REPORT

Mirny (Kazakhstan) 1GW Wind Farm Project

ESBS Report Chapter 1 - Introduction

Submitted to:

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Distribution List

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List of Frequently Used Abbreviations

ADB	Asian Development Bank
AF	Associated Facility
AIIB	Asian Infrastructure Investment Bank
AoI	Area of Influence
BESS	Battery Energy Storage System
BMP	Biodiversity Management Plan
BoP	Balance of Plants
Bq/l	Becquerel per liter
CH	Cultural Heritage
CCRA	Climate Change Risk Assessment
CHA	Critical Habitat Assessment
CHS	Community Health & Safety
CIA	Cumulative Impact Assessment
CLO	Community Liaison Officer
dB	Decibel
Db(A)	Decibel Ampere
E&S	Environmental and Social
EHS	Environment, Health & Safety (also “HSE”)
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EBRD	European Bank for Reconstruction and Development
EP	Equator Principle
EPC	Engineering, Procurement, and Construction
ESAP	Environmental and Social Action Plan
ESBS	Environmental and Social Baseline Study
ESDD	Environmental and Social Due Diligence
ESIA	Environmental & Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System

FSWP	Field Survey Execution Work Plan
GW	Giga Watt
H&S	Health and Safety
HR	Human Resources
HRRA	Human Rights Risk Assessment
HV	High voltage power line
IFC	International Finance Corporation
ILO	International Labour Organization
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature
KEGOC	Kazakhstan Electricity Grid Operating Company
km	Kilometres
kN	KiloNewton
kV	Kilovolt
kVA	Kilovolt Ampere
m	meters
MAC	Maximum Allowable Concentrations
MΩ	Megaohm
mm	millimeters
MV	Medium voltage
MW	Mega Watt
MWh	Mega Watt hour
NGO	Non-Governmental Organization
OECD	Organisation for Economic Co-operation and Development
OHTL	Over Head Transmission Line
OHS	Occupational Health and Safety
PGA	Peak Ground Acceleration
PMC	Project Management Contractor
PO	Project Owner – Aktas Energy LLP
PR	Performance Requirement
PS	Performance Standard

SEA	Strategic Environmental Assessment
SEP	Stakeholder Engagement Plan
SS	Substation
UN	United Nations
UNDP	United Nations Development Program
WHO	World Health Organisation
WPP	Wind Power Plant
WTG	Wind Turbine Generator
µg/l G	Microgram per liter

1.0 INTRODUCTION

Aktas Energy Limited Liability Partnership (LLP) (“Aktas”, “the Client” or “the Company”), was established on October 6, 2020, to implement the construction and operation of the Mirny 1 GW Wind Power Plant (“the Project”). The founder and sole shareholder as of September 2025 (100% stake) of Aktas is TotalEnergies S.A.

The Client appointed WSP Italia S.r.l. (“WSP”) as Environmental & Social (“E&S”) consultant to prepare a full Environmental and Social Impact Assessment (ESIA) package for the construction and development of an onshore wind farm having 1 GW capacity in Mirny, Kazakhstan (“the Project”). The process has been organised in separate reports, the Environmental and Social Baseline Study (“ESBS” or this report), and the Environmental and Social Impact Assessment Study (ref. our doc. N. 24685792-004-R-ESIA Report).

The Project perimeter and the potential receptors have been identified as part of a scoping phase completed in late 2023. WSP team collected primary and secondary physical, social and biological baseline data. Chapter 1 to 5 of this report prepared by WSP represent the ESBS report, aimed at providing details on all primary and secondary data collected, and on the E&S conditions of the Project site.

The secondary data have been collected by reviewing – through desktop research – publicly available data such as site-specific technical studies available on public databases.

The primary data have been collected through a number of field studies conducted on the Project site according to the survey plan described in document “**24685792-001-R-Rev 1_FSWP**”, delivered and agreed with the Client in July 2024.

1.1 Project Summary

The Project consists in developing an onshore wind farm of 1 Gigawatt (“GW”) installed capacity (combined with Battery Energy Storage System (“BESS”) the related Overhead Transmission Lines (“OHTL”) and the necessary additional roads. The Project will be located in Mirny, in the Jambyl region and Almaty region in the South-Central part of Kazakhstan. The Project location is shown below in Figure 1.

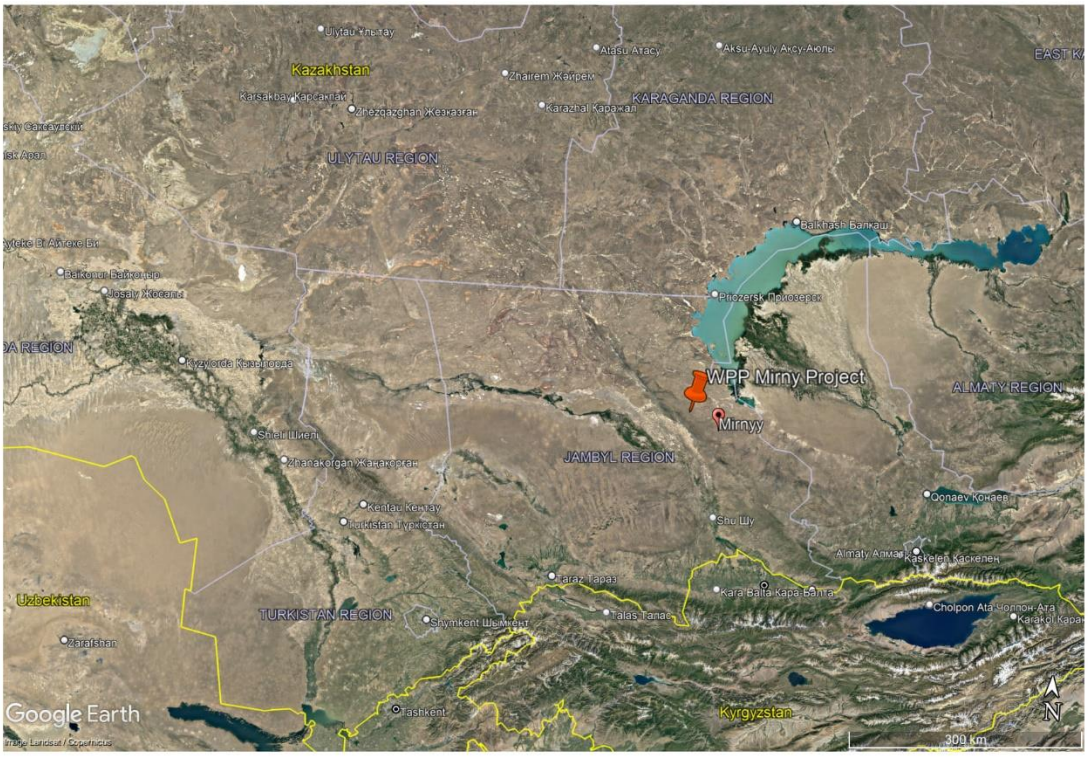

Figure 1: Project location on Google Earth.

The Project is considered the largest wind energy initiative ever undertaken in Kazakhstan and will contribute to the country's green energy transition and is a strong ally for achieving the 2030 target. It is expected that the development of the Project will avoid the emission of approximately 3.5 million tons of CO_2/year.

The electricity to be generated by the Project will be entirely sold to the Financial Settlement Center of Renewable Energy, a public entity owned by the Government of Kazakhstan, for the supply of the national grid. The Project will provide electricity to 1 million people.

In addition, the Project aims to support regional sustainable growth and contribute to local employment. Diverse educational programs involving the local population such as workshops on renewable energy, will be conducted in cooperation with the local municipalities, and a center of expertise on storage will be created.

The Project will be located in the Moyynkum district of the Jambyl region, in south-eastern Kazakhstan, which has low population density due to the sandy deserts and the lack of water resources. The closest village to the Project is called Mirny, a remote settlement built for workers employed in uranium mining, an activity that is currently no longer carried out. When the local uranium mining ended, the population plummeted from several thousand to just a few hundred, as of today.

Based on the design information, the main components of the Project include:

- Wind turbine generators (WTGs) and related foundations;
- Internal roads connecting turbines and substations;
- Access roads;
- Trenches for laying medium voltage ("MV") cables connecting the turbine generators;
- Step-up substations, one to the North Mirny SS and one to the South Mirny SS;
- BESS that will be operated by Kazakhstan Electricity Grid Operating Company ("KEGOC");
- OHTL between North Mirny SS and Ulken SS, between South Mirny SS and Shu SS, and between North Mirny SS and South Mirny SS; and
- Reactive power compensating devices.

The Project description with details for both construction and operation phases are provided in **Chapter 02**.

1.2 Project Proponent, Lenders and Key Parties

The Project Proponent is the Client. The Client is developing the Project in partnership with the National Wealth Fund "Samruk-Kazyna" and the National Company "KazMunayGas", which will each own a 20% stake in the Project.

The three parties signed a *Memorandum of Understanding* with the Ministry of Energy of the Republic of Kazakhstan in October 2021.

In February 2023, the government of Kazakhstan approved the long-term Strategy for Achieving Carbon Neutrality of the Republic of Kazakhstan until 2060, which sets ambitious net-zero carbon goals for climate action and identifies key technological transformations needed for the country's decarbonization. According to the Strategy, the country has created the necessary conditions for the development of renewable energy sources. By 2030, Kazakhstan plans to increase the share of renewable energy sources in its balance from the current 4.5% to 15%, according to the country's Prime Minister.

The Client approached Société Générale as Financial Advisor and European Bank for Reconstruction and Development (EBRD) and Proparco for financing the Project. The Lenders involved are both International

Financial Institutions that have adopted sustainability policies, which implies several environmental and social obligations for the Client, including carrying out the ESIA process according to national and international standards. The Client appointed WSP to develop the Project ESIA in line with both the national and the international standards, laws and regulations.

The owner of the Project is the Client, who already an established headquarters in Kazakhstan and the team for managing the Mirny Project has been allocated. Aktas will supervise the construction through the appointed construction management company, TERSK.

The Client appointed WSP at first to carry out the Project's Scoping phase (to define the scope of a full ESIA study) and then to carry out the ESIA study. Additionally, the Client engaged the local company Association for the Conservation of Biodiversity of Kazakhstan (ACBK) to carry out the biodiversity seasonal monitoring activities, as requested by the international standards. WSP scope of work also foresees the review of ASBK approach and the provision of a guidance for additional data collection.

1.3 The ESIA Process

The ESIA process started in summer 2023 and consisted of several subsequent phases, further described in the sections below.

1.3.1 Review of existing documents/information

The first phase of the ESBS process included the review of the existing Project documentation made available by the Client:

- Request for Proposal ("RfP");
- WSP scoping report prepared in February 2024;
- The Company's E&S policies;
- The Company's and the Contractor's organization charts;
- HAZID Report, Total Energies – August 2024;
- The Project construction layouts and maps;
- The Project Design (Method of Statement).

In addition to these, scientific studies and reports available online and information retrieved from major international research websites were also used, since no local ESIA was required or available.

1.3.2 Scoping Phase

In October 2023, WSP senior staff visited the Project site. The aim of the visit was to familiarise with the geographic context of the Project and meet key stakeholders in Mirny. Client's local and international staff was on site with WSP.

As a result of the visit a scoping report was prepared and delivered to the Client. The report defined the scope of baseline studies and of the assessment to be delivered in compliance with applicable E&S lenders' standards.

1.3.3 Site surveys

WSP team of experts conducted the field surveys at the Project site the week of July 8th, 2024.

The activities were aimed at obtaining a better understanding of the Project site E&S characteristics and site setting. Specifically, the visit included:

- Reviewing the potential for the existence of any E&S issues at the specific location of the Project site;
- Confirming the Area of Influence ("AoI") boundaries defined during the Scoping phase and the level of details for the baseline data collection;
- Checking the facilities along the existing road potentially posing some constrains in the selected routing;
- Establishing greater understanding of Company's Stakeholders and conduct engagement activities; and
- Conducting all necessary field surveys and studies.

The site-specific surveys mainly consisted of socioeconomic surveys (including stakeholder engagement) and environmental surveys (groundwater sampling and analysis, noise measurements and radiological tests).

A local team of experts of the Kazakh company Green Operating LLP ("GO"), which is based in Astana, conducted the field activities and the E&S surveys, the baseline data collection, the stakeholder engagement meetings and the public consultation. GO was supported by specialists from a local accredited laboratory to carry out the environmental sampling and analyses.

A team of experts of the German company IAF-Radioökologie GmbH ("IAF") conducted the Radiation Survey together with technical specialists from the accredited radiological laboratory WISUTEC.

1.3.4 Baseline data collection

By using appropriate methodologies, WSP – with the support of GO and IAF – collected both field data and secondary information to acquire knowledge on the baseline conditions for components like geology and landscape, ambient air and noise, groundwater and surface water, soils, habitats and species, water quality and resources consumption, and current waste generation and management at the Project site's surroundings.

In addition, an assessment of the current socio-economic conditions of the Project AoI has been carried out, including an evaluation of social issues associated with any previous use of the areas intended for the Project and of potential impacts on livelihoods. Collected data have also served to determine an ecologically appropriate AoI to assess the species present in the area and the presence of any Natural or Critical Habitats. Baseline information and conditions used to support the assessment process are described in the chapters Chapter 05 and 06.

1.3.5 Stakeholder Engagement

A Stakeholder Engagement process has been ongoing since beginning of the process as defined in the Stakeholder Engagement Plan ("SEP") prepared for the Project. The SEP goal is to facilitate decision making, create an atmosphere of mutual understanding and actively involve stakeholders in a timely manner. Additionally, the SEP aims to ensure that all stakeholder groups are provided with sufficient opportunity to voice their opinions and concerns that may influence project decisions. Overall, the SEP is a tool which will optimise managing communications between the city and its stakeholders.

A draft SEP compliant with Lenders' requirements has been prepared in parallel to the Scoping. Such draft SEP has been revised and integrated as per the most updated information and details collected. The final SEP is delivered together with this ESBS report as standalone document and includes detailed information on stakeholder engagement activities performed and planned by the Project proponent to engage with stakeholders and communities for the future.

1.4 Outline of the ESBS Report

This ESBS report is organized into the following chapters:

- ESBS Introduction (Chapter 01);

- Project Description (Chapter 02);
- Legal Requirements (Chapter 03);
- Baseline Conditions – Environmental (Chapter 04);
- Baseline Conditions – Socio-economic (Chapter 05);
- Baseline Conditions – Biological and Biodiversity resources (Chapter 06 - enclosed as a standalone document).

The following Appendices complete the ESBS study:

a) APPENDIX A – Natural Radioactivity and Radiation Study,

b) APPENDIX B – Site Visit Report and Photolog,

c) APPENDIX C - Bio Surveys April 2023 to May 2024,

d) APPENDIX D - Bio Surveys September 2024 to August 2025,

e) APPENDIX E - Bird Collision Risk Modelling Report,

f) APPENDIX F – Ichthyofauna survey report 2021,

g) APPENDIX G – Bat survey report,

h) APPENDIX H – Critical Habitat Assessment (CHA).

1.5 Assumptions in the ESBS study

For the benefit of the ESBS process and considering the magnitude of the study some assumptions were adopted in drafting the documents, as follows:

- **Reference Standards**: Although the study was carried out in compliance with national legislation and a number of international standards, the main reference considered is the E&S General Specification of Total Energies, which adopts the IFC PSs as its main reference standard; therefore, the study refers to Area of Influence, Associated Facilities, etc. (see further below). Considering the specificity of the Biodiversity component and other differences existing among the applicable lenders' standards, discussions and analysis that consider the specific requirements of IFC, EBRD and EIB and their differences and nuances are from time to time presented in the study.
- **Use of the terminology "Project Area of Influence", "Project Site" and "Project Footprint":** the study adopts the following terminology and meanings:
    - The "Project Footprint" is the exact area occupied by Project facilities, such as structures, buildings, turbine pads, electric line pilons and the like.
    - The "Project site" includes the Project Footprint but it is larger than that as it also includes the area that is not occupied by any facilities but falls within the boundary of the site legally allocated to the Project (see Chapter 2, "Project Description" for more details).
    - The "Project Area of influence" is the area corresponding to the definition included in Par. 8 of IFC PS1 (i.e. the area which (i) is affected by the Project and the Client's activities, (ii) encompasses all Project's associated facilities and (iii) cumulative impacts). The "Project Area of Influence" is also considered to correspond to the spatial range where Project facilities, Project activities and

associated facilities generate environmental and social risks, and cumulative impacts as well, as per Par.9 and 10 of EBRD PR1.

- Terms such as WPP Footprint, Site, or Area of Influence, as well as OHTL Footprint, Site or Area of Influence are used according to the same definitions provided above, however they refer to, respectively, the WPP or the OHTL only. As such, the OHTL and the WPP Areas of Influence, when taken individually are subsets of the Project Area of Influence, while they together correspond to the Project Area of Influence; the same concept applies to the WPP and OHTL sites and footprints.

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