy conditions, risks from extreme hot and cold weather and conditions and low/high temperatures, (iv) requirements for emergency kits, (v) onsite assembly points, (vi) emergency signs, (vii) training requirements, (viii) monitoring and reporting requirements, and (ix) roles and responsibilities of the personnel involved in implementation of the plan.	Mitigation	Submission of OHS training records	Not applicable	Throughout operation period	
			Mitigation	Visual Inspections	Entire project footprint	Throughout operation period	
			Mitigation	Submit EPRP	Not applicable	Once before commencement of operation	
			Mitigation	Submission of EPRP drills and EPRP TBT records	Not applicable	Throughout operation period	
			Mitigation	Visual Inspections	Entire project footprint	Throughout operation period	

19. PROJECT CATEGORIZATION

The table below presents the definition of Project categorization based on ADB's Safeguard Policy Statement (SPS) (2009).

Table 107: Definition of Project Categorization under International E&S Standards and Requirements

Policy and Principle	Categorization
ADB's Safeguard Policy Statement (SPS) (2009)	Category A. A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required
	Category B. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
	Category C. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

The section below discusses the Project categorization as applicable for each safeguard. This analysis will be considered applicable for both the windfarm project and the OHTL.

- Safeguard Requirements 1: Environment
- Safeguard Requirements 2: Involuntary Resettlement
- Safeguard Requirements 3: Indigenous Peoples

19.1 Safeguard Requirements 1: Environment

Due to the biodiversity considerations below, the **Project meets the definition of Category A from the perspective of Environment.**

- The Project triggers critical habitat for the following species MacQueen's Bustard (*Chlamydotis macqueenii*), White-headed Duck (*Oxyura leucocephala*) and Red-crested Pochard (*Netta rufina*).
- The Project could affect raptor species as a result of collision with operational Wind Turbine Generators (WTGs) and OHTL as well as mortality associated with electrocution with live parts of the transmission lines. The project falls within a broad migration front that is used by many raptor species of conservation concern. The Collision Risk Modelling (CRM) does not predict high levels of mortality for any species however for some species (e.g. Steppe Eagle (*Aquila nipalensis*), Golden Eagle (*A. chrysaetos*) and Eastern Imperial Eagle (*A. heliaca*)) the levels of predicted mortality, if realized, could be significant due to their elevated (national or international or both) conservation status and low 'take limit' as set out in the Potential Biological Removal Study. To that end an offset strategy is likely to be required to off-set any losses at the Kungrad WF as well as possible negative impacts associated with the OHTL.
- The Project could also affect migration routes of terrestrial mammals, specifically those that undertake short, medium and longer-distance migration through the Ustyurt Plateau (e.g. Saiga (*Saiga tatarica*) and Goitered Gazelle (*Gazella subgutturosa*). The magnitude of these impacts is largely unstudied

however current research indicates that some negative impacts may result from operational wind farms and that migration routes could alter. The site is not considered to be important habitat for migratory mammals (e.g., as a stopover / congregatory site) nor is it an important calving or breeding (mating) site. Currently Saiga within the Ustyurt Plateau are rare due to issues with border fences along their transborder migration routes and Goitered Gazelle are present in low numbers and are widespread across the Ustyurt Plateau. It is however possible that the windfarm will result in significant and persistent barrier impacts to ungulates however the actual severity of this impact is questionable given the relatively low populations of Goitered Gazelle and historical presence of Saiga within the Project site. Should conservation measures increase the populations of either species within the Ustyurt, any impacts to migratory movements through the Ustyurt will likely remain unknown and mitigation to reduce any such impacts difficult to achieve. Nevertheless, continual monitoring will be completed throughout the operational phase to record ungulate use of the site and surrounding Ustyurt Plateau.

- There are key and adverse potential impacts from the OHTL in particular on the MacQueen's Bustard to include:
 - MacQueen's Bustard is listed as Vulnerable (VU) on the global IUCN redlist⁶³ as well as the Uzbekistan Red Data Book⁶⁴.
 - Roughly 85% of the global population of MacQueen's Bustard migrates semi-annually across the proposed path of the OHTL.
 - The easternmost 127 km of the proposed OHTL passes through this species' core breeding range in the Bukhara region of Uzbekistan's Kyzylkum Desert.
 - The mitigation of potential impacts to the MacQueen's Bustard from the Project's OHTL is made more challenging by several known aspects of MacQueen's Bustard biology that heighten the potential for adverse impact, or reduce the effectiveness of available mitigation measures, as follows:
 - MacQueen's Bustard is known to collide with transmission and distribution lines, and the consensus among world-leading bustard science and conservation experts is that alongside hunting pressure, OHTL collisions is one of the most significant anthropogenic impacts contributing to this species' worldwide population decline. *Thus, the Project has the potential to generate serious adverse impacts on MacQueen's Bustard.*
 - At present, none of the currently available Bird Flight Diverters (BFD) have been proven to be effective at reducing OHTL collision rates for MacQueen's Bustard or any other species of bustard⁶⁵. There are some hypotheses, some of which are currently being tested, and there are some innovative new technologies under development, but at present, there is no basis in data to assume any mitigative effect of any currently available BFD for reducing

⁶³ <https://www.iucnredlist.org/species/22733562/205364424> accessed 19 August, 2024

⁶⁴ Uzbekistan Red Data book. 2019. Vol.2. Animals. Tashkent: Chinor ENK

⁶⁵ Silva JP, Marques AT, Bernardino J, Allinson T, Andryushchenko Y, Dutta S, Kessler M, Martins RC, Moreira F, Pallett J, Pretorius MD, Scott HA, Shaw JM, Collar NJ (2022). The effects of powerlines on bustards: how best to mitigate, how best to monitor?. Bird Conservation International, 1–14 <https://doi.org/10.1017/S0959270922000314>

MacQueen's Bustard collision rates with OHTL⁶⁶. *Thus, the mitigative effect of installing BFD on the Project's OHTL is limited.*

- The impact is high, and the reduction of impact through avoidance/minimization measures is low, thus there is a potentially very large amount of residual impact that must be mitigated through offsets.

Other impacts from the Project, in general, are considered standard impacts that can be effectively controlled through proper mitigation, management and monitoring measures. This includes impacts related to waste management, hazardous material management, pollution prevention, resource conservation, occupational health and safety, etc. Other impacts were also properly studied and it is concluded that no impacts are relevant or proper mitigation and monitoring measures were identified. This includes:

- Community health and safety. No key impacts in relation to noise, shadow flicker, blade throws, EMF, etc. Other impacts have been identified and adequate preventive measures and requirements for further plans have been included – this includes issues such as worker influx, security management, emergency planning, etc.
- Physical cultural resource: a survey identified a number of archaeology and cultural heritage resources within the Project site. Proper buffer areas were incorporated into the design to account for those as well as additional mitigations were identified. Requirement for chance finds were also included.

19.2 Safeguard Requirements 2: Involuntary Resettlement

The project meets the definition of Category B from the perspective of land acquisition and livelihood restoration for the following reasons:

- Although the OHTL is large-scale, and the estimated number of partially economically displaced small-scale commercial and informal farming households is 232, and state institution landowners is estimated at 39, the scale of the permanent impact on agriculture is very small, and the scale and duration of the temporary impact on agriculture is small. This estimate is based on extrapolation of 25% sample of valuation data, and interpolation and extrapolation of cadastral data.
- The permanent land acquisition and livelihood impacts are site specific, limited to the tower base footprints, and have been minimized by avoiding arable areas. Permanent impact on agricultural land constitutes an estimated 0.06% of total arable land. Towers will be micro-sited to minimize impact on farmers irrigation infrastructure. The permanent impact on buildings and trees within the right of way is minimal, due to careful routing.
- The temporary land acquisition impacts are site specific and short term, limited to narrow strips required for construction of the towers and cabling. Temporary livelihood impacts based on one season of lost crop during construction, are calculated to be 1.2% of total arable land. Temporary impacts will be further reduced through careful timing of the cabling to avoid agricultural growing seasons. The larger servitude covers a maximum combined 5.3% of the total farmland. However,

⁶⁶ We note that in spite of this limitation, the KWEP is committing to installing BFD on 100% of the Project's OHL, using whichever BFD available at the time of construction is considered by experts to have the greatest potential for reducing HB collision with the OHL. This mitigation measure is expected to render impact minimization benefits to other potentially affected species (e.g. cranes, pelicans, waterfowl), even if the benefits of this mitigation to HB are unknown and potentially as low as zero.

access will be granted after completion of the construction phase. Consequently, long-term livelihoods restrictions are substantially minimized.

ADB defines a project as a Category A project due to significant economic impact if more than 200 individual persons have more than 10% of their livelihood impacted by a project. Analysis of surveyed properties covered in the Preliminary Valuation Study shows that the land access or restriction impacts are not significant (See Table below) and no persons fall within this definition. The highest impact of 7 to 7.9% of total land, would be felt by only 3% of affected farmers. There is no evidence to suggest that any farmer would lose more than 8% of their land, and therefore it is concluded that the project remain a Category B project.

Table 108: Affected Lease holding by % of temporary land losses during the construction phase

% of Total Land Loss	Estimated affected lease holding by % Loss	
	Est. Number	Percent
<1	49	21%
1 to 2.9	128	55%
3 to 4.9	31	13%
5 to 6.9	17	7%
7 to 7.9	7	3%
>8	0	0%
Total	232	100%

Redundancy of permanent and temporary farm employees will be minimal due to low and short-term impacts on agriculture and mitigated by payment of compensation for lost production and obtaining agreement by the farmer to maintain normal staff levels using the compensation provided.

Physical displacement impacts are expected to be zero. To date, all possible physically displaced structures were identified, and ground truth checked by the company during routing of the OHTL, and no physical displacement has yet been identified along the OHTL route.

The land owned by public institutions is predominantly desert land and largely unutilized except for livestock grazing over much larger areas. The permanent and temporary impact will be insignificant on the grazing use of desert land.

The displacement impact on existing public linear infrastructure, graves, archaeological sites, and other non-building point infrastructure will be avoided through micro-siting of towers.

Pre-existing vulnerabilities of project-affected communities have been caused by the Aral Sea disaster and resulting water shortages, salinity, poor air quality, and extreme weather conditions, but due to the very low displacement impact, it is unlikely that these will be placed at additional risk because of the project. Nonetheless, vulnerable households will be identified and where required, special measures defined.

The scoping study found that no indigenous peoples will be impacted, and the 37% socio-economic baseline sample undertaken at the time of drafting the Land Access and Compensation Plan supports this conclusion with no indigenous peoples identified.

19.3 Safeguard Requirements 3: Indigenous Peoples

The international law and conventions on indigenous peoples is to be found in conventions, social performance standards and guidelines of the UN, ADB, IFC, EBRD and similar institutions.

These instruments have been reviewed and no specific indigenous peoples have been identified as being present in the project context or impacted area. ADB's Safeguard Requirement 3, requires the Social Impact Assessment stage of a project, to screen and confirm whether or not there are likely to be project impacts on Indigenous people. As part of the ESIA, an assessment was undertaken to determine whether there are Indigenous Peoples in Uzbekistan in general and Karakalpakstan Region in specific. The assessment concluded that there are no indigenous groups in the country. Furthermore, the socio-economic and the asset inventory baseline surveys and stakeholder engagements did not identify indigenous peoples in the Project area.

Consequently, no "Special Considerations for Indigenous Peoples" as specified under the ADB's Safeguard Policy Statement, June 2009 are required.

Therefore, project categorization is not applicable for safeguard requirements 3.