



**Clean Energy**

**Salkhit Wind Farm**

**Operational Environmental and Social Management Plan**

**Updated as of  
October 2023**

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## 1 INTRODUCTION

### 1.1 AIMS AND SCOPE OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The operational phase Environmental and Social Management Plan (ESMP) sets the standards of environmental performance for the Salkhit Wind Farm. The document replaces the construction phase ESMP and should be adhered to during operation of the wind farm.

Standards of environmental performance will form the basis against which the site will be measured during environmental audits. The primary purpose of this document is to act as the mechanism by which the project developer and sub-contractors will incorporate the requirements of the ESIA together with Equator Principles and EBRD Performance Requirements into the operation of the wind farm.

The ESMP for the Salkhit Wind Farm enables factors that affect wind farm construction, operation and decommissioning to be addressed. The ESMP will be further updated and expanded following site audits as well as finalization of the Newcom Group Environmental and Social Management System.

The document sets a number of objectives to ensure that the site is operated in an environmentally acceptable manner through managing the site's significant environmental aspects. The scope of this ESMP for the Salkhit Wind Farm includes all activities, whether conducted by Clean Energy LLC, other parts of Newcom or other companies and sub-contractors that are part of the operation of the wind farm. It will be detailed in all contractor's contracts that they will have to demonstrate compliance with the sections of this ESMP relevant to their activities.

Each significant aspect has one or more objectives, which are followed by mitigation measures to ensure that the objectives are met through operational controls.

A HSE Manager has been established to communicate progress of site operations and report the internal environmental performance audit results during the operational phase.

### 1.2 IMPLEMENTATION OF THE ESMP

In order to successfully implement the ESMP, the following key tasks will be undertaken:

- Preparation of an operational audit checklist based on the targets and objectives.
- Undertake inspection / audit of site and project operations, including records of training, waste management etc.
- Prepare a report detailing areas of compliance / non-compliance.
- Prepare a list of actions (action plan) to address non-compliances with associated timescales for completion; and
- Audit the actions to ensure issues have been addressed.

It will be the responsibility of Clean Energy to monitor the effectiveness of the project ESMP and identify improvement actions as necessary.

### 1.3 STRUCTURE OF THE ESMP

The ESMP is structured as follows:

- Chapter 2: Clean Energy Environmental and Social Policy
- Chapter 3: Roles and Responsibilities
- Chapter 4: Compliance with Legal Requirements
- Chapter 5: Environmental and Social Baseline

- Chapter 6: Management and Mitigation Measures
- Chapter 7: Monitoring of Environmental and Social Performance
- Chapter 8: Review of the Management Plan
- Chapter 9: Record Keeping

These topics are discussed in subsequent chapters:

## 2 CLEAN ENERGY ENVIRONMENTAL AND SOCIAL POLICY

Clean Energy is committed to ensuring the responsible management of the environmental, health, safety, employment, supply chain, and community aspects that our operations affect, and to promote sustainable development in the industries and communities in which we operate. This policy outlines our approach to managing environmental and social (E&S) risks and maximising opportunities throughout all our operations.

### It is Clean Energy's policy to:

- Strive for high levels of ethics, principles and values in all aspects of E&S performance by our employees and our operations.
- Regularly review and improve E&S performance.
- Include E&S issues as part of overall risk-based management and integrate into routine business decision making processes.
- Consider E&S impacts when developing any policy, system, service or major change initiative.
- Review all potential and committed investments or projects against the E&S Policy.
- Review and ensure the existing and future operations manage E&S risks in their operations in compliance with Newcom Group's Environmental and Social Management System (ESMS) and seek opportunities to maximise sustainable outcomes.
- Ensure qualified staff or consultants are familiar with and able to carry out the review, assessment, management, surveillance, and monitoring of the company's performance.
- Train all staff on their roles and responsibilities in implementing the E&S Policy.
- Monitor and review the implementation of the ESMP regularly so that the company can assure compliance of all operations with the E&S Policy.
- Communicate the E&S Policy internally to all employees and contractors to ensure effective implementation.
- Provide statements and reports where appropriate and relevant.
- Promptly report all E&S incidents of a material nature to the company's senior management.

### 2.1 CLEAN ENERGY'S COMMITMENT

This Plan identifies specific actions that Clean Energy considers necessary to address the E&S issues related to our business activities, in satisfying national and international standards.

From planning through to decommissioning, Clean Energy regards employees, contractors, and visitors as the top priority in our E&S performance. General Manager(s), Department Managers, Workers, and Contractors should all understand their roles and responsibilities, effectively implement the ESMP, and strive to achieve sustainable development and maintain 'zero fatality.'

To reflect our commitment in detail, we established this ESMP to provide clear instructions on how to comply with the relevant requirements and how to implement procedures, so we ensure that the E&S risks are managed and mitigated properly. The ESMP clearly defines the standards of environmental performance for the Salkhit Wind Farm and the requirements for assessing, monitoring, and reporting E&S performance.

This ESMP will evolve and mature over the years to satisfy the needs of our business development. The Director and the E&S Manager shall ensure this ESMP is updated on a regular basis, and are directly responsible for its effective implementation.

Proactive and effective implementation of the ESMP is a key to career promotion. All employees' performance will be evaluated based on well-defined and measurable E&S actions, objectives, and KPIs.

## **2.2 PROVIDING A HEALTHY AND SAFE WORKING ENVIRONMENT**

Clean Energy is committed to:

- Minimise occupational accidents, incidents, and occupational diseases.
- Integrate E&S performance into our operation processes and services.
- Promote environmentally friendly product design and procurement.
- Hold the environment, health, safety, and community as our core values.
- Provide a safe workplace with 'zero fatality'; and
- Increase public disclosure and transparency through community outreach.

## **2.3 PUBLIC SAFETY**

Whenever there is business operation in or nearby residential communities, the likelihood for the residents being impacted increases. These potential risks and impacts must be properly managed to the level of maximum control achievable. Clean Energy will effectively manage the risks by providing training to raise public safety awareness, and to maintain regular communication with community residents in order to understand their needs and concerns.

## **2.4 COMMUNITY ENGAGEMENT**

Employee volunteering is an integral part of our community engagement strategy. It provides new ways of connecting with our local communities and enables our staff to gain skills and motivation while giving back to society. This will allow the general public to better understand Clean Energy and its values.

We believe we have a responsibility to do what is right, not only for our business and our stakeholders, but also for the communities where we live and work. We realize that our enterprises touch the lives of thousands of people – including employees, contractors, suppliers, associates, customers, and environmental and community groups. We are committed to being a responsible member of this community.

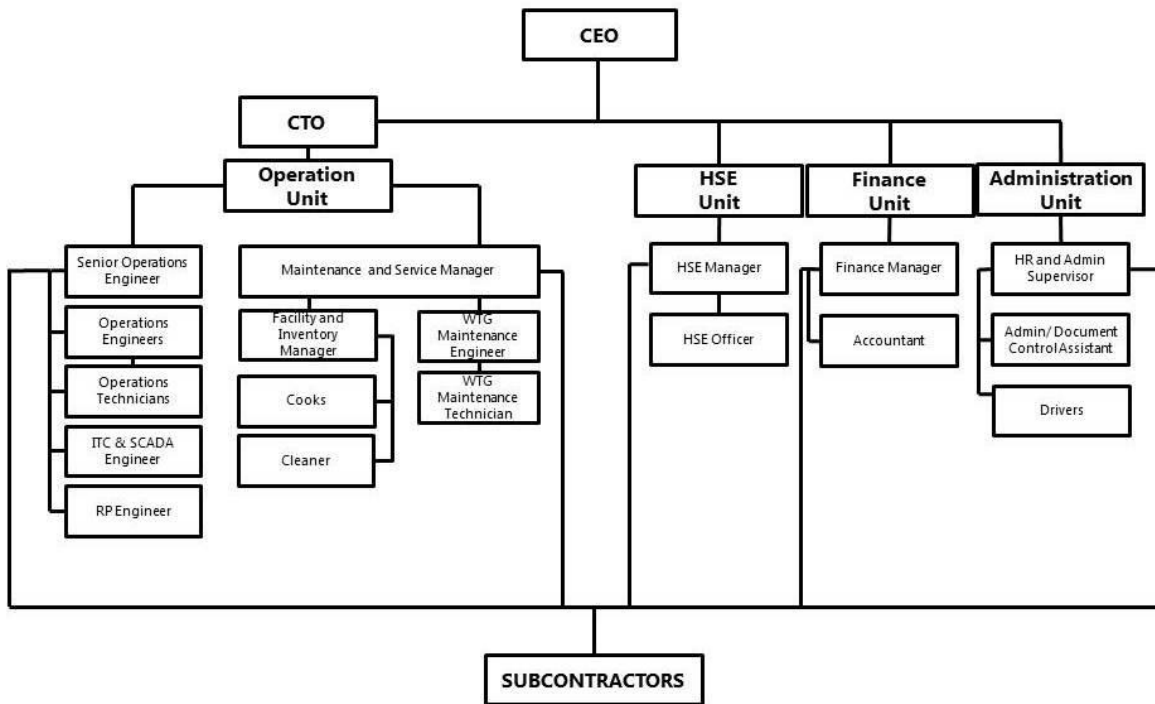


### 3 ROLES AND RESPONSIBILITIES

#### 3.1 CORPORATE MANAGEMENT STRUCTURE

The following chart shows the corporate management structure in relation to the various environmental and social management aspects.

#### 3.2 RESPONSIBILITIES



#### 3.3

Responsibilities of parties of the Salkhit Wind Farm project are presented below. The responsibilities of implementing the specific actions stated in the ESMP will be set out in the Clean Energy Environmental and Social Action Plan (ESAP).

**Clean Energy** HSE manager and officer have the overall responsibility of developing, reviewing, and updating the ESMP. It will also on a regular basis, monitor and audit the implementation of the ESMP. Clean Energy will provide appropriate training for their staff in relation to implementing the ESMP.

**Subcontractors** during operation include the Turbine Supply Contractor (GE), BOP O&M service for substation Central Region Electricity Transmission Grid (CRETG).

**GE** will be responsible for their activities in compliance with the ESMP, the relevant laws and regulations and the international standards set out in the ESMP, including taking the required precautions, carrying out the necessary actions to minimize environmental and social impacts that may occur during the operation of the Salkhit Wind Farm.

National Power Transmission Grid state owned joint stock (NPTG) will be responsible for carry out perform the Services, which shall include all necessary regular and routine (scheduled) maintenance for all components of the BoP as contemplated in the relevant manufacturer’s maintenance manuals (as

amended from time to time) or, where no manuals exist, in accordance with Prudent Industry Practices, in order to meet the specification and design of the BoP.

**Newcom LLC** as the Sponsor of Salkhit Wind Farm shall periodically review and monitor the implementation of the ESMP, and provide guidance and support in the framework of its ESMS.

**EBRD and FMO** as the Lenders and Shareholders will require compliance with the respective performance standards and requirements.

### 3.4 CONTACT DETAILS

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### 3.5 ENVIRONMENTAL MANAGEMENT PLANS

#### 3.5.1 CLEAN ENERGY

Clean Energy's Project environmental and social management system consists of the following plans:

- Operational Environmental and Social Management Plan.
- Community Health and Safety Plan.
- Occupational Health and Safety Plan.
- Public Consultation and Disclosure Plan.
- Workers Grievance Mechanism.

Clean Energy's Project EMS is the primary EMS which provides overall control over the project and contractors. Where discrepancies occur, Clean Energy's Project EMS will take precedence over the sub-contractor's management plans with the exception of health and safety issues. GE will be the principal contractor on site during operation and all work on site including that of Clean Energy staff will be in accordance with the provisions of GE's H&S Plan.

### 3.5.2 GE

GE has an existing Environmental Management Plan for construction sites already in place and will update this as part of its operational commitments. GE will implement the following plan:

- Small Site Work Plan.

### 3.5.3 PLAN HIERARCHY

The hierarchy of management plans is shown below:

<b>Table 1: Management Plans during Operation</b>		
Title	Effective Date	Comments
<b>Overarching plans to be in place for entire lifetime of project</b>		
Clean Energy Operational Environmental and Social Management Plan,	Entire project lifetime	Principal E&S management plan to be in place throughout entire project lifetime.
Clean Energy Community Health and Safety Plan (CHSP)	Entire project lifetime	CHSP forms basis for community health and safety during construction and commissioning.
Clean Energy Public Consultation and Disclosure Plan (PCDP),	Entire project lifetime	PCDP will be implemented throughout operation.
Clean Energy Workers Grievance Mechanism,	Entire project lifetime	Grievance Mechanism to be in place throughout operation.
<b>GE E&amp;S plans to take precedence during the operational phase</b>		
GE Small Site Work Plan	Entire project lifetime	GE has assumed responsibility for works on site following the completion of construction works. Overall control of development lies with Clean Energy.

## 4 COMPLIANCE WITH LEGAL REQUIREMENTS

Clean Energy will follow the own procedures and guidelines. Another key consideration of this ESMP is making sure all activities comply with national and international legislation and standards.

### 4.1 MONGOLIAN LEGISLATION

The below mentioned laws and regulations include the legal requirements to reduce environmental impacts that may occur during construction and operational activities of the Salkhit Wind Farm:

- Conditions listed in the General Environmental Impact Assessment issued by the Ministry of Environment and Green Development.
- Law on Environmental Impact Assessment.
- Law on Environmental Protection.
- Law on Fire Safety.
- Law on Disaster Protection.
- Law on Renewable Energy.

- Law on Special Protected Areas.
- Law on Water.
- Law on Water and Mineral Water Use; and
- Law on Hazardous and Toxic Chemicals.

#### **4.2 INTERNATIONAL CRITERIA**

The Equator Principles, EBRD Performance Requirements, IFC Performance Standards (PS) and World Bank Group Environmental Health and Safety (EHS) Guidelines for Wind Energy and EHS General Guidelines were considered during the preparation of the ESMP as lender's requirements.

## 5 ENVIRONMENTAL AND SOCIAL BASELINE

### 5.1.1 SUMMARY OF SITE ENVIRONMENTAL CONDITIONS

The ecosystem of the study area can be generally described as a low-level anthropogenically disturbed (through grazing), moderately moist meadow steppe, situated on weakly-moderately or highly dissected low mountain/hummocky terrain underlain by automorphic and semi hydromorphic soils. The vegetation is predominantly small grass/petrophysics obscures dry steppe. No arable agricultural activities have been identified in the Project area.

### 5.1.2 LANDSCAPE AND GEOLOGY

The area is characterized by fairly wide flat-bottomed valleys bounded by low mountain ridges. The lowest point of the valley where the control centre is proposed to be located lies at about 1,650 meters above mean sea level (amsl), while the WTGs are located on the East Ridge at elevations ranging from about 1,775 to 1,850 m amsl.

The project site is located in the transition zones between the mountains (denudational surface N-Q) and Mesozoic, Cenozoic denudational and alluvial plains. The topography is characterized by hilly, moderately to highly dissected terrain, with slight slopes covered by steppe grass and broad valleys. There are no designated or protected landscapes within 40 km of the site.

The project area, like much of the surrounding area, is open countryside, with little woodland cover other than small areas of birch scrub that are found on many sheltered north-facing slopes. The predominant vegetation cover is dry steppe grassland. The steppe is used for grazing, apart from which there are few other signs of human habitation. These comprise a few linear features, including a line of telegraph poles which crosses the valley, and the main road and railway to the east of the project site. In addition, there is an unimproved vehicle track that traverses the site in the valley as well as some other tracks that are less frequently used. There are a few buildings associated with the railway to the north-east and east of the site. Seasonally, up to 10 to 12 families of nomadic herders move their gers into the valleys in the vicinity of the Project area and allow their herds to graze in spring and summer.

Like much of rural Mongolia, the landscape is otherwise free from buildings and is dominated by the broad expanse of the sky. The mountaintops and ridges provide good vantage points from which to view the surrounding landscape. This open landscape provides an overwhelming sense of vast natural space.

The geology of the area is presented by upper pre-Cambrian and mid-upper Paleozoic (Devonian, late Silurian and Carboniferous periods) rock deposits. The area is located between two geologic faults.

### 5.1.3 SURFACE WATER

There are no perennial streams or permanent surface water bodies in the vicinity of the project site. The nearest main rivers are the Terelj River and the Tuul River, which are some 40 km and 70 km north-north-east of the site, respectively.

The dry bed of a small ephemeral creek runs along the floor of the valley where the sub-station is located. In April 2008, the creek was dry, and it is likely that it flows only after significant precipitation events in summer, and then probably for only short distances. Beneath the streambed there apparently is a shallow alluvial aquifer that expresses itself in small springs, one of which was visible in April 2008. These small springs are very likely to be critical water sources for wildlife and for grazing livestock in the dry season of spring and early summer and could be attractive to migrating birds in the spring and fall migration seasons.

Small erosion channels were observed on the mountain slopes and hillsides. None were deeply incised. It is likely they flow only during and after severe precipitation events in summer.

During site visits in September 2012 and July 2013, a number of seasonal drainage routes and small surface water features were observed, particularly at the bottom of the valley, most of which are used as drinking water sources by livestock.

#### 5.1.4 HYDROGEOLOGY

In terms of hydrogeological zoning the study area belongs to the Khangai-Khentii hydrogeological complex, and the site is likely to be underlain by the following types of aquifers:

- Quaternary alluvial porous confined aquifers composed of sand, sandy loam and gravel material. Thickness of the aquifer ranges within 45-65 m. The groundwater table depth typically varies between 10 and 25 m. The shallow alluvial aquifer that apparently lies along the ephemeral streambed in the valley floor is an expression of this type of aquifer; aquifer thickness is unknown.
- Fractured water zones in metamorphic rocks. This type of aquifer is typical of the study area and is characterized by unsteady regime and relatively deep groundwater table depths (more than 30 m). This is likely to be the predominant deep aquifer in the Project area.

#### 5.1.5 SOILS

Field observations revealed numerous traces of soil erosion and desertification, principally caused by vehicle traffic on unimproved tracks. Once vehicles have damaged the grass cover, which is already reduced by over-grazing, the fine soil is subject to Aeolian transport and erosion in the dry season and water erosion during the wet season. In addition, there are some run-off channels on the hillsides, but there is no sign of severe erosion.

#### 5.1.6 VEGETATION

Geographically, the Project area belongs to central Khalkh steppe of the Dry Mongolia Steppe zone (Mongolian classification). Vegetation is exclusively grass, except for areas of low shrub, predominantly birch (*Betula sp.*), on north-facing slopes in the vicinity of WTG 5. These small areas of shrub would provide roosts for birds (see below) and cover for larger mammals. The growing season typically starts in May and lasts through late August or early September. No construction impacts were recorded on any areas of birch scrub.

During site visits, the area appeared to be heavily grazed in most places. In March and April, nomadic herders begin to bring their livestock into this area for spring and summer pasturing. No restrictions were made on grazing of livestock during construction of the Project. Given the heavy grazing, any vegetation species of potential conservation interest would already be severely disturbed or extirpated.

#### 5.1.7 TERRESTRIAL ECOLOGY

Brandt's voles (*Microtus brandti*) were seen to be abundant in the Project area. Burrows were visible in every area where there was soil, both in the valley and on the hillsides, and many voles were seen on the surface. It is currently of low-risk conservation status.

The Mongolian marmot (*Marmota sibirica*) is another rodent in the Project area. This species' burrows are much larger than the voles' and were relatively common in the project area. The species is regionally endangered but globally in the lower risk category.

Another rodent species, the blue mountain vole, was observed on a northern peak on the Western Ridge.

Grey wolves (*Canis lupus*) have been sighted within the Project area. This species' regional conservational status is near threatened but globally is considered of least conservational concern.

Corsac foxes (*Vulpes corsac*) also occur in the Project area. This species typically inhabits steppes, semi-deserts and deserts, avoiding mountains, forested areas, and dense bush. Their global conservation status is of least concern.

According to local herders, Mongolian gazelle (*Procapra gutturosa*) herds migrate through the area in autumn. This species is classified as regionally endangered but globally of least conservational concern.

No reptile species were observed during any of the site visits, and it is not known if they occur on the site. No amphibian species were observed, and none are likely to occur within the Project site.

The ESIA identified that whiskered bats (*Myotis mystacinus*) and long-eared bats (*Plecotus ognevi*) are seasonally present at the Project site.

Bat monitoring was carried out during the July 2013 audit to determine the presence of bats species at the site using Anabat bat monitoring detectors. An initial site walkover was carried out on 15 July 2013 in order to establish any suitable bat habitats and features on the site. It was identified that railway buildings beyond WTGs 1 and 2 could provide for potential bat roosting. Following this, driven transects of the site and roost surveys at the railway buildings were carried out at dawn and dusk. An anabat detector was placed in two different locations (by a small water body and near birch scrub habitat) on the site to monitor bat activity.

Time constraints on the survey visit meant that only a very limited amount of data could be collected. Therefore, seasonal variations in the usage of the site and species present could not be identified. No internal checks of buildings were carried out for roosts. This can provide more definitive information with regards to the identification of bats present to species level.

Given the short time after sunset that bats were recorded, and data presented from previous surveys, it is likely that bats are roosting either within the railway buildings or in the residential buildings beyond the wind farm site.

Following the survey effort, all Anabat data were reviewed and analysed by an experienced ecologist. At the railway buildings, social calls were recorded approximately five minutes after sunset until 45 minutes after sunset followed by foraging and commuting behaviour around one hour and 40 minutes after sunset until the end of the survey at 23:00. Within the wind farm site itself, activity was much lower with no bats recorded during the driven transects and only four bat passes at WTG 1.

Of the species recorded at and adjacent to the site, *Vespertilio* and *Eptesicus* are both at moderate to high risk for collision with WTGs. *Myotis* species are generally fast and low-flying and so are considered to be at low to moderate risk for collision with WTGs.

Internationally, all the species possibly encountered are considered as Least Concern by the International Union for Nature Conservation (IUCN).

#### 5.1.8 BIRDS

During a visit to the site in April 2011 and through an avian survey completed in May and June last year, significant numbers of large raptors were observed in the Project area. Some of the soaring birds were likely to have been migrating through the area at the time, but the area also was found to support many breeding pairs who use the area for hunting and raising young.

Among the species observed were steppe eagle (*Aquila nipalensis*), upland buzzard (*Buteo hemilasius*), common buzzard (*Buteo buteo*) Saker falcon (*Falco cherrug*), Eurasian hobby (*Falco subbuteo*), common kestrel (*Falco tinninulus*), black kite (*Milvus migrans*), great bustard (*Otis tarda*), and black vulture (*Aegypius monachus*).

The black vulture would scavenge carcasses of wildlife and livestock, and the other species would prey on rodents on the site, whose abundance would account for the high density of raptors. The black vulture is identified as Near Threatened on the 2006 Red List of the International Union for Conservation of Nature and Natural Resources (IUCN). The saker falcon is classified as Endangered, and the great bustard as Vulnerable.

#### 5.1.9 *PROTECTED AREAS*

There are no designated or protected landscapes in the vicinity of the Salkhit area.

#### 5.1.10 *CULTURAL HERITAGE*

The ESIA identifies no known archaeological sites, heritage sites, or large cemeteries located within the wind farm area. In a letter dated 27 May 2008, the Sergelen soum's Governor's office stated that the Newcom leasehold "does not have any ancient tombs, shrine, ossuary, monument, memorabilia, or archaic graves" (Sergelen soum Governor's Office, 2008).

Cultural heritage interests on the site are deemed to be insignificant and mitigation is proposed where there may be an impact on ovoos. None of these are deemed to be of special significance.

Following site audits, we were made aware of the potential impacts on burial site(s) located within the project site. One of these is located in proximity to WTG 21. This burial site is covered in stones and is not considered to be of great significance. There has been no adverse impact on any burial site during construction of the wind farm.

#### 5.1.11 *SOCIO-ECONOMIC CONDITIONS*

The only people who live on or near the wind farm site are several herders' families who seasonally move into the area in spring and summer to allow their herds to graze on project area grasslands, and railway workers' families, who are permanent residents near the railway stations.

The herders live in gers (round wool tents also known as yurts) and use fenced corrals for keeping some of their livestock (e.g., young animals or those being milked) close to the ger. Otherwise, the animals are free to graze on the surrounding pasture and are regularly tended by the herders. The herders buy drinking water and non-meat foods in Zuunmond or Sergelen village. Springs and active groundwater wells (there are no wells in the project area at present) are used for the livestock drinking water supply. The typical herder family in this area has a small truck for transportation.

Railway workers are employed by the State railway company that operates the Trans-Mongolian railway. Two railway stations, 6-P zor and 7-P zor, are located in close vicinity to the Salkhit site. The workers live in 2 to 3 storey apartment houses at each railway station.

They are supplied with food by the railway company and with drinking water from a groundwater well located at station 7-P.

The major income source for the herder families is trading beef, horse, goats, sheep meat and milk to shops and residents in Zuunmond and Ulaanbaatar.

## 5.2 **OVERVIEW OF WORKS DURING OPERATION**

Construction works on the Project were completed in September 2013. The main works to be undertaken during operation will consist of the following:

- Site Restoration and Aftercare.
- WTG Maintenance Activities.



- General Windfarm Operation focused on the Sub-station building and Compound; and
- Maintenance of Access Roads.
- Spill and Soil Contamination Response
- Environmental Monitoring
- Collection, Transportation and Disposal of Solid Waste
- Collection, Transportation, Disposal of Hazardous Waste
- Environmental Incident Reporting and Response

#### Information of document location

<b>Document name</b>	<b>Hard copy</b>	<b>Soft copy</b>
ESMP	Salkhit Wind Farm – Substation office	<a href="http://www.cleanenergy.mn">http://www.cleanenergy.mn</a>
HSE related documents	Salkhit Wind Farm – Substation office	<b>On internal server</b> - \\192.168.2.117\CE-CleanEnergy\Open\HSE - Health Safety Environment\2. Procedures

### 5.3 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

Table 3 summarises the potential impacts on the environmental impacts.

Table 2.1 summarises socio-economic resources as reported in the ESIA and updated where appropriate.

<b>Table 2.1: Summary of Environmental Impacts</b>							
Activity	Environmental aspect	Source	Environmental impact	Frequency of Impact	Degree of Impact	Significance	Operational Control
Electricity generation	Bird and bat collision with the turbines. Bird and bat electrocution by 110KW power lines.	Wind turbine movement and electricity of the 110KW power lines	Bird and bat fatality	3	3	1	1. Conduct bird and bat monitoring according to the plan. 2. Take preventive actions, implement mitigation measures 3. Make incident response plan and equipment available on site
	Harm to animals and plants	Wind turbine movement	Physical attributes e.g., size, shape, colour, appearance	3	3	3	1. Conduct environmental risk assessment on regular basis 2. Conduct environmental monitoring (bird and bat monitoring) according to plan. 3. Have incident prevention procedures and plans in place 4. Make incident response plan and equipment available on site
Electricity use	Water heating, room heating, lighting	Electricity consumption	Air emission, global warming	1	1	2	1. Put up signage to shut down lights in office to encourage electricity saving. Maximize the use of natural light by shifting workstations near the windows.
Waste generation	Food waste, plastic bottles	Resource consumption	Releases to land	3	3	2	1. Raise everyone awareness about the waste segregation and recycling program by placement of signage.
	Hazardous waste to the environment	Wind turbine and transformer maintenance	Soil contamination by oil	3	2	1	1. Develop procedure and plan on handling with hazardous waste, procedure on spill management, and emergency plan 2. Contract licensed contractor to dispose hazardous waste offsite and keep records of such wastes 3. Take corrective and preventive actions when necessary

Transporting people to the site	Vehicle use	Fuel burning	Air emissions	1	3	1	1. Help employees plan and share vehicles, e.g., Car-pooling 2. Encourage employees to use public transport facilities instead of using private vehicles. Make a listing of public transportation (bus/ rail) routes and circulate within the staff
	Adverse impact on soil	Vehicle movement	Soil erosion	2	2	1	1. Raise employees' awareness about staying to designated roads

<b>Table 3.1: Summary of Social Impacts</b>				
Environmental Receptor	Sensitivity of Receptor	Potential Impact	Magnitude of Impact and Duration	Significance
<b>Environmental Conditions</b>				
<b><i>Air and Climate</i></b>				
Local air quality – Salkhit.	Low.	Generation of dust by vehicles.	Locally Medium, very short duration.	Negligible.
		Low levels of emissions from machinery.	Very Low	Negligible.
		Emissions from maintenance during operation.	Very Low.	Negligible.
<b><i>Landscape and Visual</i></b>				
Local landscape.	Medium.	Changes to vegetation and topography during operation – 33 ha. Introduction of machinery and equipment to landscape.	Medium. Temporary – medium-term.	Moderate adverse.
		Erection of 31 WTGs 80 m high within open but vast landscape, in terms of scale.	Medium to Major. Permanent.	Moderate to Major adverse.
		Presence of site support buildings and roads; offsite linear features including roads and power lines.	Low. Permanent.	Minor adverse.
Herders.	Medium.	Change to views of ridges due to erection of WTGs, in addition to the sub-station, roads and power lines. In a social context, the visual disturbance is limited.	Low to Medium. Permanent.	Minor to moderate adverse.
Railway workers.	Medium.	Change to views of ridges due to erection of WTGs, in addition to sub-station, roads and power lines. In a social context, the visual change is not negative.	Low. Permanent.	Negligible.

Residents at Nailakh.	High.	Very small-scale changes due to alterations at sub-station and power lines.	Very Low. Permanent.	Minor adverse.
Travelers/ Visitors.	Low.	Change to views of ridges due to erection of WTGs, in addition to sub-station, roads and power lines.	Low to Medium. Permanent.	Negligible to Minor beneficial.
<b>Surface Water</b>				
Ephemeral creeks and channels.	Low.	Increased surface run-off during operation and changes to channel morphology during rainfall events.	Low. Permanent.	Negligible.
Surface water in valley from springs.	Medium.	Indirect impacts such as potential pollution from suspended solids.	Very Low. Temporary.	Negligible.
<b>Groundwater</b>				
Groundwater aquifers and springs.	Medium.	Use of water for workforce and local herders during operation.	Very Low. Permanent.	Negligible.
		Pollution incidents during operation from leaks and spills from oils or chemicals discharge of sewage.	Low. Permanent.	Minor adverse.
		Decline in water table due to new wells, which could cause reduction or cessation of flow in springs.	Low. Temporary (as long as pumping continued).	Minor adverse.
<b>Soils</b>				
Soils.	High.	Soil erosion due to vehicle trafficking during operation, site roads between WTGs and offsite access roads.	Low. Permanent.	Moderate adverse.
		Potential contamination from generation of waste during operation.	Very Low. Permanent.	Minor adverse.
<b>Habitat and Flora</b>				
Grassland steppe.	Medium.	Loss of small areas of grassland due to presence of roads and structures. Continued degradation possible during operation.	Low. Permanent.	Minor adverse.
Rocky uplands.	Medium.	Loss of rocky peaks to WTG bases and site roads.	Very low. Permanent.	Negligible.
Birch scrub.	Medium.	These areas will be avoided and no degradation or loss of habitat during operation is anticipated.	Very Low. Temporary.	Negligible.

<b>Fauna</b>				
Bats (see Appendix D)	Unknown.	Collision risk with WTGs.	Unknown. For an accurate assessment of impacts, further surveys are required (see Appendix D).	Potentially significant however further assessment is required.
Brandt's vole ( <i>Microtus brandti</i> ) and other common rodents.	Low.	Loss of available habitat during operation.	Low. Permanent.	Negligible.
Mongolian marmot ( <i>Marmota sibirica</i> ).	Medium.	Disturbance and loss of available habitat during operation.	Very Low. Permanent.	Negligible.
Grey wolf ( <i>Canis lupis</i> ).	Medium.	Displacement during operation.	Very Low. Temporary	Negligible.
Corsac foxes ( <i>Vulpes corsac</i> ).	Low.	Displacement during operation.	Very Low. Temporary.	Negligible.
Mongolian gazelle ( <i>Procapra gutturosa</i> ).	Medium.	Displacement during operation.	Very Low. Temporary.	Negligible.
Avifauna (see Appendix D).	High and very high.	Direct and indirect habitat loss during operation.	Low.	Moderate adverse.
		Electrocution from contact with transmission lines.	Medium.	Major adverse.
		Collision risk with WTGs.	Medium.	Major adverse.
<b>Noise</b>				
Nomadic herders, railway workers.	Medium.	WTG and vehicle noise during operation (including "wind-whistling).	Medium. Long-term	Minor adverse.
Railway workers and others to east of site.	Low.	WTG and vehicle noise during operation.	Low. Long-term.	Minor adverse.
Raptors and mammals.	Medium-high.	WTG and vehicle noise during operation.	Low. Long-term.	Minor adverse.

<b>Socio-economic Conditions</b>				
Population and employment.	Low.	Increased employment opportunities from operation and service.	Low. Long-term.	Minor beneficial.
Economy.	Low.	Ulaanbaatar and local purchase of supplies/equipment, investment, employment, and service income.	Low. Long-term.	Minor beneficial.
Tourism.	Low.	Increased tourism during operation.	Very low. Long-term	Negligible.
<b>Infrastructure</b>				
Transportation.	Medium.	Disruptions to traffic during linkage of access road to Highway A0101.	Moderate. Very temporary.	Minor adverse.
	Medium.	Increased traffic through pasturelands (effect on livestock, herders).	Moderate. Long-term	Minor adverse.
Medical.	Medium.	Increased demand on local medical services by 20 during operation.	Low. Occasional.	Negligible.
Electric power.	Medium.	Addition of 50 MW generating capacity (+5%).	Medium. Long-term.	Moderate beneficial.
Social infrastructure.	Medium.	Improving local transportation network. Better Medicare for local communities. Local herders concern over increased road traffic and noise through their pastures.	Medium. Permanent.	Minor adverse- moderate beneficial.
<b>Land use</b>				
Land use.	Medium.	Loss of 30+ hectares of pasturelands during operation.	Low. Temporary.	Minor adverse.
	Medium.	Installation of new well for watering livestock 7 km to SW.	Medium. Long-term.	Minor beneficial.
<b>Community</b>				
Public perception.	Low.	High profile and positive image of Sergelen soum as locale for renewable energy for the country.	Low. Long-term.	Minor beneficial.
Social cohesion.	Medium.	Conflicts between operation workers and local herders and railway workers.	Low. Long-term.	Minor adverse.

<b>Public and Occupational Health and Safety</b>				
Livestock.	Medium.	Injury or death from vehicle collisions.	Low to High, varying duration.	Minor adverse to medium adverse.
Residents.	High.	Injury or death from vehicle accidents.	Low to High, varying duration.	Minor adverse to major adverse.
Workers.	High.	Injury or death from vehicle accidents falls, falling objects, blasting, electrocution, or weather.	Low to High, varying duration.	Minor adverse to major adverse.
Trespassers.	High.	Injury or death from falls, falling objects, blasting, electrocution.	Low to High, varying duration.	Minor adverse to major adverse.

## 6 MANAGEMENT AND MITIGATION MEASURES

### 6.1 GENERAL MANAGEMENT APPROACH

#### 6.1.1 MANAGEMENT AWARENESS

*Objective: To ensure that the Project Management team is fully aware of the site environmental standards and is committed to complying with the standards.*

It is the site management's responsibility to ensure that the actions contained in this ESMP are conducted and maintained. Therefore, the site management's awareness of the environmental standards set out in the ESMP is critical to the successful working of the Salkhit Wind Farm Site and the attitude that they take will be reflected in the overall conditions prevailing at the site.

The Site Manager will be appointed by Clean Energy and is responsible for the implementation of the ESMP.

#### ACTIONS

- a) Regular site environmental audits, undertaken by the Environment Team to assess the site's environmental performance against the ESMP, will be used to educate and motivate site management to achieve the desired environmental standards on site by explaining the importance of conforming to the standards and focussing on any areas that require improvement. The responsibility to ensure the mitigation measures are implemented and the relevant environmental legislation is complied with, is set with the site management.
- b) The site management will have had environmental awareness training. This will be conducted by talks from the environment team and include the Newcom environmental policy and environmental issues raised within the ESMP.

#### 6.1.2 GRIEVANCE AND INCIDENT PROCEDURES

*Objective: To ensure that any environmental complaints and incidents that occur on site are reported, investigated and appropriate action taken by following complaint and incident procedures.*

Grievance and incident procedures will be in place and will state how any environmental complaint or incident that may arise from the site's activities will be managed. Any complaint received will be logged at the site or the company offices. All complaints and incidents will be investigated and any necessary corrective and/or preventative action will be taken and recorded. Incident records must contain dates, incident details, corrective actions, and confirmation if corrective actions have been completed.

Complaints and incidents are logged and investigated.

#### ACTIONS

- a) Contact telephone numbers including a 24-hour number will be published in leaflets distributed to occupants of neighbouring premises before site operations commence and will also be detailed on the site entrance sign.
- b) The complaint and notifiable incidents procedure/s will be followed by the site management and office staff.
- c) Any complaints and incidents are reported to the Environmental Manager who ensures that they are fully investigated, resolved and closed out.



### 6.1.3 ENVIRONMENTAL AUDITS

*Objective: To ensure that the site is regularly audited against this ESMP to monitor the achievement of the environmental objectives at Salkhit Wind farm.*

Environmental audits are fundamental to ensuring that the actions for each objective contained within this ESMP are established and maintained on the Salkhit Wind Farm.

Audits are set to take place provisionally every week during the initial period of operation, reducing down to monthly and then quarterly in accordance with monitoring requirements.

#### ACTIONS

Before an audit the following documents will be consulted in order to check conformance where applicable:

- Any discharge consents and abstraction licences.
- Permits and conditions.
- Records of any previous environmental audits, non-conformance notices, complaints and environmental incidents.
  - a) The measures to control significant aspects outlined in this report and their effective implementation will be checked during regular environmental audits of the site during operation.
  - b) The local government's environmental official, representatives from the local community and liaison committee members will be welcome to attend the audits.
  - c) The results of the audit will be recorded on the environmental audit report and any non-conformances found will be formally recorded along with the action required.
  - d) Each non-conformance will be issued to the relevant person/s to take the corrective / preventative action detailed within an agreed timescale.
  - e) The HSE Manager will monitor the progress of actions and once action has been taken it will be checked and if satisfactory the non-conformance will then be closed out. If there are any outstanding actions at the next audit, these will be priority items to check.
  - f) The audit results will be reported at the site liaison committee.

### 6.1.4 PROJECT ENVIRONMENTAL COMMITTEE

*Objective 4: To establish and maintain regular environmental committee meetings to communicate the Salkhit Wind Farm's progress and environmental performance and to discuss and address any issues rose.*

#### ACTIONS

- A Salkhit Wind Farm environmental committee was established prior to commencing the site construction phase and meetings held regularly during the construction phase. These meetings will extend into the first three years of operation.
- The purpose of the committee is to discuss relevant issues that arise out of the development which could influence people living or working in nearby properties or enjoying nearby land.
- Representatives from the local government, Contractors and local residents' representative joined Clean Energy to form the environmental committee.
- The aim of the committee has been to act as a forum for the exchange of information on progress of the site and for the company to listen to any views of local residents relating to the development and respond accordingly.
- Environmental audit findings have been presented to the committee during the construction

phase of the Project.

#### 6.1.5 OCCUPATIONAL HEALTH AND SAFETY

Occupational and public health and safety concerns associated with operation of the wind farm will be similar to those from the operation of any industrial facility in a remote area. The major potential hazards include:

- Movement or operation of passengers and vehicles, equipment, and materials could cause injury or death to humans (drivers, passengers, pedestrians) or animals (livestock or wildlife).
- Using hand tools or larger equipment could result in accidents that harm or kill workers.
- Falling overhead objects could cause injury or death to workers or trespassers.
- Falls into or collapse of open excavations could cause injury or death to workers or trespassers.
- Falls from heights (buildings, transmission towers, WTGs) could cause injury or death to workers or trespassers.
- Blasting could cause injury or death to workers or trespassers.
- Contact with electrical lines or transformers could cause injury or death to workers or trespassers.
- Noise and vibration could distress or injure workers or distress residents.

Clean Energy and its contractors will continue to comply with International Occupational Health & Safety regulations and standards (for example, EU Directive 89/3918 and OSHA9 standards) in addition to Mongolian safety standards regarding any electrical works, structural climbing and other hazards required during operation and maintenance of the Project. In general, any operations required will be planned and implemented in accordance with these standards and with IFC safety guidelines.

There will be a workforce manager in charge of all activities, and in charge of compliance with health and safety requirements. This individual will report directly to the Clean Energy project manager and will have independent lines of reporting to Clean Energy upper management. The workforce manager will develop a safety programme to cover the operation of the site. The programme will describe in detail the potential hazards and the ways in which they will be prevented or avoided. All workers (including contractors) will be required to complete a training programme that covers the safety programme, and training will cover hazard awareness, job and site-specific hazards, emergency procedures for fire, illness or injury or natural disaster. This ESMP and its associated procedures OHS training needs for workers must be evaluated and reported on regular basis.

Besides training, the safety programme will include detailed requirements for inspecting, testing, and calibrating safety equipment, for monitoring the working environment for hazards, and for monitoring worker health. In addition, all incidents and accidents will be recorded if they resulted, or nearly resulted, in damage to equipment or injury or to humans or animals, will be recorded. Incident record must contain incident details, dates, corrective actions taken, and confirmations if corrective actions have been completed. On an annual basis, Clean Energy will report to the lenders and shareholders on the status of the overall safety programme, including information on training and on incidents.

Beyond the safety programme, Clean Energy will compensate herders for livestock that may be killed as a result of site traffic.

Workplace inspections will be undertaken regularly to monitor H&S aspects on site.

Health and Safety aspects are covered in more detail in the Clean Energy Health and Safety Procedures.

## **6.2 MANAGEMENT AND MITIGATION OF ENVIRONMENTAL IMPACTS**

The following tables provide an overview of the required management and mitigation measures to minimise the risk of significant impacts during the operational phase of the Project.

<b>Table 4: Mitigation Measures during the Operational Phase</b>			
Activity	Potential Impact	Mitigation	Significance
Maintenance of the WTGs / storage of wastes.	Impact on the views as a result of litter and garbage present on the site.	- Collect and store all waste and garbage before disposal to Nalaikh (not including contaminated soils, oils or greases which are required to be dealt with separately).	Negligible
		- Organize periodic clean-ups of existing garbage to improve the landscape, particularly in and around birch scrub.	Negligible
Post-construction.	Views for local herders, railway workers and travellers on the roads and railway.	- Restoration of the site including re-seeding of bare soils remaining post-construction using native grasses. Monitoring to check for success of restoration plan and re-establishment of vegetation.	Negligible
Presence of WTGs, associated tracks and infrastructure.	Direct loss of habitats and vegetation.	Reduction in damage to soils and grasslands through: <ul style="list-style-type: none"> <li>- Restricting vehicles to designated access roads.</li> <li>- Restore additional and unintended roads to original condition by seeding.</li> <li>- Regular monitoring of road condition and damaged and rutted roads repaired rather than bypassing damaged sections.</li> <li>- Monitoring of erosion controls and undertake repairs where needed.</li> <li>- Maintenance of grass covers on berms and ditches.</li> <li>- Restoration of existing eroded access tracks with grass cover where required.</li> </ul>	Minor adverse
		Reduce impact on natural resources through: <ul style="list-style-type: none"> <li>- No collection of firewood on the site.</li> <li>- No disturbance of birch scrub in any way.</li> <li>- Prohibit marmot hunting on the site.</li> <li>- Ensure that hunting of all other animals complies with the Mongolian Law on Hunting.</li> <li>- Establish funds to compensate herders for loss of livestock for any reason.</li> </ul>	Minor adverse
	Collision risk for bats.	<ul style="list-style-type: none"> <li>- Bat activity surveys to be carried out once per month between May and September inclusive to include the spring and autumn migration periods. These should include driven transects and static detector surveys.</li> <li>- Fatality monitoring surveys should be carried out in line with the Eurobat 3 publication. There should be monthly searches around at least 7 of the WTG bases on five consecutive days at each WTG location.</li> <li>- If carcasses are discovered, their location should be marked using GPS, the carcass condition assessed, species confirmed, and the habitat noted.</li> </ul> <p>Depending on the activity recorded during these surveys, a mitigation strategy may be required. This could include:</p> <ul style="list-style-type: none"> <li>- Management of habitat around WTGs to dissuade bats from the area.</li> <li>- Increase cut-in speeds for specific WTGs.</li> <li>- Feathering WTG blades in certain weather conditions / times of year.</li> <li>- If significant numbers are reported, consider shutting down specific WTGs for a period during</li> </ul>	Negligible

<b>Table 4: Mitigation Measures during the Operational Phase</b>			
Activity	Potential Impact	Mitigation	Significance
		<p>spring and autumn migrations.</p> <p>Appendix D sets out the approach for bat monitoring on the site during operation.</p>	
Presence of WTGs, associated tracks, and transmission line.	Loss of birds due to collisions with WTGs and electrocution through perching on transmission lines.	<p>In line with the bird and bat monitoring report found in Appendix D of this document, the following mitigation measures are proposed:</p> <ul style="list-style-type: none"> <li>- Migration and raptor surveys should be carried out during spring and autumn migration periods using methodologies set out within Appendix D. Recorded data will be used to ascertain any impact of the WTGs on birds.</li> <li>- Breeding bird surveys to be carried out for the first two years following operation. These should be completed along identified transects and the results used to ascertain any impacts.</li> <li>- Carcass searching carried out for the first two years following operation at each WTG from March to November and at a lesser intensity during winter months. See Appendix D for a detailed methodology.</li> </ul>	Minor to major adverse
Storage of waste materials.	Contamination of groundwater.	<ul style="list-style-type: none"> <li>- Maximise reuse and recycling of materials.</li> <li>- Collect sanitary wastes in appropriate tanks.</li> <li>- Collect and store all waste and garbage before disposal to Nalaikh (not including contaminated soils, oils or greases which are required to be dealt with separately).</li> <li>- Waste oils, fuel and greases should be segregated from other wastes and stored in an allocated area. At a minimum, it should be stored in bunded containers and siting on a hard standing area with plastic lining at the bottom and gravel on top. Capacity must be sufficient to contain the full volume within a bund and secured area.</li> <li>- Any contaminated soils should be separately stored and kept on site for remediation due to the lack of appropriate facilities in Mongolia to treat the soils.</li> <li>- Undertake water quality monitoring at specified boreholes on the site.</li> </ul>	Minor to major adverse
Use of vehicles on the site.		<ul style="list-style-type: none"> <li>- Suitable spill kits should be placed within all vehicles and drip trays placed on any diesel pumps or similar. Check trays regularly and remove any accumulated oil.</li> <li>- Check hoses and valves regularly for signs of wear and ensure they are turned off and securely locked when not in use.</li> <li>- Do not leave vehicle unattended when refuelling. Any refuelling area on site during operation should be sufficiently lined and covered in gravel to reduce the potential for soil and groundwater contamination.</li> <li>- Inspect vehicles before use /on regular basis and its records kept on site.</li> </ul>	Minor adverse
Vehicle traffic to and from the site and between the control centre and the	Soil loss and erosion.	<ul style="list-style-type: none"> <li>- Require vehicles to stay on designated roads and communicate this to workers within toolbox talks.</li> <li>- Monitor road condition regularly; then repair damaged and rutted roads rather than bypassing</li> </ul>	Minor adverse

<b>Table 4: Mitigation Measures during the Operational Phase</b>			
Activity	Potential Impact	Mitigation	Significance
WTGs for operation and maintenance (approximate maintenance requirement is once per week).		damaged sections. - Monitor erosion controls and repair as needed. - Maintain grass cover on berms and ditches. - Re-stabilize existing eroded tracks and restore grass cover as needed.	
	Soil contamination.	- Reduce wastes to the extent possible and maximise re-use and recycling of materials. - Collect and store all waste and garbage before disposal to Nalaikh (not including contaminated soils, oils or greases which are required to be dealt with separately). - Waste oils, fuel and greases should be segregated from other wastes and stored in an allocated area. At a minimum, it should be stored in bundled containers and siting on a hard standing area with plastic lining at the bottom and gravel on top. Capacity must be sufficient to contain the full volume within a bund and secured area. - Any contaminated soils should be separately stored and kept on site for remediation due to the lack of appropriate facilities in Mongolia to treat the soils. - Remediation of soils to be carried out in accordance with SgurrEnergy's pollution control and response plan (March 2013). - Suitable spill kits should be placed within all vehicles and drip trays placed on any diesel pumps or similar. Check trays regularly and remove any accumulated oil. - Check hoses and valves regularly for signs of wear and ensure they are turned off and securely locked when not in use. - Do not leave vehicle unattended when refuelling. Any refuelling area on site during operation should be sufficiently lined and covered in gravel to reduce the potential for soil and groundwater contamination. - Inspect vehicles before use /on regular basis and its records kept on site.	Minor adverse
General operation	Nuisance to local residents	- Implement actions within the Community Health and Safety Plan to strengthen community safety measures and inform community located within the Project site of potential risks and maintain records of all discussions. - Erect warning signs when required which make locals aware of the potential risks - Provide the opportunity for local people to raise concerns through a grievance mechanism and ensure it is fully communicated to local herders. - Provide toolbox talks to project staff making them aware of the risks to the local communities. - Continuation of the environmental committee with meetings recorded and improvement actions will be identified. Actions will be reviewed at the subsequent meeting. - Improve CSR through identifying community benefits and implementing actions for the local community (i.e. funding of community events, provision of equipment etc).	Negligible

<b>Table 4: Mitigation Measures during the Operational Phase</b>			
Activity	Potential Impact	Mitigation	Significance
		- Continue to implement measures within the Public Consultation and Disclosure Plan, including Grievance Procedure.	
	Environmental permits	- Maintain all environmental permits, date applied for and obtained, conditions associated with the permits on site.	Negligible

## **7 MONITORING OF ENVIRONMENTAL AND SOCIAL PERFORMANCE**

### **7.1 MONITORING PROGRAMME**

A programme of Environmental and Social Monitoring will continue through operation of the Project in order to verify the effectiveness of the proposed mitigation measures in reducing impacts and also to allow mitigation measures to be refined or developed as needed to further address potential impacts or to develop plans for future development. More specifically, the objectives of the monitoring programme are to:

- Record project impacts during operation.
- Meet legal and community obligations.
- Evaluate the effectiveness of the mitigation measures and identify any shortcomings.
- Allow refinement and enhancement of mitigation measures to further reduce impacts.
- Allow identification unforeseen issues or changes in operations and provide information for development of mitigation measures to deal with those issues or changes.

The environmental and social monitoring programme was developed in accordance with the best international practices for the wind energy sector.

### **7.2 KEY PERFORMANCE INDICATORS**

Key environmental performance indicators for this monitoring plan are shown in Appendix A: Key Performance Indicators.

Appendix B: Monitoring Programme presents the monitoring programme for Salkhit Wind Farm.

### **7.3 REPORTING**

Details of monitoring, together with results will be summarised in a monitoring report, which will be submitted to the Lenders for approval.

Each monitoring report will cover a period of three months and will be submitted one month subsequent to the end of that monitoring period.



## **8 REVIEW OF THE ESMP**

### **8.1 ESMP REVIEW**

An effective ESMP requires monitoring and updating. If this is not undertaken, the policy that governs it may become out of date and ineffective.

### **8.2 SCHEDULING AND MANAGING REVIEWS**

The implementation of clear internal auditing systems will ensure that the measures contained in the policy are being implemented on a day-to-day basis. An operational environmental and social monitoring checklist will be developed for use during site audits. As part of the ESMP Clean Energy will:

- Monitor the overall effectiveness of the ESMP against the Key Performance Indicators.
- Develop mechanisms to monitor the targets and objectives.
- Provide clear definitions of reporting and management responsibilities; and
- Regularly schedule reviews of the procedures and practices that underpin the ESMP.

During the first year of operation, the ESMP will be reviewed every six months. Following this period, the ESMP will be reviewed annually.

The results of the review will be used to update the ESMP, if deemed necessary, to either ensure targets are met or to ensure continual improvements in environmental performance.

## 9 RECORD KEEPING

The following documents are important to the environmental management of the Salkhit Wind Farm site. These will be available on site and must be kept up to date by Site Management (create a folder on site containing copies of the following).

- The latest versions of Salkhit Wind Farm ESMP (this document) and all associated plans.
- Salkhit Environmental and Social Impact Assessment.
- Planning permission, planning / loan conditions, environmental permits, and associated documents.
- Any discharge consents and abstraction licences.
- Complaint and incident logbooks and procedures (including grievance mechanism for community and employees) with details, dates, corrective actions, and confirmation if corrective actions have been completed.
- Site inspection forms.
- Results of any site environmental monitoring.
- Contact names, addresses and telephone numbers for environmental or safety incidents.
- Emergency Response Procedure.
- Environmental audit reports and non-conformance notices and corrective actions taken.
- Waste transfer notes for removal of waste from site of all sub-contractors.
- Site Waste Management Plan.
- Training records including attendance, purpose, comments and results.
- Details of ESMP reviews.
- Community health and safety issues, meetings, and consultation activities.
- Deviation of the contractor's quality control system.

**APPENDIX A: KEY PERFORMANCE INDICATORS**

<b>Table 5: Key Performance Indicators</b>			
Environmental Component	Project Phase	Key Indicators	Compliance to Benchmark Values / Standards
Ambient air quality	Operation.	Fugitive dust (SPM, PM10)	Internationally accepted standard of no visible emissions at 50 m.
Ambient noise and vibration level	Operation.	Observed hourly equivalent sound pressure levels LAeq (dBA) calculated for daytime and night-time.	International compliance: Measured baseline values and sampled values compared to corresponding IFC Environmental, Health and Safety Guidelines for Wind Energy, Noise management and Construction / Decommissioning.
Surface and Groundwater quality	Operation	pH, TDS, TSS, BOD5, DO, TPH, e-coli. Groundwater – TSS, pH, electrical conductivity, Total Petroleum Hydrocarbons, Metals (Ca, Mg, Na, K, Cl, SO <sub>4</sub> , HCO <sub>3</sub> and NO <sub>3</sub> ).	International compliance: Measured baseline values and sampled values compared to corresponding IFC Environmental, Health and Safety Guidelines for Wind Energy and Ambient Water Quality Local compliance: Mongolian Surface and Drinking Water Quality Standards (MNS 4585-98).
Soil quality and erosion rate	Operation	Soil contaminants as identified in USEPA or Dutch list standards. Erosion rate observation.	International compliance: Measured baseline values and sampled values compared to corresponding IFC Environmental, Health and Safety Guidelines for Wind Energy and Construction/Decommissioning Detailed plan/programme for restoring disturbed land and re-establishing grassland vegetation developed prior to operation.
Avifauna	Operation	Bird and bat injury or mortality in the vicinity of the WTGs. Nesting near WTGs. Nest abandonment. Prey concentration near WTGs.	EU-UK Best Available Techniques and guidelines for bird surveys and monitoring. Detailed plan developed prior to operation (see Appendix D).

**APPENDIX B: MONITORING PROGRAMME**

<b>Table 6: Environmental and Social Monitoring Programme (ESMP) for Salkhit Wind Farm</b>						
Media	Project Phase	Parameter	Standard	Location	Frequency	Duration and Deliverables
Water Quality.	Operation.	pH, BOD <sub>5</sub> , TSS, TDS TPH, e-coli Groundwater – TSS, pH, electrical conductivity, Total Petroleum Hydrocarbons, Metals (Ca, Mg, Na, K, Cl, SO <sub>4</sub> , HCO <sub>3</sub> and NO <sub>3</sub> ).	IFC standards for groundwater quality and drinking water quality standards. Mongolian surface and drinking water quality standards MNS: 0900:1992.	Any groundwater wells. Any other natural waters used as potable water (none known at this time).	Annual. After any spill within 1 km of well.	Two samples per location.
Soil Quality and Erosion.	Operation.	Assessment of soil disturbance and erosion.	Best practice.	All roads and other erosion controls.	Monthly observation for evidence of erosion. After each major precipitation / run-off event (ID areas for repairs).	Checklist observation. Annual photographic record.
Ecology, Flora and Fauna.	Operation.	- Level of grassland disturbance. - Marmot burrows. - Brandt's vole colonies.	Best practice.	Same locations as soil monitoring (all disturbed areas), including roadside areas.	Annually.	Photographic and narrative record.
		Vegetation success.	Best practices	All areas planted with grass or shrub (ID areas to repair).	Beginning, middle, and end of growing season.	Photographic and narrative record.

<b>Table 6: Environmental and Social Monitoring Programme (ESMP) for Salkhit Wind Farm</b>						
Media	Project Phase	Parameter	Standard	Location	Frequency	Duration and Deliverables
Avifauna.	Operation.	Bat survey – driven transects (see Appendix D).	Best practice (as set out within Appendix D).	Along all designated access tracks, stopping for 5 minutes at each WTG location.	Between May and September, once a month, beginning at sunset.	During first two years of operation. Analysis of results by suitably qualified ecologist.
		Bat survey – static detectors (see Appendix D).		Up to five detectors placed in broadly representative habitats at separate WTG locations.	Between May and September. Three to five consecutive nights per month.	
		Bat fatality monitoring (carcass searches).		Around the bases of at least 7 WTGs.	Monthly on five consecutive days as early as light permits.	
	Migration and raptor vantage point (VP) surveys.	Best practices (see Appendix D).	At identified VPs (see Appendix D for selection methodology).	Minimum of 36 hours of watches at each identified VP for each season (breeding, non-breeding and migration). Spread throughout the day between dawn and dusk.	First two years of operation following which, results will be submitted for review and potential mitigation measures identified (see Appendix D).	

<b>Table 6: Environmental and Social Monitoring Programme (ESMP) for Salkhit Wind Farm</b>						
Media	Project Phase	Parameter	Standard	Location	Frequency	Duration and Deliverables
		Breeding bird surveys.		Along identified transects on the site (see Appendix D).	During breeding bird season.	
		Bird carcass searching.		Plot size of 130 m x 130 m around each operational WTG and along the transmission line corridor.	Approximately once a week from March to November, each plot will take approximately 1.5 to 2.5 hours to survey.	
			Guidelines for Community Noise, World Health Organization (WHO), 1999.	At nearby noise-sensitive receptors (railway buildings, any worker's accommodation on the site).		During the first two years of operation. Mitigation strategy will be developed should levels exceed recommendations.
Socio-economic conditions.	Operation.	Wages of wind farm employees. Contract values and royalties of full-time wind farm employees. Local population size dynamics: local herders as individual group. Average hourly wage rate in To Aimag and Sergelen soum. Local unemployment rate dynamics. ToV Aimag and Sergelen soum annual budget dynamics.	Best practices.	Town of Zuunmond, Sergelen soum, village of Sergelen, town of Nalaikh, local herders nearby the wind farm.	Once a year.	Annual report to lenders.

Table 6: Environmental and Social Monitoring Programme (ESMP) for Salkhit Wind Farm						
Media	Project Phase	Parameter	Standard	Location	Frequency	Duration and Deliverables
Occupational and Public Health & Safety.	Operation.	Workplace inspections: noise, illumination, fire safety, hazardous materials registrar, solid and sanitary waste registrar.	Best practices. Local OHS standards.	At control center compound. Along the WTG locations.	Continuous; documented at least monthly.	Designated work force manager (WFM) conducts OHS monitoring. Report twice a year to the Lenders.
		Personnel health & safety training (working at heights, trenches, use of PPE, fire safety, first aid, etc.). Driver training for traffic safety.			Before employment and annually. Occupational safety training prior to employment and annual refresher training.	
		Traffic safety: sign and vehicle inspection.		Along roadways in the project area.	Quarterly.	
		Registrar of accidents. Physical health checks.		At control center compound.	As required. Before employment and annually.	
		Noise level monitoring.	Guidelines for Community Noise, World Health Organization (WHO), 1999	At nearby noise-sensitive receptors (railway buildings, any worker's accommodation on the site).	Twice yearly.	During the first two years of operation. Mitigation strategy will be developed should levels exceed recommendations.

**APPENDIX C: ENVIRONMENTAL AND SOCIAL ACTION PLAN (ESAP)**

№	Action	Evaluation	Implementation period	Requirement	Status
<b>PERFORMANCE STANDARD 1: ENVIRONMENTAL AND SOCIAL APPRAISAL AND MANAGEMENT</b>					
1.1	<b>REPORT</b> to the Bank on environmental, social, health and safety performance, including status of each Environmental and Social Action Plan (ESAP) element and other agreed activity.	<ul style="list-style-type: none"> <li>Submission of report on specified schedule.</li> </ul>	During operation	EBRD requirement	This report forms part of the reporting commitment to the Bank.
1.2	<b>DEVELOP AND IMPLEMENT</b> a Project Stakeholder Engagement Plan (SEP) in line with EBRD performance requirement.	<ul style="list-style-type: none"> <li>Information in annual report of any new developments in the region</li> </ul>	During operation	EBRD requirement	The Public Consultation and Disclosure Plan (PCDP) describe the key stakeholders, information and communication plans, a time schedule for future consultation and grievance procedures. The document provides all information to satisfy EBRD performance requirement.
1.3	<b>MONITORING PLAN:</b> Implement the Environmental monitoring plan as provided in the Environmental and Social Impact Assessment (ESIA) to track progress against <i>Key Performance Indicators</i> (KPI) and EBRD PRs.	<ul style="list-style-type: none"> <li>Environmental Monitoring Plan</li> <li>Annual EHS Report to the Bank</li> </ul>	During operation	EBRD requirement and best practice	Undertake annual audit checklist.
1.4	<b>CONTRACTORS:</b> Manage all on-site contractors' Environmental and OHS performance for their actions.	<ul style="list-style-type: none"> <li>Review of OHS and environmental manager capacity</li> </ul>	During operation	Best practice	All on-site contractors must have qualified HSE managers, or they must strictly follow Clean Energy's HSE managers' requirements.
1.5	<b>WASTE MANAGEMENT:</b> Develop and implement a comprehensive waste management plan/procedure to guide management of all wastes to be generated during operation.	<ul style="list-style-type: none"> <li>Reporting of waste disposal/recycling records.</li> <li>Records of unauthorized discharge of waste effluent</li> </ul>	During operation	ISO 14001 requirement and best practice	<ol style="list-style-type: none"> <li>Collect all waste transfer records and notes on site.</li> <li>Colour coding system to be developed and implemented on site</li> <li>Organize periodic clean-ups of existing garbage to improve the landscape, particularly in and around the birch scrub</li> </ol>
<b>PERFORMANCE STANDARD 2: LABOUR AND WORKING CONDITIONS</b>					



№	Action	Evaluation	Implementation period	Requirement	Status
2.1	<b>PROCEDURES:</b> Develop and implement occupational health and safety procedures relevant to wind park operation	<ul style="list-style-type: none"> <li>Procedures approved</li> </ul>	During operation	Mongolian occupational health and safety relevant standards	<ol style="list-style-type: none"> <li>Develop and implement all relevant HSE procedures</li> <li>All procedures must be communicated and signed off by all staff on site</li> </ol>
2.2	<b>TRAININGS:</b> Develop and implement OHS training program to improve OHS documents disclosure and compliance. It must encompass, but not limited to: <ul style="list-style-type: none"> <li>Information on EMP and all associated procedures to all employees and subcontractors</li> </ul>	<ul style="list-style-type: none"> <li>Training needs identified</li> <li>Conduct the trainings</li> </ul>	During operation		<ol style="list-style-type: none"> <li>Identify OHS training needs for workers.</li> <li>Undertake the trainings (HSE orientation and induction, risk assessment and job safety analysis training, job specific HSE training including daily toolbox talks and specialized training such as first aid, material safety data sheet).</li> </ol>
<b>PERFORMANCE STANDARD 3: POLLUTION PREVENTION AND ABATEMENT</b>					
3.1	<b>SPILL:</b> Prepare and implement a Spillage management plan (fuel, etc.), including (but not limited to): <ul style="list-style-type: none"> <li>Cleanup kits (absorbent materials, etc.) always carried in all vehicles and equipment.</li> <li>Training for drivers and equipment operators, and others who use fuel, oil and other hazardous materials.</li> <li>Inspect all vehicles and equipment for leaks before use near or in water.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring</li> <li>Training</li> <li>Report to Bank</li> <li>Secondary containment in place</li> <li>Drip trays and spill kits for vehicles</li> <li>Spill kits located around the site and vehicles</li> </ul>	During operation	ISO 14001 requirement and best practice	<ol style="list-style-type: none"> <li>Provide cleanup kits for all vehicles</li> <li>Deliver training for all drivers and staff</li> <li>Inspect vehicles before use</li> </ol>
3.2	<b>WASTE:</b> Contain all sanitary wastes from site and provide appropriate treatment prior to permitted discharge.	<ul style="list-style-type: none"> <li>Records of waste treatment and disposal.</li> </ul>	During operation	ISO 14001 requirement and best practice	<ol style="list-style-type: none"> <li>Collect sanitary wastes in appropriate tanks</li> <li>Contract permitted subcontractor</li> <li>Collect waste transfer notes on site</li> </ol>
<b>PERFORMANCE STANDARD 4: COMMUNITY HEALTH, SAFETY AND SECURITY</b>					
4.1	<b>FIRE SAFETY:</b> Develop a Life & Fire Safety (L&FS) master plan to ensure that the facility design and construction to comply with an international fire code. Conduct L&FS audit against an international	<ul style="list-style-type: none"> <li>Reporting of audit findings.</li> </ul>	During operation	Mongolian occupational health and safety relevant standards, ISO	<ol style="list-style-type: none"> <li>Conduct monthly fire inspections and mark the tags</li> <li>Organize fire drills and report</li> </ol>

№	Action	Evaluation	Implementation period	Requirement	Status
	fire code.			45001 and best practice	
4.2	<b>TRAINING:</b> Provide training to work leaders and others for minimizing noise, dust, and other activities that would disturb nearby residents, especially in evening and night. Perform operational non-emergency work during daylight hours at location near residences or other gathering places.	<ul style="list-style-type: none"> <li>Report to Bank on training and on complaints and responses.</li> </ul>	During operation	ISO 9001 and best practice	1. Toolbox talks to cover these topics
<b>PERFORMANCE STANDARD 5: BIODIVERSITY CONSERVATION AND SUSTAINABLE NATURAL RESOURCE MANAGEMENT</b>					
5.2	<b>ENVIRONMENTAL MONITORING:</b> <ol style="list-style-type: none"> <li><b>Research of water environment</b></li> <li><b>Research of atmosphere</b> <ul style="list-style-type: none"> <li>Noise measurement</li> <li>Research of environmental pollution</li> <li>Research of air pollution of site vehicle smoke</li> </ul> </li> <li><b>Research of plant coverage</b> <ul style="list-style-type: none"> <li>Research of flora</li> </ul> </li> <li><b>Research of soil environment</b> <ul style="list-style-type: none"> <li>Erosion and pollution of soil cover</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>Reporting of environmental monitoring outcomes</li> <li>Identification of suitable mitigation plan</li> </ul>	During operation	Mongolian environmental relevant standards, Detailed Environmental Impact Assessment, ISO 45001, and best practice	<ol style="list-style-type: none"> <li>Conduct annual environmental monitoring</li> <li>Develop and follow up the mitigation plan</li> </ol>
5.2	<b>BIRD &amp; BAT:</b> Undertake operational bird and bats monitoring.  Review of monitoring results to determine suitable mitigation measures.	<ul style="list-style-type: none"> <li>Reporting of monitoring outcomes and proposed mitigation</li> </ul>	During operation	EBRD requirement	1. Conduct bird and bat monitoring during operational phase
5.3	<b>BIRD &amp; BAT:</b> Training of operational personnel to undertake bird collision monitoring during operation of the wind farm.	<ul style="list-style-type: none"> <li>Training Records.</li> </ul>	During operation	EBRD requirement	1. Train operational staff in bird collision monitoring
5.4	<b>BIRD &amp; BAT:</b> Monitor bird and bat mortality in wind park and along transmission line corridor. In case of excessive mortality, develop and implement a bird monitoring and mitigation plan.	<ul style="list-style-type: none"> <li>Reporting of bird and bat collision monitoring outcomes</li> <li>Identification of</li> </ul>	During operation	EBRD requirement	<ol style="list-style-type: none"> <li>Monitor the bird mortality along the transmission line</li> <li>Develop Bird mitigation plan</li> <li>Develop Biodiversity action plan</li> </ol>

№	Action	Evaluation	Implementation period	Requirement	Status
		suitable mitigation plan			
<b>OTHERS: INFORMATION DISCLOSURE AND STAKEHOLDER ENGAGEMENT</b>					
6.1	<b>PLAN:</b> Update Public Consultation and Disclosure Plan (PCDP) and Grievance Mechanism	<ul style="list-style-type: none"> <li>Provision of revised PCDP and grievance mechanism to Bank for review</li> </ul>	During operation	EBRD requirement	<ol style="list-style-type: none"> <li>Update will incorporate the latest community health and safety management measures as detailed above.</li> <li>Organize activities according to the plan</li> </ol>
6.2	<b>CSR ACTION:</b> Identify community benefits and undertake CSR actions (i.e., funding of community events, provision of equipment, grievance mechanism etc.)	<ul style="list-style-type: none"> <li>Reports on actions</li> </ul>	During operation	Mongolian laws and ISO 9001 requirement	<ol style="list-style-type: none"> <li>Identify local community needs and benefits to plan actions</li> <li>Develop CSR actions plan</li> <li>Implement the plan</li> <li>Community grievance log</li> </ol>
6.3	Compliance with National legislation	<ul style="list-style-type: none"> <li>Receive permits/authorizations prior to action requiring authorization</li> </ul>	During operation	Accordance with Mongolian law	<ol style="list-style-type: none"> <li>Environmental Protection Plan and Monitoring Program 2024 to be submitted to the Ministry of Environment and Tourism (annual)</li> </ol>

## **APPENDIX D: BIRD AND BAT MONITORING METHODOLOGY**

### **INTRODUCTION**

Item 2.2 of the Common Terms Agreement (CTA) obliges Clean Energy to monitor bird and bat mortality as well as seasonal and collision monitoring in the wind farm and along the transmission line corridor.

### **PURPOSE OF DOCUMENT**

This document is a Bird and Bat Monitoring Methodology (BBMM) developed by SgurrEnergy on behalf of Clean Energy and describes the scope, methods and reporting to be undertaken by the Project for the first two years of the operational phase in satisfaction of item 2.2 of the CTA mentioned above.

This BBMM is informed by the findings of:

1. The Project ESIA by Black and Veatch dated 30 November 2008.
2. The Winter and Spring bird monitoring report by Evergreen Earth (no date attached);
3. The Summer and Autumn bird monitoring report by Evergreen Earth (no date attached); and
4. Preliminary bat monitoring undertaken by SgurrEnergy in July 2013 with data analysed by Turnstone Ecology.

This BBMM provides the methodology for future monitoring.

### **OPERATIONAL PHASE MONITORING**

#### *INTRODUCTION*

Monitoring during the operation of the Project will be performed to assess the actual (as opposed to the predicted) impact caused by the Project upon species of breeding, resident and migratory birds. Monitoring will be performed for the first two years of operation. The operational monitoring includes migration studies, resident bird studies and breeding bird surveys.

#### *TARGET SPECIES IDENTIFIED IN THE PREVIOUS PROJECT BIRD STUDIES*

The following list contains the lists of target bird species observed at and near the site or otherwise recorded in proximity to the Project site. Consequently, the monitoring recommended in this BBMM must include a level of survey effort sufficient to monitor these species so that the Project's operational impacts upon them can be determined.

1. Table 5-7 and Table 1 of Appendix D to the ESIA.
2. The Evergreen Earth Winter and Spring Monitoring Report.
3. The Annex to the Evergreen Earth Construction Stage Bird Impact Summer and Fall Monitoring Report.

#### *MIGRATION AND RAPTOR (INCLUDING RESIDENT RAPTOR) SURVEYS*

Surveys will be completed during the spring and autumn migration periods (April and May and early August to mid-October respectively) for the first two years of operation by qualified ornithologists. Recorded data will be used to ascertain any impact of the Project upon migrating birds.

### ***Vantage Point Surveys***

Vantage point (VP) surveys shall be used to survey migratory and raptor species. It is important to confirm that VP surveys must not be combined with any other survey such as resident or breeding bird surveys.

The VP surveys' methodology specified in this BBMM is based upon that in the Scottish Natural Heritage Guidance Document "Survey methods for use in assessing the impacts of onshore wind farms on bird communities November 2005" (revised December 2010) which is accepted as industry good practice.

#### Purpose of Vantage Point Surveys

The purpose of the VP surveys is to collect data on target species that will enable confirmation to be made of:

1. Time spent flying over the defined survey area.
2. Relative use of different parts of the defined survey area; and
3. Proportion of flying time spent within the area swept by WTG blades.

#### Identification of Vantage Points

Vantage Points must cover the defined survey area, which encompasses the WTG array and extend to at least 200 m beyond the WTGs.

When selecting VPs, the intention is to cover all the area referred to immediately above so that no point is greater than 2 km from a VP. It is very important that VPs are chosen so that they achieve maximum visibility whilst using the minimum number of VPs. Each VP should provide a 180° view arc. VPs are best located outside the survey area but can be located close to the survey boundary. VPs should not be located near to the nest site of target species and observers should try to position themselves inconspicuously so as to minimise their effects on bird movements.

#### Duration of Survey at Vantage Points

According to international best practice, "the recommended minimum is that 36 hours of watches should be conducted at each vantage point (VP) for each season (breeding, non-breeding, migratory) when the species is present.

Each season should be regarded as a discrete observation period. Within each season, each part of the wind farm should be watched for at least 36 hours. If half of the proposed wind farm area has been watched for 36 hours, for example, and the other half has been watched for 36 hours (with no overlap in visibility areas), then the proposed wind farm area has been watched over for 36 hours (the time spent observing each part of the proposed wind farm), and not 72 hours (the total time spent in observation)."<sup>1</sup>

In effect, this means that VP watches shall be conducted for two breeding seasons, non-breeding seasons or years, depending on whether the raptor interest is breeding, non-breeding or year-round respectively.

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<sup>1</sup> Paragraph 51 of Scottish Natural Heritage guidance document survey methods for use in assessing the impacts of onshore wind farms on bird communities November 2005 (revised December 2010).

### Survey Effort

Observations should be spread throughout the day, between dawn and dusk. During the breeding season observers should pay particular attention to any breeding display flights and the flight behaviour of dispersing young, as birds may be prone to collision when engaged in these activities. Hence, it is also important that observations are spread temporally to account for all phases of the breeding cycle and, for resident species, between the breeding and non-breeding seasons as behaviour can change through and between the seasons.

For **breeding raptors**, survey methods need to be species-specific, and relate to those species identified as being present by the documents referred to in page 50 (Vantage Point Surveys). Field survey work will focus on finding nests and evaluating nesting outcomes. Breeding raptor surveys are time-intensive, require experienced surveyors and should follow standard survey protocols, (SNH/Raptor Study Group Raptor Monitoring Handbook), keeping disturbance to a minimum.

During the breeding season observers should pay particular attention to any breeding display flights and the flight behaviour of dispersing young, as birds may be prone to collision when engaged in these activities. Hence, it is also important that observations are spread temporally to account for all phases of the breeding cycle and, for resident species, between the breeding and non-breeding seasons as behaviour can change through and between the seasons.

### ***Breeding and Resident Birds (excluding raptors)***

Breeding bird surveys will be completed for the first two years of operation. The surveys will be completed along transects selected in 2013 and the results used to ascertain the impacts on breeding birds within the wind farm area.

### ***Carcass Searching***

#### Introduction

Carcass searching will be completed for two years of operation of the Project. This will involve regular searching underneath the operational WTGs and all carcasses (bat and bird) will be recorded.

The primary objective of the carcass searches is to estimate the annual number of avian and bat fatalities attributable to the Project. The standardised fatality monitoring phase of the study will begin once all WTGs are constructed and operational. The study will be conducted for a minimum of two years. The methods are broken into four primary components:

- 1) standardised carcass searches.
- 2) an incidental casualty and injured bird reporting system.
- 3) searcher efficiency trials; and
- 4) Carcass removal trials.

The number of avian and bat fatalities attributable to collision with the WTGs will be estimated based on the number of avian and bat fatalities found in the casualty search plots whose death appears related to collision with them. All carcasses located within areas surveyed, regardless of species, will be recorded and a cause of death determined, if possible, based on carcass inspection. Some carcasses may be necropsied to aid in determining cause of death. Total number of avian and bat carcasses will be estimated by adjusting for "removal bias" (e.g. scavenging), searcher efficiency bias, and sampling effort. Carcasses where the cause of death is not apparent will be included in the fatality estimate. Including fatalities when cause of death is unknown will lead to an overestimate of the true number of Project fatalities.

### Definitions and Field Methods

All operational WTGs will be subject to carcass searching. The plot size will be 130m x 130m, with each plot centred on a WTG and the sides orientated north/south, east/west. The corners of each plot will be marked with stakes protruding 1 m from the ground and marked with fluorescent tape / paint. Additional markers (bamboo canes), also marked with fluorescent tape, will be stuck into the ground at intervals during the transecting. Compass and GPS are also to be used to allow surveyors to follow the transects as precisely as possible.

The plot will be covered with search transects 10 m apart, with the searcher looking 5 m on either side. Depending on the terrain each plot requires 1.5 – 2.5 hours search time.

### Scheduling / Timing

Carcass searches will be conducted approximately once every week at each operational WTG from March – November. Monitoring will continue over the winter period at a lesser intensity (dependent upon the results of the field surveys and scavenger removal trials).

The first search will be conducted within 30 days after the date all WTGs become operational (commercially producing electricity) to clear the plots of evidence of old carcasses and document fatalities that may have occurred during the testing and early operational phase. The frequency of carcass searching will be informed by the results of the scavenger removal trials.

### Standardised Carcass Searches

Personnel trained in proper search techniques will conduct the carcass searches. Initially, transects will be set approximately 10 metres apart in the area to be searched. A searcher will walk at a rate of approximately 45-60 meters per minute along each transect searching both sides of the transect out to five metres for casualties. Search area and speed may be adjusted by habitat type after evaluation of the first searcher efficiency trial.

The condition of each carcass found will be recorded using the following condition categories:

- Intact – a carcass that is completely intact, is not badly decomposed, and shows no sign of being fed upon by a predator or scavenger.
- Scavenged – an entire carcass, which shows signs of being fed upon by a predator or scavenger, or a portion(s) of a carcass in one location (e.g., wings, skeletal remains, legs, pieces of skin, etc.); and
- Feather Spot - 10 or more feathers or 2 or more primaries at one location indicating predation or scavenging.

All carcasses found will be labelled with a unique number, bagged and frozen for future reference. A copy of the data sheet for each carcass will be maintained, bagged and frozen with the carcass at all times. For all casualties found, data recorded will include species, sex and age, when possible, date and time collected, GPS location, condition (e.g., intact, scavenged, feather spot), and any comments that may indicate cause of death. All casualties located will be photographed as found and mapped on a detailed map of the study area showing the location of the WTGs and associated facilities such as access roads and meteorological towers.

### Casual Observations

Casualties or fatalities found by maintenance personnel and others not conducting the formal searches within 150 m of a WTG, meteorological tower, substation or road will be documented using a reporting form which should be kept in all site vehicles.

When non-study personnel discover carcasses or injured animals, a digital photograph will be taken, and the site manager informed who will inform the Project ecologist.

Casualties or fatalities found in non-search areas will be treated as incidental discoveries. Fatalities found within search areas, but not during scheduled searches, will be included in the fatality estimation.

#### Searcher Efficiency and Carcass Removal Trials

Searcher efficiency will be estimated by size of carcass, general habitat type, and season. Estimates of searcher efficiency will be used to adjust the number of carcasses found, correcting for detection bias. Searcher efficiency trials will begin when WTGs are placed into operation.

Searcher efficiency and carcass removal trials will be carried out in similar habitat to the Project area. However, the WTG areas will be avoided to reduce any attraction of vultures and buzzards to the WTG array. An area approximately 1 km outside the WTG array will be chosen that is similar in altitude, topography and vegetation height to the WTG area. Three plots of the same size as those searched in the WTG array will be marked out in similar manner.

During each trial approximately 15 carcasses of birds of two different size classes will be placed in the search area throughout the search period. Species such as chickens (including dark coloured chicks) and pigeons will be used. An attempt will be made to use several small brown birds (house sparrows if possible) during the summer and autumn seasons to simulate bat carcasses. Bat carcasses will be used if available. All carcasses will be placed at random locations within areas being searched prior to the carcass search on the same day. Carcasses will be dropped from waist height and each trial carcass and will be discreetly marked so that each can be identified as a study carcass after it is found. The number and location of the detection carcasses found during the carcass search will be recorded.

Trials will take place in late April, late August and January 2015 and carcasses will be checked for a period of 20 days to determine removal rates. They will be checked every day for the first 4 days, and then on day 7, day 10, day 14, and day 20. The state of each carcass will be noted (intact/ part scavenged / completely scavenged / missing) and signs and presence of scavengers noted. This schedule may vary depending on weather and coordination with the other survey work. On completion of the scavenger removal trials the frequency of carcass searches may be modified.

#### **Review and Additional Measures**

The outcome of each of the two years bird and bat monitoring shall be submitted to the Lenders' environmental advisor for review. If the Lenders' environmental advisor concludes that mitigation measures are required, these will be discussed and agreed. Examples of mitigation measures include implementation of WTG shutdowns using an automated bird/bat detection system.

## **BATS**

### *BASELINE SURVEYS*

Preliminary baseline surveys were undertaken on the site in July 2013. Further surveys are required however during operation of the Project. These should be based on the outlined methodologies set out below.

The bat surveys methodology specified in this BBMM is based upon that stated in the Bat Conservation Trust Good Practice Guidelines (2<sup>nd</sup> edition 2012) (the "Guidance").

The surveys required to collect necessary data fit into two categories:

1. Activity surveys; and
2. Roost surveys.



Surveys should take place at times of good weather conditions to maximise the probability of encountering bats. Adverse weather and dusk temperatures of 10°C or below should be avoided. Data on wind speed, rainfall and temperature should also be recorded during monitoring.

### **Activity Surveys**

Bat activity surveys should be carried out between April and September inclusive and once per month. This ensures that the spring and autumn migration periods are incorporated.

Driven transects should be carried out starting at sunset and travelling around the service roads within the site, making sure that each WTG location is covered with at least a 5-minute stop. Transects should be driven at a speed of between 5 and 15 mph (ideally below 10 mph to reduce wind noise and distortion) with a detector capable of time expansion or frequency division. The detector should be mounted on one of the windows or sunroofs. The route should be reversed each month.

Static detector surveys should also be undertaken, with up to five detectors placed in broadly representative habitats within the site at separate WTG locations for a period of 3 - 5 consecutive nights per month. The static detectors should either be the Anabat SD or the Wildlife Acoustic SM2Bat+. A combination of detectors should be avoided as the sensitivity and range of detection varies between the Anabat and SM2 microphones.

The minimum survey frequency is specified at Table 10.2 of the Guidance.

Data collected during transects shall be retained for analysis purposes. This data shall include species recorded as well as the time and location they were recorded. A suggested data collection sheet is provided at Table 7.3 of the Guidance.

### **Roost Surveys**

Sites suitable for bats to use as roosts should be surveyed during daytime at any point where they occur within 200 m of the Project. This survey will be used to determine whether there is evidence of roosting bats and allow a general assessment of roosting features. The bat species using identified roosts shall also be recorded.

The minimum level of surveying is specified at Table 8.5 of the Guidance and general methodology to be followed is provided at chapter 8 of the Guidance.

### *MITIGATION*

A detailed mitigation package will be devised on completion of the bat monitoring and the following mitigation options will need to be considered:

1. Increasing cut-in wind speeds if peaks in bat activity are recorded across the site at certain times of the year or times of the day.
2. Managing habitat around the WTGs to dissuade bats from the area.
3. Feathering the WTG blades in certain weather conditions/ times of the year.
4. Targeted WTG shut-down at periods of peak bat activity if increased cut-in wind speeds are not effective at reducing collisions.

### *CARCASS SEARCHING*

In addition, carcass searching will be performed and any bat carcasses recorded. The fatality monitoring should be completed in accordance with the guidance set out in the Eurobats 3 publication<sup>2</sup>, with monthly searches undertaken around the bases of at least seven WTGs. Searches

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<sup>2</sup> Guidelines for consideration of bats in wind farm projects. Eurobats publication series No. 3. 2008 Rodrigues, L., L Bach, M.-J. Dubourg-Savage, J. Goodwin & C Harbusch

will be completed on five consecutive days at each WTG, each day the surveyors will begin the survey as early as light is adequate and will walk an expanding transect around each WTG base, searching for bats which may have been killed by the WTGs during the night. If bat carcasses are discovered their location should be marked using GPS, the condition of the carcass assessed, species confirmed and the habitat it was discovered in noted.

A 'high impact' WTG is considered to be one at which a high proportion of carcasses are found when compared to the wind farm area as a whole.

## APPENDIX E: MATRIX OF APPROVAL AND PERMITS

Nº	Approval and Permit	Applying authority	Granted date	Expiry date	Status	Responsible
2	Water use contract 2022	Environmental unit of Sergelen soum	2022.06.07	2024.06.07	-	Clean Energy LLC
3	Certificate of workplace fire safety ensuring	Emergency Management Agency of Tuv province	2017.10.13	2019.10.13	-	Clean Energy LLC
4	Certificate of workplace fire safety ensuring	Emergency Management Agency of Tuv province	2020.01.09	2022.01.09	-	Clean Energy LLC
5	Certificate of workplace fire safety ensuring	Emergency Management Agency of Tuv province	2022.08.11	2024.08.11	-	Clean Energy LLC

## APPENDIX F: GUIDE FOR SPILLS OCCURRED DURING THE OPERATION

### 1. Notify

In case of any spill, it is mandatory to notify the supervisor/administration and HSE personnel immediately and inform the following information:

- Name and position of the informant
- Location of spill
- If recognizable, the name of the spilled substance
- Approximate quantity of spill

### 2. Limit

- It is required to ensure your own safety first prior to taking actions to limit the spill.
- If possible, spills should be stopped by closing the door or turning up the tank containing the spilling substance.
- In case of flammable substance spill, it is required to check presence of any fire igniting sources first and power off all fire igniting sources or machinery.
- It is the priority to protect the head water sources if spilled oil or chemical substance is located at the headwater, water discharging pipeline, or wells.
- Set dirt bunds to limit the spill from spreading.

### 3. Clean

- Actions to clean spill and mitigate its adverse impacts should be undertaken in direct control and instruction of Environmental Officer of the department or company causing the spill.
- In case of spill on soil, it is required to dig out the contaminated soil and remove the contaminated soil to designated waste disposal site.

- If you have spill kit onsite, it is required to adhere to the following processes:
  - Spread out the spill absorbants on spill
  - Continue spreading spill absorbants until the spilled liquid are completely absorbed.
  - All used materials and absorbents must be tagged and stored in designated waste container.

#### **4. Monitoring and Prevention measures**

1. Company HSE personnel must ensure monitoring of this procedure.
2. All project staff are responsible to ensure implementation of this procedure, take corrective actions in case of nonconformities, and inform the HSE department.
3. Environmental personnel must organize training in order to prevent and reduce environmental spills.

#### **5. Responsibilities for procedure violators**

1. If personnel violates this procedure requirements or neglects to inform spill, then he/she will receive warning from supervisors.
2. If the above-mentioned nonconformities were repeated deliberately, then the responsible personnel will be taken accountable according to company internal procedures.
3. Policy not to criticize spill informant shall be implemented.

#### **6. Spill information database**

1. Spill information must be included in the monthly report by company unit, department or contractors and submitted to HSE department.
2. The HSE department shall prepare report on spills on annual basis.

**Source:**

***CLEAN ENERGY LLC - PROCEDURE FOR SPILL AND SOIL CONTAMINATION RESPONSE***