International ESIA for an Integrated Renewable Energy Project

180MW Wind Power and Battery Energy Storage System, Tsogttsetsii soum, Mongolia

Chapter 10 Cumulative Impact Assessment

PREPARED FOR

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MCS and URECA

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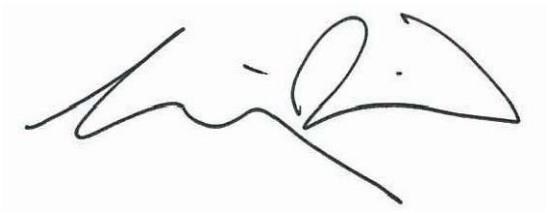
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ACRONYMS AND ABBREVIATIONS

Acronyms	Description
AADT	Annual Average Daily Traffic
[redacted]	[redacted]
AIS	Air Insulated Switchgear
ALARP	As Low As Reasonably Practicable
AoI	Area of Influence
APLIC	Avian Powerline Interaction Committee

Acronyms	Description
BESS	Battery Energy Storage System
BMP	Biodiversity Management Plan
BOD	biochemical oxygen demand
CAF	Central Asian Flyway
CAQMP	Construction Air Quality Management Plan
CCRA	Climate Change Risk Assessment
CD	Community Development
CH	Critical Habitat
CHA	Critical Habitat Assessment
CIA	Cumulative Impact Assessment
CIP	Climate Impact Platform
CITES	Convention on International Trade in Endangered Species
CLO	Community Liaison Officer
CMIP6	Coupled Model Intercomparison Project Phase 6
CMS	Conservation of Migratory Species of Wild Animals
CO	Carbon monoxide
COD	chemical oxygen demand
CR	critically endangered
CRM	Citizen's Representative Meeting
CRM	Collision Risk Model
CSMP	Cold Stress Management Plan
DEIA	Detailed Environmental Impact Assessment
DFID	International Development
DSF	Development Support Fund
E&S	Environmental and Social
EAAA	Ecologically Appropriate Area of Analysis
EAAF	East Asian-Australasian Flyway
EBRD	European Bank for Reconstruction and Development
EC	Electrical Conductivity
EEO	Extent of Occurrence
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EN	Endangered

Acronyms	Description
EPC	Engineering Procurement and Construction
EPRP	Emergency Preparedness and Response Plan
ERM	ERM-Hong Kong, Limited
ESA	European Space Agency
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environment and Social Management System
ETI	Ethical Trading Initiative
FERP	Flood Emergency Response Plan
FFDI	Arthur Forest Fire Danger Index
FGD	focus group discussion
FPIC	Free, Prior and Informed Consent
GBV	Gender-based violence
GCD	Global Climate Database
GHG	Green House Gas
GIIP	good international industry practice
GIS	Geographic Information System
GM	grievance mechanism
GPN	This Good Practice Note
GRM	Grievance Redress Mechanism
HCO	Bicarbonate
HSEQ	Health, Safety, Environment, and Quality
HSMP	Heat Stress Management Plan
HSS	Health, Safety and Security
HSSE	Health, Safety, Security and Environment
HVAC	Heating, Ventilation, and Air Conditioning
IA	Impact Assessment
IAQM	Institute of Air Quality Management
IBA	Important Bird and Biodiversity Areas
IBAT	Integrated Biodiversity Assessment Tool
IFC	International Finance Corporation
ILO	International Labour Organisation
IMAR	Inner Mongolia Autonomous Region

Acronyms	Description
IPA	Important Plant Areas
ISMP	Invasive Species Management Plan
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Areas
KII	Key Informant Interview
LC	Least Concern
LiDAR	Light Detection and Ranging
LLC	Limited Liability Company
LO	Land Officer
LRP	Livelihood Restoration Plan
LRP	Livelihood Restoration Plan
LVIA	Landscape & Visual Impact Assessment
MCS	Mongolian Consulting Service
MECC	Ministry of Environment and Climate Change
MNS	Mongolian National Standard
MRIA	Mongolian Renewables Industries Association
MRL	Mongolian Red List
MSDS	Material Safety Data Sheet
MW	Mega Watt
MWEA	Mongolian Wind Energy Association
NASA	National Aeronautic Space Administration
NDC	Nationally Determined Contributions
NDC	National Dispatching Centre
NE	not evaluated
NGO	Non-governmental Organization
NH4+	Ammonium
NO2	Nitrogen dioxide
NO2-	Nitrite
NO3-	Nitrate
NOAA	Atmospheric Association
NPTG	National Power Transmission Grid Company
NPTG	National Power Transmission Grid Company
NREC	The National Renewable Energy Centre

Acronyms	Description
NSR	Noise sensitive receiver
NT	Near threatened
NZE	Net Zero Energy LLC
O&M	Operation and Maintenance
OHL	Overhead Transmission Line
OHS	Occupational Health and Safety
OT	Oyu Tolgoi
PA	protected area
PAD	project affected districts
PAPs	Project Affected Persons
PI, mg/L	Phosphate
PM	Particulate matter
POP	persistent organic pollutants
PPA	Power Purchase Agreement
PPE	Personal protective equipment
PS	Performance Standards
RAP	Resettlement Action Plan
RCIA	Rapid Cumulative Impact Assessment
RCS	Real Case Scenario
RILI	rainfall-induced landslide index
RoW	Right of Way
SCADA	Supervisory Control and Data Acquisition
SNH	Scottish Natural Heritage
SO	Social Officer
SO2	Sulphur dioxide
SO4	Sulphate
SPA	Strictly Protected Area
SRTM	Shuttle Radar Topography Mission
STE	Serrated Trailed Edge
TDS	Total Dissolved Solids
TIP	Trafficking in Persons
TL	Transmission Line
TNC	The Nature Conservancy

Acronyms	Description
TOR	Terms of Reference
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States dollars
UV	Ultra-violet
VEC	Valued Environmental and Social Components
VP	Vantage Point
VU	Vulnerable
WBG	World Bank Group
WBGT	Wet Bulb Globe Temperature
WCS	Worst Case Scenario
WCS	Wildlife Conservation Society
WHO	World Health Organisation
WPF	Wind Power Farm
WPFW	West Pacific Flyway
WRI	World Resource Institute
WSDI	Warm spell duration index
WTG	Wind Turbine Generator
WWF	World Wide Fund for Nature

10. CUMULATIVE IMPACT ASSESSMENT

10.1 INTRODUCTION

Cumulative impacts are generally considered as those, which are additive or interactive in nature that arise as a result of an impact from the Project interacting with an impact from another activity to create an intensified impact.

The IFC World Bank Group defines a cumulative impact as the:

"*…result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted. Cumulative impacts are limited to those impacts generally recognised as important on the basis of scientific concerns and/or concerns from Affected Communities*"[1].

IFC PS 1 requires that an environmental assessment should also address cumulative impacts. The objective of the Cumulative Impact Assessment (CIA) is to identify those environmental, social or health aspects that may not on their own constitute a significant impact but when combined with impacts from past, present, or reasonably foreseeable future Project activities or other projects/activities may result in a larger and more significance impact.

In order to gain an understanding of the Project's overall contribution to impacts, a CIA is required to be undertaken. Whilst total cumulative impacts due to multiple projects within a given area should be identified within government-led spatial planning efforts (generally as part of a Strategic Environmental Assessment), NZE needs to determine the degree to which it is contributing to these overall cumulative impacts on Valued Environmental and Social Components (VEC). In this regard, the objectives of the CIA are:

- Use the outcomes of the ESIA Report to determine spatial and temporal boundaries, identify VEC's and all development and external natural and social stressors affecting them;
- Recognise and identify how the Project, along with other existing and future projects may contribute to cumulative impacts on the predicted future condition of the identified VEC's; and
- Develop measures to ensure these are avoided and/or minimised to the greatest extent possible.

10.2 RELEVANT GUIDELINES AND CRITERIA

To achieve these objectives and gain an understanding of the complexities of cumulative impacts, this Chapter presents a Rapid Cumulative Impact Assessment (RCIA), which has been undertaken largely in accordance with international best practice guidance documents, such as:

- The European Union's "Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions" (1999);

[1] IFC World Bank Group Performance Standard 1 (IFC PS 1), January 1, 2012

- The Canadian Environmental Assessment Agency's "Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act" (2012);
- The IFC's "Good Practice Handbook: Cumulative Impact Assessment and Management Guidance for the Private Sector in Emerging Markets" (2013); and
- Scottish Natural Heritage (SNH), "Assessing the cumulative impact of onshore wind energy developments." (2012).

10.3 METHODOLOGY

This Chapter presents an RCIA in accordance with the IFC Handbook and therefore with regard to the six-step process outlined in ***Figure 10-1***. As this RCIA forms part of the overall ESIA, the general conditions and VECs are already known, as are the impacts from the Project (as part of the impact assessment) and the proposed mitigation, management and monitoring measures. Given this, VECs and impacts have been quickly established, with an emphasis placed on the steps pertaining to CIA and management.

In developing the methodology for this CIA, emphasis has been placed upon following a largely qualitative approach, allowing for identification of general trends and then developing appropriate management, mitigation and monitoring measures. This is primarily due to lack of clear data or information on surrounding projects. Given this approach, the majority of the methodology relies upon the use of professional judgements, complimented by ERM's understanding of the Project and impacts and experience with similar projects in similar settings.

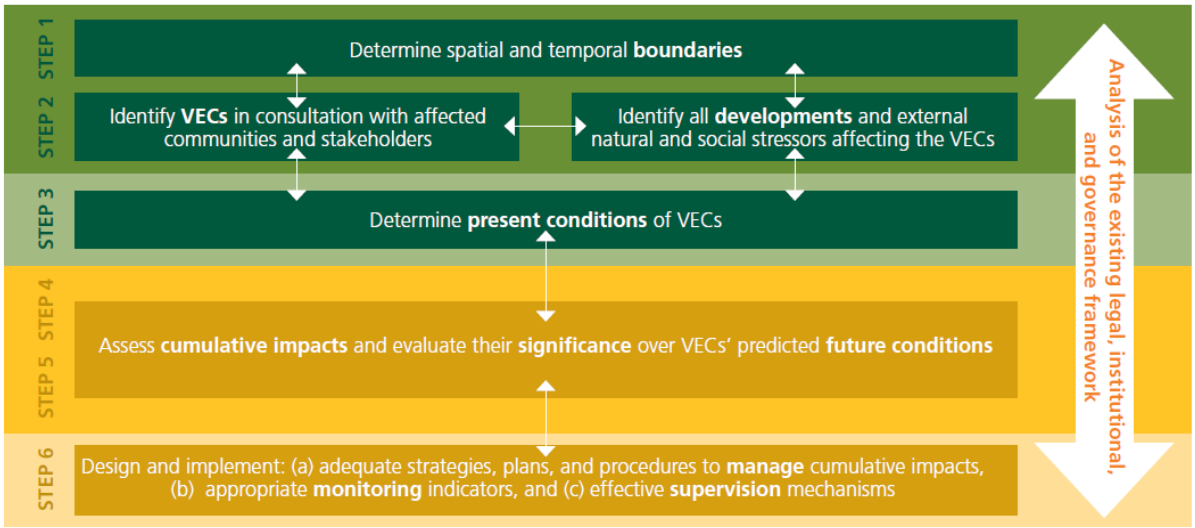


FIGURE 10-1: THE SIX STEPS FOR THE CUMULATIVE IMPACT ASSESSMENT

10.3.1 DETERMINING SPATIAL AND TEMPORAL BOUNDARIES AND VECS

The methodology used in the setting of spatial and temporal boundaries is largely qualitative and is based upon the general "rules of thumb" suggested in Box 7 of the IFC Handbook. The following factors have been established within the methodology:

- Temporal boundaries have been set based on a desktop review of available information pertaining to other proposed projects within the area;

- ERM's understanding of the projects currently within and proposed to be developed within the local area; and
- Geographic boundaries are a composite of the distance to the identified VECs, assessed impacts of the Project and the degree to which they may overlap with other external projects and stressors to impact upon an identified VEC.

10.3.2 IDENTIFYING VECS AND THEIR PRESENT CONDITIONS

As this RCIA is based on review of existing documents including the Detailed Environmental Impact Assessment (DEIA), the identification of VEC's is solely based on desktop work. VECs are defined as sensitive receptors within the Environmental and Social Impact Assessment (ESIA). An example of this is any households identified as a sensitive receptor for the purposes of the noise assessment or biodiversity values identified.

10.3.3 IDENTIFYING DEVELOPMENTS AND EXTERNAL SOCIAL STRESSORS AFFECTING VECS

External developments, also known as reasonably foreseeable future actions, are identified utilizing knowledge gained through the ESIA process (including field observations), stakeholder engagement and the interpretation of readily available external data. The outcomes of these considerations will be a simple binomial decision, i.e., the external project is likely and therefore will be included within the CIA, or no, it is unlikely and therefore will not be included within the CIA.

The second step is to determine the extent of the various impacts of these projects. This allows for a decision to be made as to whether there is the potential for an overlap in Project impacts that could lead to measurable cumulative impacts. Key to this are the following elements:

- Identification of appropriate geographical/spatial boundaries. Where potentially interacting projects are not located close enough, or sufficiently linked through various ecological and social processes, for relevant impacts to overlap, cumulative impacts are less likely;
- Identification of temporal boundaries. Where the schedules of various components of projects do not overlap in time, particularly with regards to the construction phase of large projects, cumulative impacts are less likely. Additionally, where projects are going to be short-term, cumulative impacts will generally be of limited duration;
- Consideration of impact type. Whilst there may be no direct geographical overlap in project boundaries, there is the possibility that their offsite impacts may directly overlap elsewhere and cause offsite cumulative impacts. Examples are sediment discharges into river systems, air pollutant emissions, and social impacts associated with overall migration influx;
- Determination of any "aggravating factors" that may be evident within a particular project identified for inclusion within the CIA. This includes elements such as the size of the project, environmental management performance, and the regulatory regime under which it operates; and
- Identification of potential externalities, that is a project ability to influence (either positively or negatively) the behaviours of other operations in the area.

The other element identified as part of this scope is external natural and social stressors which are not related to a single project or source. As these are ongoing stressors, it has been

assumed that they have already been captured as part of the ESIA. Specific additional identification and assessment of these is thus not considered necessary as part of this RCIA.

10.3.4 IDENTIFICATION AND ASSESSMENT OF IMPACTS

Impact scoping and identification needs to be in alignment with those assessed by the ESIA Report and needs to include those which are recognised as important on the basis of genuine scientific concerns and the views of affected communities and other stakeholders. This allows for impacts to be appropriately grouped and added to impacts identified as likely to occur from other projects.

A largely qualitative approach was taken for the RCIA. This is to enable a focus upon identification of trends across the various projects in the area, their temporal and spatial interactions and how these are likely to impact upon VECs. Whilst impacts arising from the Project have been defined and assessed in isolation, it can be difficult to accurately quantify cumulative impacts as there can be a high degree of uncertainty in interactions with other projects and activities that may be occurring in the area, as well as a lack of confirmed project information. Therefore, the impacts are to be assessed qualitatively based on the identified trends and grouped according to impact type, rather than VEC. The RCIA is also based on the assumption that all assessed residual impact levels within the ESIA are achievable.

10.3.5 DEVELOPMENT OF MANAGEMENT, MITIGATION AND MONITORING MEASURES

Based upon identification of broad impact trends, broad scale mitigation measures will need to be developed. Generally, these are based upon:

- Effective application of, and adherence to, the mitigation hierarchy in environmental and social management of the specific contributions by the Project expected cumulative impacts. This is generally achieved through stringent implementation of the measures developed specifically for the Project; and
- Development of best efforts to engage in, enhance and/or contribute to a multi-stakeholder, collaborative approach to implementing management actions which are beyond the capacity of an individual project proponent.

Any measures developed to address concerns identified within this CIA will take into account these general concepts.

10.4 SCOPING ASSESSMENT

10.4.1 IDENTIFICATION OF VECS

The ESIA identifies and describes the current condition of a range of sensitive receptors, defined as VEC's for the purposes of this RCIA. These are:

- The herders within the Project Area of Influence (AoI);
- Biodiversity values such as plants, terrestrial mammals, birds, and bats and that inhabit the vicinity of the Project Site;
- Terrestrial habitat; and
- Water resources.

10.4.2 SPATIAL BOUNDARIES

According to IFC Good Practice Handbook on Cumulative Impact Assessment (2013), spatial and temporal boundaries of the Project include the area to be directly affected by the Project or activities and surrounding region contributing to significant impacts outside the Project Site.

10.4.3 EXISTING AND PLANNED DEVELOPMENTS

The following developments are identified as planned to begin construction in the future, or the development already exists within the immediate proximity to the Project Site.

Table 10-1 and ***Figure 10-2*** presents the key developments based on its distance from Bilgeh Wind Project and respective timeline of the projects[2].

- Oyu Tolgoi mining underground expansion
  - Location: The Oyu Tolgoi mine is in the South Gobi Desert of Mongolia, 80 kilometres north of Mongolia's border with the Peoples' Republic of China.
  - Description: The Oyu Tolgoi mine is a combined open pit and underground mining project in Khanbogd Soum. The site was discovered in 2001 and is being developed ever since. Oyu Tolgoi expansion project to increase the exploitation area commenced in 2023 and is ongoing. No maps are available, but it is assumed that the expansion will be adjacent to the current location of the mine.
  - Timeline: In operation; Expansion commenced in 2023.
- Tavan Tolgoi-Gashuun Sukhait 250 km heavy-duty paved road project
  - Location: The new lane road was implemented in Umnugovi Aimag, Tsogttsetsii, Khanbogd and Bayan-Ovoo Soums.
  - Description: A 4-lane road for the carriageway. The existing two-lane road will be used for Gashuun Sukhait-Tavan Tolgoi traffic, and two new lanes added on the west side to accommodate the Tavan Tolgoi-Gashuun Sukhait road.
  - Timeline: in operation; The road started construction in 2021 and expected to be completed in 2025 (i.e. completed prior to the Project)
- Khanbumbat Airport
  - Location: Khanbogd, Umnugovi, Mongolia
  - Description: The airport has a runway length of 3,259 m, and a width of 45 m. It is able to receive Boeing-737 and Airbus A320 aircraft. The terminal building is able to cater for up to 240 passengers per hour.
  - Timeline: The airport was built in the 2000s. At that time, the runway was unpaved. In 2007 it started accepting passenger flights. The new airport was built in 2012. It opened on 10 February 2013.
- Existing transmission lines from Peoples' Republic of China connecting to existing CES Oyu Tolgoi Substation and existing Oyu Togoi Mine Central Substation and northward to regional Mongolian CES grid network
  - Location: CES grid network including spanning Oyu Tolgoi to Tsogttsetsii.

[2] A proposed Khanbogd Wind Farm Project is distant from the Project (100 km away from the WTG Area) and is reported to be shelved (unlikely to proceed) and thus not included for CIA.

- Description: approximately 130 km overhead line of the CES grid network spanning from Oyu Tolgoi to Tsogttsetsii.
- Timeline: in operation.

- Existing Tavan Tolgoi Mine
  - Location: 15 km south west of Tsogttsetsii. Umnugovi, Mongolia
  - Description: Tavan Tolgoi Mine comprises several coal production sections. Production commenced in the 1960s with newest sections coming into production in the 2000s.
  - Timeline: in operation.
- Existing Tsetsii Wind Farm
  - Location: Tsogttsetsii. Umnugovi, Mongolia
  - Description: 50MW wind farm with 25 2MW WTGs, which commenced operation in 2017.
  - Timeline: in operation.
- Future 450MW Tavantolgoi Thermal Power Plant and Transmission Lines
  - Location: Tsogttsetsii. Umnugovi, Mongolia
  - Description: The project is reported as delayed and few project details are publicly available. The Power Plant would be constructed near to the Tavan Tolgoi mine, reportedly in two phases (Phase 1: 300MW, Phase 2 150MW). No maps are available from publicly available sources. The power plant would primarily supply power to Tavan Tologoi, Oyo Tolgoi mines and future mines (e.g. Kharmagtai mine) so as to reduce energy import from China. It is conservatively assumed new transmission lines would be required, though no details on this requirement (i.e. whether existing transmission line would be available) or route are available but may follow the existing transmission line route.
  - Timeline: Given reported delays, it is assumed that the project would be several years in the future if the project proceeds and that its construction would not be concurrent with the construction of the Bilgeh Wind Farm.
- Future Kharmagtai copper mine
  - Location: Tsogttsetsii. Umnugovi, Mongolia
  - Description: The Kharmagtai copper mine would be an open pit mining project to recover large copper and gold deposits.
  - Timeline: A bankable feasibility study (BFS) is planned to start in early 2025 and complete by mid-2026[3]. Given timeline for completion of feasibility study and that the mining company indicates power supply would be from the future Tavantolgoi Thermal Power Plant, it is estimated construction would be several years in the future if the project proceeds.

A summary of the key projects is provided in the below table.

[3] https://api.investi.com.au/api/announcements/xam/f97d05ab-f06.pdf

TABLE 10-1: KEY PROJECTS IN THE PROXIMITY OF THE PROJECT SITE

Key Projects	Description	Expected Timeline	Approximate Distance (km) to WTG	Approximate Distance (km) to OHL
Oyu Tolgoi mining underground expansion	Expansion of underground mining project (Gold and Copper)	In operation, expansion commenced 2023.	55	2
Tavan Tolgoi - Gashuun Sukhait 250 km heavy-duty paved road project	A 4-lane road construction	To be completed in 2025. Assumed in operation before Project commencement.	20	5
Khanbumbat Airport	Airport	In operation.	45	10
Existing transmission lines	OHL	In operation	<0.5	<0.5
Tavan Tolgoi Mine	Mining project (Coal)	In operation	65	70
Tsetsii Wind Farm	Wind Farm	In operation	60	65
Tavantolgoi Thermal Power Plant	Coal-fired power plant	Considered reasonable to assume potential development will not overlap the construction phase of the Project.	70 (Estimated)	75 (Estimated)
Kharmagtai copper mine	Open pit copper and gold mine	Pre-feasibility study to be completed in 2026 and so considered reasonable to assume potential development will not overlap construction phase of the Project.	60	65



Note: "Tavantolgoi Thermal Power Plant" is not shown on figure as location is not known.

FIGURE 10-2: KEY PROJECTS IN THE PROXIMITY OF THE PROJECT SITE

10.4.4 SCOPE OF CIA

A cumulative screening assessment was carried out to consider the interactions of impacts from various key projects on the relevant VECs, including:

- Cumulative habitat loss of vegetation;
- Cumulative bird and bats collision;
- Cumulative impact on barrier creation for terrestrial mammals;
- Cumulative impact on economy and employment;
- Cumulative impact on community health and safety;
- Cumulative impact on traffic; and
- Cumulative impacts on water consumption.

Cumulative impacts that are not considered significant for the Project were scoped out.

Table 10-2 presents the outcomes of the scoping, based on identified VECs, assessed Project impacts, and the identified external projects.

TABLE 10-2: KEY PROJECTS IN THE PROXIMITY OF THE PROJECT SITE

Impact type	VECs Likely to be Impacted	Assessment of Potential Impacts	RCIA Scope
Cumulative habitat loss of vegetation	Species of conservation significance known to occur in the local area	Flora will mainly be affected during the construction. However, six of the key projects already or will already exist. The projects that will reduce vegetated area is the Oyu Tolgoi mining underground expansion as well as and future Tavantolgoi power plant and future Kharmagtai copper mine. However, Bilgeh Wind Project would have a negligible soil disturbance surface compared to those projects. As the magnitude of the impacts of the two mining projects and power plant are not comparable and as the Bilgeh Wind Project will have a negligible impact on loss of vegetation, it is not proposed a detailed CIA. No further CIA is proposed.	No further CIA is proposed.
Cumulative birds and bats collision	Species of conservation significance known to occur in the local area	The presence of an existing transmission line parallel to the Project as well as transmission line for future Tavantolgoi thermal power plant, may increase the risk of collision for birds and volent mammals. The existing Tsettsi Wind Farm is distant (>50 km) from the WTG Area. No further CIA is proposed.	As this impact is expected during operation phase, a qualitative assessment for OHL is undertaken below.
Cumulative impact on barrier creation for terrestrial mammals	Species of conservation significance known to habitat the local area.	Terrestrial mammals will mainly be affected during the construction phase considering the influx of workers and machineries. The expanded heavy duty coal road to improve transportation of coal exports from the existing Tavan Tolgoi mine will	As this impact is expected during construction and operation phases, a qualitative

Impact type	VECs Likely to be Impacted	Assessment of Potential Impacts	RCIA Scope
		be in operation prior to the Project will be a source of potential collision risk with wild fauna. The ongoing expansion of the Oyu Tolgoi mine as well as future construction of the Tavantolgoi power plant will also subtract available land for the passage of large mammals.	assessment is undertaken below.
Cumulative impact on community health and safety	The VECs likely to be impacted are those people residing near the Project Site.	It is expected to have an impact due to the presence of workers temporarily residing in the proximity of the Project construction sites. Additional impacts occur as potential accidents during construction. Potential cumulative impacts may be experienced particularly in the town of Gashuun Sukhait as traffic generated by Oyu Tolgoi mining expansion, the existing Tavan Tolgoi Mine. However, measures to plan transportation to not interfere with existing traffic for coal exports will be in place and are already mitigated and the cumulative impact with other projects, if any, will be temporary.	No further CIA is proposed.
Cumulative impact on traffic	The VECs likely to be impacted are those people residing near the Project Site.	Potential cumulative impacts may be experienced in the town of Gashuun Sukhait as there is existing traffic for coal exports from the Tavan Tologoi mine. Trucks may be following the similar route, crossing Gashuun Sukhait town and expected to use the completed upgraded heavy duty paved road. It is planned that the Project will liaise with the Tavan Tolgoi mine so that transportation of material and equipment does not interfere with coal export traffic. As such, traffic movements activities are present temporarily and will be managed to reduce overlap so the cumulative impact, if any, will be temporary.	No further CIA is proposed.
Cumulative Impacts on water consumption	The VECs likely to be impacted are those people residing near the Project Site.	Impacts on water consumption may arise during the construction phase considering dry environment. The Project is expected to extract groundwater for construction activities from a well located within the WTG Area. Oyu Tolgoi mining underground expansion is reported to be utilising groundwater within their exploitation area as well as piped from distant deep saline aquifers, which is at approximately 50 km from the WTG Area. Similarly, the existing Tavantolgoi coal mine and potential Tavantolgoi power plant project are approximately over 60 km from the WTG Area. It is	No further CIA is proposed.

Impact type	VECs Likely to be Impacted	Assessment of Potential Impacts	RCIA Scope
		likely that the aquifer at the WTG Area are disconnected from aquifers at the mines and do not affect the same water resource. It should be noted that the water consumption from the mine activities and potential power plant will be much greater than the Bilgeh Wind Project.	

10.5 SUMMARY OF VECS

10.5.1 CUMULATIVE VOLANT FAUNA COLLISION AND ELECTROCUTION FROM PROJECT'S OHL

The biodiversity impact assessment (***Chapter 7***) has identified mortality causes for avifauna and bats during the operation phase through two main sources – collision with wind turbines, and electrocution due to collision with the OHL. For the purpose of this CIA, only the mortality causes from collision with OHL are considered due to the presence of a nearby transmission line and potentially future transmission line (with unknown location) for the Tavan Tolgoi power plant, while no wind farms are located within a 50 km radius of the Project. Birds and bats mortality can occur when flying into the transmission lines wire and electrocutions occur when an individual completes a circuit by touching two energized parts of strung wires. Birds are likely to be impacted by collision with transmission lines including birds that soar and dive for prey.

The majority of collisions occur in poor weather and with the top or earth wire which are finer and harder for birds to see. Larger perching bird species such as raptors are more susceptible to electrocution because their larger wingspan means they are more likely to create a short-circuit between a live cable and another component resulting in electrocution.

The construction of the Project OHL is likely to create a cumulative impact with the existing transmission line, which is parallel and has a similar design.

Given the proximity of the two lines and the similarity of the habitat, it is reasonable to assume that the likelihood of collisions of birds and bats to a transmission line would increase in the area between the WTG Area and the Oyu Tolgoi Mine's central substation.

With regards to bats, the impact significance has been evaluated as negligible prior to mitigation measures due to the presence of only three (3) species of low conservation significance (Least Concern on the IUCN Red List) recorded from the baseline surveys. For birds, the impact significance of direct mortality through collision and/or electrocution from the WTGs and OHL is moderate but reduced to minor by applying additional mitigation measures, with additional recommendations to be outlined in a BAP to adhere to IFC PS6 requirements for no net loss of natural habitat and net gain of critical habitat values.

During the avifauna baseline surveys conducted between August 2024 and May 2025, no bird flight diverters were observed on existing transmission lines in the area during conduct of carcass search surveys. However, bird diverters would be a requirement for new OHL projects in Mongolia including new transmission lines for future Tavantolgoi thermal power plant. Therefore, mitigation measures will already be implemented to reduce the impacts in the

existing transmission line. Apart from this, some studies have suggested that parallel OHL with staggered towers may reduce collision risk[4].

Considering some mitigation measures on the future transmission line, combined with the impact significance ratings and proposed mitigation measures for the Project OHL, the cumulative impact is considered to be **minor**.

It should be noted that a quantitative collision risk assessment (CRM) to evaluate cumulative impacts of volant species collision from Project's WTGs and OHL as well as existing OHL infrastructure is not feasible at this stage. This is due to lack of Vantage Point survey data in the vicinity of existing OHLs to serve as inputs into a CRM, nor other primary and secondary data on species' presence, abundance, distribution, and diversity.

Given that the Project is committed to deliver no net loss outcomes for volant species that qualify as PBFs under EBRD ESR6 criteria, it is considered unlikely that the Project would contribute to significant increases in cumulative impacts on a landscape level.

TABLE 10-3: CUMULATIVE IMPACTS ON BIRDS AND BATS COLLISION

Key Projects	**Birds and Bats**	
	Construction	**Operation**
Oyu Tolgoi mining underground expansion		
Tavan Tolgoi -Gashuun Sukhait 250 km heavy-duty paved road project		
Khanbumbat Airport		
Existing transmission lines		
Tavan Tolgoi Mine		
Tsetsii Wind Farm		
Tavantolgoi Thermal Power Plant		
Kharmagtai copper mine		

Note:

	Cumulative impact considered to be high
	Cumulative impact considered to be medium
	Cumulative impact considered to be minor
	No potential impact
	Positive impact
N/A	Not applicable

[4] Pallett J et al. (2022) Staggered towers on parallel transmission lines: a new mitigation measure to reduce collisions of birds, especially bustards. Namibia Journal of Environment. Vol 6.

10.5.2 CUMULATIVE IMPACTS ON BARRIER CREATION FOR TERRESTRIAL MAMMALS

Barrier effects are defined as any obstacle (including the Project components), that acts as a barrier to fauna movements, so that they avoid the vicinity of the obstacle and choose another route. For this Project, barriers may be created by fencing installed during construction activities, or roads created to access and maintain WTGs and infrastructures. The barrier effects on the population of particular species are unique, as each species responds individually to a range of processes related to its requirements for food, shelter, space, suitable climatic conditions and processes. Small mammals will likely be impacted at a local scale, whilst larger fauna are unlikely to be impacted given that barriers will be localised within close proximity of the WTG laydown area. As explained in ***Chapter 7***, for biodiversity impact assessment, the impacts from barrier creation are present both in construction phase (from construction of WTGs, Substation, BESS, OHL, roads, and associated fences), and operation phase (presence of OHL towers and WTGs). For the purpose of this CIA, only the barriers created by construction of new roads/expansion of existing roads is considered due to the presence of existing roads.

The expanded heavy-duty paved road, which will be in operation prior to the Project, will provide a faster route for vehicles and transportation of goods and raw materials. It is reasonable to expect that there will be an increase in traffic flow compared to the original road design. Increase in traffic may discourage wild animals to roam closer to the road or, in extreme cases, result in fatalities due to collision with vehicles. Thus, the in operation heavy duty-paved road is considered a source of the barrier creation that can cause disturbance and potentially displacement of mobile fauna such as birds, mammals, and reptiles.

The Oyu Tolgoi mining underground expansion will have more significant impact on barrier creation as the occupied surface is significantly wider than the Bilgeh Wind Project and the existing heavy-duty paved road.

In addition, the creation of barriers through construction of roads is only limited to the construction phase (17 months) of the Project. The impact is estimated as minor. Thus, compared to the relatively shorter duration of impact created by barriers of the Project, the other two key projects (Oyu Tolgoi mining underground expansion and existing Tavan Tolgoi-Gashuup Sukhait road will provide a barrier effect during operation, with significantly longer duration.

In conclusion, the contribution to the creation of cumulative impacts during Project construction is evaluated as **minor**.

Table 10-4 presents the scoping matrix for Impacts on Barrier Creation for terrestrial mammals

TABLE 10-4: CUMULATIVE IMPACTS ON BARRIER CREATION FOR TERRESTRIAL MAMMALS

Key Projects	**Terrestrial Mammals**	
	Construction	**Operation**
Oyu Tolgoi mining underground expansion		
Tavan Tolgoi -Gashuun Sukhait 250 km heavy-duty paved road project		

Key Projects	Terrestrial Mammals	
	Construction	Operation
Khanbumbat Airport		
Existing transmission lines		
Tavan Tolgoi Mine		
Tsetsii Wind Farm		
Tavantolgoi Thermal Power Plant		
Kharmagtai copper mine		

Note:

	Cumulative impact considered to be high
	Cumulative impact considered to be medium
	Cumulative impact considered to be negligible or minor
	No potential impact
	Positive impact
N/A	Not applicable

10.5.3 CUMULATIVE IMPACT ON ECONOMY AND EMPLOYMENT

In terms of economy and employment, the cumulative impact will be positive and this positive impact will be assessed at national, provincial and local levels through analysing tax revenue, economic development and employment opportunities, respectively. The cumulative impacts will occur during both the construction and operation phases of the Project. Benefits will be visible in the local employment and procurement activities of the Project as well as other local developments, both directly to the projects and indirectly via their sub-contractors and suppliers. Although not all of these workers will be recruited from the local area, some will be employed from the local communities for unskilled and semi-skilled jobs. Business and service development will increase in the area leading to increased incomes and induced employment for local people.

The presence of multiple key projects being developed in the area, offer cumulative positive impacts to the local workers, which can invest time in training during the development of one project and continue using the acquired skills to other available construction sites in the area. This will offer some of the workers with additional employment opportunities and career progression.

Table 10-5 presents the scoping matrix for economy and employment.

TABLE 10-5: CUMULATIVE IMPACTS ON ECONOMY AND EMPLOYMENT

Key Projects	Economy and Employment	
	Construction	Operation
Oyu Tolgoi mining underground expansion		

Key Projects	Economy and Employment	
	Construction	Operation
Tavan Tolgoi -Gashuun Sukhait 250 km heavy-duty paved road project		
Khanbumbat Airport		
Existing transmission lines		
Tavan Tolgoi Mine		
Tsetsii Wind Farm		
Tavantolgoi Thermal Power Plant		
Kharmagtai copper mine		

Note:

	Cumulative impact considered to be high
	Cumulative impact considered to be medium
	Cumulative impact considered to be negligible or minimal
	No potential impact
	Positive impact
N/A	Not applicable

10.6 CONCLUSIONS OF THE CIA

Based upon a review of existing projects and potential developments, it is concluded that cumulative impacts associated with projects that occur near the Project site will likely be experienced during the construction and operation phases of the Project.

- Cumulative birds and bats collision;
- Barrier creation for terrestrial mammals; and
- Economy and employment.

No additional mitigation measures are suggested to mitigate cumulative impacts as they are evaluated as minor.

However, it is recommended to consider the presence of such key projects when designing monitoring programs during Project operation. The evaluation of the monitoring results may help to clarify and assess the magnitude of cumulative effects identified in this exercise.

The successful implementation of the various mitigation and management measures recommended to Bilgeh Wind Project, will still require collaboration with a number of stakeholders. Key stakeholders include local authorities, owners of projects in Tsogttsetsii soum, Khanbogd Soums, Manlai soum and local communities. It is recommended NZE to seek to actively collaborate with all stakeholders as well as surrounding project owners, to exchange information on the management of environmental and social impacts of the projects.

Based on the assessed cumulative impacts it is recommended to implement the following mitigation measures:

- Maintain communication with the other project owners; and
- Consider presence of other key projects in the Project's monitoring program.

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