Environmental and Social Review Summary

Lekela Wind Energy Facilities

This Environmental and Social Review Summary (ESRS) is prepared by MIGA staff and disclosed in advance of the MIGA Board consideration of the proposed issuance of a Contract of Guarantee. Its purpose is to enhance the transparency of MIGA’s activities. This document should not be construed as presuming the outcome of the decision by the MIGA Board of Directors. Board dates are estimates only.

Any documentation which is attached to this ESRS has been prepared by the Project sponsor, and authorization has been given for public release. MIGA has reviewed the attached documentation as provided by the applicant, and considers it of adequate quality to be released to the public, but does not endorse the content.

Country: Republic of South Africa
Sector: Energy
Project Enterprise: Mainstream Renewable Power
Environmental Category: A
Date ESRS Disclosed: October 24, 2016
Status: Due Diligence

A. Project Description

Lekela Power B.V. (Lekela), a partnership between Actis, an existing MIGA client, and Mainstream Renewable Power (Mainstream), a global wind and solar developer and IFC client, is seeking MIGA’s cover of its equity and shareholder loan investments in five wind farms projects in South Africa (“Projects”) against the risk of transfer restrictions, expropriation, breach of contract and war and civil disturbance, as part of the company’s overall risk management policy.

The Projects include the construction and operation of five wind farms in the Northern and Western Cape Provinces in South Africa: the 140 MW Khobab wind farm (Khobab) and the 140 MW Loeriesfontein 2 wind farm (Loeriesfontein 2) projects located in adjacent sites; the 80.5 MW Noupoort wind farm project (Noupoort); the 140MW Kangnas wind farm project (Kangnas); and the 110MW Perdekraal East wind farm project (Perdekraal East). Associated infrastructure includes internal and external electrical connections, substations and transmission lines, access roads; and operations and maintenance (O&M) buildings.

It is important to note that Mainstream plans to develop solar energy facilities within or nearby some of the sites selected for the proposed wind Projects. The Environmental Impact Assessments and other supplemental studies cover E&S risk and impacts associated with these solar facilities where applicable. However, the solar projects are out of the scope of the Projects proposed for MIGA coverage. Therefore, E&S risks and impacts specific to the solar energy facilities are not discussed in this ESRS.
The following is a brief description of each wind farm:

**Noupoort** – 80 MW operational wind farm located in the outskirts of the town of Noupoort within the Umsobomvu Local Municipality in the greater Pixley ka Seme District Municipality, Northern Cape Province. The total study area of the Noupoort site is made up by three private farms totaling 7,632ha of which the total built footprint is approximately 1,873ha.

**Khobab** - 140MW wind farm under construction on the remainder of the FarmSous No. 226 near Loeriesfontein, Northern Cape Province.

**Loeriesfontein 2** - 140MW wind farm on Portion 1 and 2 of the Farm Aan De Karree Doorn Pan No. 213 near the town of Loeriesfontein, Northern Cape Province. The site is approximately 10,400ha in size of which a smaller area will be required for the establishment of the proposed wind farm. The Khobab and Loerisfontein sites are adjacent to each other.

**Kangnas** – Proposed 140 MW wind farm located on farm Kangnas portion 3 of 77, farm Smorgenskaduwee remaining portion of 127 and farm Areb remaining portion of 75 in the Nama Khoi municipality. These farms are located approximately 48 km east of Springbok and are accessed via the N14. Land identified for the location of the development of the project is approximately 22,000ha with the project footprint of approximately 3600ha.

**Perdekraal** – Proposed 110 MW wind farm located within the jurisdiction of the Winelands District Municipality and Breede River Local Municipality approximately 32 km north of the town of Touwsrivier. The site is made up of two land parcels of total area of 6,347.37ha. The project area is estimated at approximately 3,100ha including the wind turbine generators, roads, and its associated infrastructure. The Perdekraal site to support 48 wind turbines of 3.2MW after a significant reduction in wind turbines to accommodate the sites environmental constraints.

**B. Environmental and Social Categorization**

The Project is a Category A under MIGA’s Policy on Environmental and Social Sustainability (2013) because there are potentially significant adverse impacts related to mortality caused by seasonal and other bird movements across the project sites, as well as loss of habitat of high conservation value for vulnerable or endangered flora and fauna species. In addition, there is an incremental risk of cumulative impacts on birds from several wind farms and solar projects currently under development regionally and in some cases near the Projects.

E&S risks and impacts across the Projects are similar in nature and magnitude and are covered herein in a general format under each applicable Performance Standard (PS). Detailed descriptions are provided under the relevant PS for cases where risk and impacts differ significantly among the Projects.
C. Applicable Standards

While all PS will be applied to the Project, based on current information, it is expected that the Project will be managed in accordance with the following PSs:

- PS1: Assessment and Management of Environmental and Social Risks and Impacts
- PS2: Labor and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community Health, Safety, and Security
- PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PS8: Cultural Heritage

PS5 (Land acquisition and Involuntary Resettlement) does not apply to this investment. All land where the wind farms will be developed are private land parcels and all transactions have taken place on a state mutual agreed lease agreement basis.

PS7 (Indigenous Peoples) is not relevant to this project since indigenous communities are not present in the area.

In addition, the following World Bank Group Environmental, Health, and Safety (EHS) Guidelines are applicable to the Project:

- World Bank Group General EHS Guidelines
- World Bank Group EHS Guidelines for Wind Energy
- World Bank Group EHS Guidelines for Electric Power Transmission and Distribution

D. Key Documents and Scope of MIGA Review

MIGA’s review consisted of appraising environmental and social information submitted by Mainstream and Lekela including Environmental Impact Assessments and Environmental Management Programs, avifauna and bats impact assessments, ecological impact studies, and others as applicable. The following are some of the documents reviewed by MIGA:

- (Khobab) Final Environmental Assessment Report Proposed Construction of a 140MW Wind Farm on the Remainder of the Farm Sous No. 226 near Loeriesfontein, Northern Cape Province, South Africa (May 2013)
- (Loeriesfontein 2) Final Environmental Assessment Report Proposed Construction of a 140MW Wind Farm on the Remainder of the Farm Sous No. 226 near Loeriesfontein, Northern Cape Province, South Africa (May 2013)
- Final Environmental Impact Report Proposed Construction of a Wind Farm near Noupoort, Northern Cape Province, South Africa (April 2012)
• (Kangnas) Environmental Impact Assessment: Proposed Wind and Solar Energy Facilities near Springbok, Northern Cape (February 2013)
• Final Environmental Impact Report Proposed Renewable Energy Facility at the Perdekraal Site 2, Western Cape (May 2012)
• Environmental Management Programs: Khobab (April 2014), Loeriesfontein 2 (April 2014), Noupoort (April 2014), Kangnas (November 2015), and Perdekraal East (April 2016)

In addition to reviewing the above documents, MIGA’s environmental and social specialist visited all Project sites in September 2016. The visit included a walk-over of the Project site and meetings with land owners, representatives of the Project sponsors, local government officials, and local communities.

E. Key Issues and Mitigation

PS1: Assessment and Management of Environmental and Social Risks and Impacts

Environmental and Social Assessment:

Prior to commissioning Environmental and Social Impact Assessments (ESIAs) for each project, Mainstream undertakes a fatal flaw analysis in which a series of technical aspects including environmental, social, and cultural site characteristics are evaluated and factored into the project site selection process.

ESIAs were completed for each project during the time period 2012-2014 as required under South African legislation, including the South African National Legislation and consistent with good international industry practice. The EIA process included public consultations and disclosure with local stakeholders including state authorities, interested NGOs and affected communities. The EIA Reports have been approved by the Department of Environmental Affairs (DEA).

Individual pre-construction bat and bird impact assessments were undertaken for a period of 12 months for all sites during 2012-2014. The assessments were designed and conducted in accordance with the BirdLife South Africa Endangered Wildlife Trust guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa. Site alternatives were also assessed in the EIA taking into account existing land use and biodiversity sensitivity. Outcomes of these analyses are captured in each respective EIA Report.

Key risks and impacts identified for the construction phase of the Projects include loss of natural vegetation, loss and disturbance of high conservation value habitat, potential for storm water pollution due to management of hazardous substances, health and safety risks intrinsic to construction activities such as physical hazards related to the use of machinery and work in high elevations, increase of dust and noise emissions, and potential community safety accidents from construction and abnormally sized vehicular traffic. During
operation of the wind farms, potential risks include: disturbance and/or displacement of birds and bats nesting area by movement and/or noise of rotating turbine blades and mortality in collisions with turbine blades or by electrocution on new power infrastructure. Other operational impacts include soil erosion around cleared areas and roads, impact on surface water and groundwater resulting from inadequate management of fuel and oil spills and increase in sediment load in drainage channels and surface water bodies as a result of erosion.

**Cumulative Impacts:**

Cumulative impacts were assessed during the ESIA stage with a focus on impacts to birds and bats (and specifically vulnerable, threatened or endangered species). According to the results of the ESIA reports, there are several proposed wind and solar energy projects nearby the Projects at different stages of development.

The ESIA reports also highlight the need for strategic planning and cooperation to better understand the cumulative impacts that may result from promoting renewable energy. The Western Cape Department Environmental Affairs and Development Planning has initiated a Regional Strategic Environmental Assessment of Sites Suitable for Wind Farms. However, in the absence of concrete strategic cumulative impact assessment for the wind power sector in the region, Mainstream has been working with local NGOs such as BirdLife South Africa to understand individual contributions to regional cumulative impacts. Data collected during the monitoring will be provided to the Department of Natural Resources, DEA, and other stakeholders relevant to regional wind farm planning and development.

**Management Program:**

Lekela has developed an Environmental and Social Governance (ESG) Framework in which it commits to applying international standards to all investments, regardless of the local regulatory environment. Lekela has a corporate ESG Head and is currently planning to centralize and streamline the management of environmental and social aspects of the South Africa Projects by establishing environmental, social, and quality management systems in line with applicable ISO Standards and appointing a local ESG team led by an E&S Manager to oversee each of the Projects. In line with Lekela’s plans, MIGA will require that Lekela appoints an E&S Manager at the local level to oversee the implementation of E&S requirements during the operation phase.

Mainstream is ISO 9001, ISO 14001, and OHSAS 18001 certified at the corporate level. Its ESG Framework includes overarching Environmental and Occupational Health and Safety Policies and includes community engagement, workplace policies, corporate policies and compliance. The Company is committed to meeting the requirements of the IFC Performance Standards and relevant World Bank Group Environmental, Health & Safety guidelines.
Comprehensive Environmental Management Programs (EMP), which are legally binding in South Africa, were prepared for the design, construction, operation, and decommissioning phases of the Projects, including associated facilities and transmission lines as applicable, and include adequate provisions for the mitigation and management of identified risks and impacts. The EMP also delineate responsible parties for the implementation of the mitigation measures, the timing, monitoring, and audit requirements. All EMP reports were approved by DEA and are referenced as part of the Environmental Authorization for each Project. It is expected that proper implementation of each EMP during all phases of the Projects will avoid and/or minimize risks and impacts to the extent possible, and ensure safe working conditions for the workers and neighboring community.

Construction contractors are required to bid for work on Mainstream projects taking into account the approved EMP for each project. During construction, contractors will be required to prepare detailed environmental, social, health and safety (ESHS) management plans for the construction of the wind farms, based on the provisions in each EMP and in line with Mainstream’s Environmental and Health and Safety Policies and ESG Framework. During operations, Lekela will be responsible to ensure that the project operator, Mainstream Asset Management South Africa (Pty) Ltd. (MAMSA), develops and implements all relevant ESHS requirements in line with MIGA’s PS and WBG EHS Guidelines.

Relevant ESHS plans to be developed under the EMP framework for will be required to meet MIGA’s E&S requirements, as detailed in the ESAP.

Organizational Capacity:

The Projects will be developed by Mainstream Renewable Power. Upon project completion, the assets will be acquired by Lekela and managed by MAMSA. During project development Mainstream has the responsibility for acquiring required permits and developing necessary E&S studies. Mainstream has adequate technical capacity in-house to identify site alternatives, identify E&S risks and impacts, and design mitigation programs. Mainstream also relies on external E&S consultants to develop relevant studies and management programs.

MAMSA has adequate systems and structure in place to successfully operate the Projects, although the level of operational experience is limited. MAMSA will be expanding its operational team as projects approach operation stage. MAMSA will appoint an ESHS Manager to ensure adequate management of the Projects’ environmental and social aspects.

An Environmental and Social Officer (ESO) is appointed by the Projects’ main contractor to manage the daily implementation of the approved EMP and compile weekly environmental and social monitoring reports. The key responsibility of the ESO is to advise the project contractor on environmental and social issues. Construction activities are supervised by Mainstream’s Project Managers assigned to the Projects and their in-house teams of ESHS personnel.
With respect to community social and economic development and community health and safety, each project has an assigned Economic Development Officer and a Community Liaison Officer during construction and retained through project operations, who among other responsibilities ensure adequate community engagement and process community grievances.

*Monitoring and Review*

The EMP contains project-specific monitoring requirements and procedures as well as key parameters and indicators to evaluate potential adverse social and environmental impacts. ESHS management responsibilities, monitoring, and reporting requirements are outlined within the procedures. Third party contractors are integrated into the site management procedures, managed and monitored through a procurement procedures, and responsible for any E&S issue to the assigned Mainstream Project Manager. Whenever necessary, Mainstream will elevate performance or non-compliance issues to their regional teams.

Post-construction, the project operator will be responsible to ensure that project-specific monitoring is carried as specified in the EMP. MIGA will require that Lekela submits annual monitoring reports (AMR) containing relevant E&S information throughout the guarantee period.

Specifically to biodiversity monitoring, injuries and mortalities resulting from collisions of birds and bats during the Projects’ operation will be monitored by qualified professionals, acceptable to MIGA. Monitoring data will be utilized to evaluate the level and adequacy of mitigation measures and will be included in the Annual Monitoring Report to be provided to MIGA on an annual basis.

*PS2: Labor and Working Conditions*

It is estimated that the construction phase for each of the projects will require approximately 100 – 550 workers depending on the project’s requirements. First priority is given to the local workforce, and providing equal employment opportunities to women is part of Mainstream’s economic support plan for local communities. However, given the difficulties of attracting skilled workers to remote parts of South Africa where the projects are located, some workers are transferred from project site to site as construction activities are phased out. Benefits to the local economy and community health and safety risks are anticipated due to the potential influx of workers.

Construction workers will be required to attend certified occupational health and safety trainings per local law requirements and will be provided competency-specific technical and awareness training related to their responsibilities on site. During operation, workers will be trained as applicable on procedures developed to manage potential ESHS risks; for example, the safe management of hazardous waste.

During construction, workers will be accommodated in the nearest towns. On-site worker accommodations will be utilized where necessary due to the remoteness of certain sites.
Mainstream manages on-site worker accommodations, services, and utilities in line with IFC and EBRD’s guidance note on workers’ accommodation. A worker camp has been implemented on the Loeriesfontein/Khobab site to accommodate non-local workforce. The camp has a 150-bed capacity dormitory and it is occupied to maximum capacity. The camp site has the relevant services and utilities, and an infirmary unit. Ambulance services in the event of emergencies are outsourced.

Post-construction activities and operation of the wind farms require a significantly smaller workforce. Mainstream has developed and implemented a Workers Readiness Program complementary to the post-construction retrenchment to assist workers with the process. Per the ESAP, MIGA will require that any further retrenchment of workforce is done in line with MIGA’s PS2 requirements.

**Human Resources (HR) Policies and Procedures**

Labor practices in South Africa are regulated by the Labour Relations Act 66 of 1995 (amended in 2002), which is enshrined in the South African Constitution and standardizes employees’ work-related rights, working conditions and stipulates obligations of employers and employees. South African labor practices are materially in line with provisions of PS2.

Mainstream has an HR team at the corporate level and corporate HR policies and procedures in line with South African labor regulation. Mainstream has an Employee Handbook which describes employee rights, working conditions, and compensation.

Third-party contractors are required to have HR procedures and to develop occupational health and safety (OHS) plans in accordance with the local regulatory framework and the provisions in the project-specific EMP. Contractors are responsible for implementing the plan and providing training for designated staff, performing risk assessments, implementing safe operating procedures, and following reporting requirements for accidents, incidents, and safety non-compliances. During operation, the operator is contractually required to assign an OHS manager and develop relevant procedures accordingly. OHS procedures are approved by Mainstream Project Managers.

**PS3: Resource Efficiency and Pollution Prevention**

Baseline conditions were established for each project study area through field measurements for air quality, noise, hydrology, hydrogeology, geology, soil quality, terrestrial ecology, and avifauna. This section summarizes key findings and proposed measures to avoid and control potential impacts related to emissions and air pollution, noise and vibration levels, liquid and solid waste management among others, as delineated in the EMP for the Projects.

**Noise and vibration**

Baseline measurements and noise impact modelling were conducted for each project at representative points within the areas of study under a worst case scenario to accommodate
potential environmental constraints to the extent possible. Impacts from noise and vibration are expected to be moderate during the construction and operation of the Projects. Although the sites are remote, noise sensitive receptors such as land owners still residing on sites were identified. Impacts during construction will be temporary and will result from the operation of construction equipment. Impacts during operation will be limited to the noise generated by the wind turbines at each site. Noise impacts mitigation measures have been designed accordingly and range from redesigning wind turbine site layouts to increasing buffer zones around residences and implementing a noise monitoring program. Noise and vibration control measures are included in each EMP and will be implemented in accordance with National Noise Control Regulations and WBG EHS Guidelines for Wind Energy facilities.

Visual Impacts

A visual impact assessment was conducted during the ESIA phase for each Project. Accordingly, visual impacts were taken into account during site alternative assessments and design mitigation measures were implemented at that time. However, the residual impacts associated with visual impacts will remain throughout the operation of the Projects. It is noteworthy, however, to emphasize that the project sites are located in rural and remote farms in scarcely populated areas.

Waste Management and Disposal

The production of liquid, solid, construction, and hazardous waste is expected throughout different phases of the Project. Construction waste as well as packaging material from unpacking turbine equipment will be generated during the construction phase. Wastewater effluents will be produced from toilet facilities (temporary chemical toilets) and construction activities such as cement mixing. General domestic waste will be produced by site personnel including wrapping from food, bottles and cans throughout the duration of the project.

Project-specific waste management procedures will be implemented in accordance with each EMP. The procedures will cover all project phases. According to the EMP, wastes will be collected, segregated, stored, recycled, and transported separately. All waste streams will be managed and disposed of in accordance with the terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008). Waste and effluents will be temporarily stored on site before they are removed by an appropriate contractor to a licensed municipal disposal site. Adequate measures will be implemented to mitigate potential impacts to soil, groundwater, or surface water from spills. For example, effluents from the cement batching plants must be contained within a bunded area and not be allowed to drain into water courses. Effluents will be recycled or removed.

Air Emissions
During construction, the main sources of air pollution will be dust emissions from excavation works and movement of vehicles, and engine emissions from exhaust gas from construction equipment and road traffic. Principal pollutants resulting from these sources are dust and particulate matter from increased vehicle movement, soil excavation and removal; and nitrogen oxides, sulphur dioxide and carbon monoxide from exhaust of vehicles. Dust emissions are exacerbated for the Projects by climate conditions including dry weather and high wind speeds. According to the ESIA reports, dust emissions during the construction will potentially impact residential receptors or sensitive habitats within 200 m of the activity causing dust production. Each EMP contains project-specific air quality control measures for the construction and operation phases of the project in line with PS3 requirements and WB EHS Guidelines.

The development of the Projects has the potential to result in significant GHG reductions and is in alignment with the objectives of the South Africa’s Integrated Plan for Electricity 2010, which seeks to Reduce CO₂ emissions by 34 percent by 2020 and 42 percent by 2025. According to estimates presented in the ESIA reports, for every kWh generated by the wind energy facilities approximately 0.97 to 1.1 kg CO₂ emissions will be reduced from the national grid managed by Eskom. Therefore, the estimated reduction of CO₂ for the Projects over the 20-year operational period is expected to be significant. For example, according to the Clean Development Mechanism (CDM) Validation Report for the Noupoort Project, the estimated annual average emission reduction is equivalent to 246,201 tons of CO₂ equivalents (CO₂e). Further, emission reduction estimates prepared by Mainstream show that the Projects could result in over 24 million tons CO₂e reduced over the project life. Final estimates will be confirmed by MIGA and captured in the AMR.

PS4: Community Health, Safety & Security

Project sites are located in rural and remote areas far away from community centers, residential, and commercial areas and the Projects sites will be developed within privately owned farms. Nonetheless, potential impacts can be significant during the movement of equipment to and from the site for the communities closest to the project sites. Risks and impacts, in the context of health and safety of off-site communities, include risks during construction activities caused particularly by increased traffic of heavy machinery, noise and dust levels exacerbated during construction, increased risk of traffic accidents due to increased transit of heavy equipment and abnormally large loads, and risks of increased social and health issues due to the influx of workers to nearby town centers.

The EMP outlines mitigation measures to reduce potential impacts from construction activities and increased vehicular traffic, and community health and safety on the affected communities. Individual traffic management plans for abnormal loads have been developed by the turbine supplier (Siemens) for each project and approved by Mainstream to control timing and routing of vehicles during the delivery of equipment to site in the construction phase. The community health and safety management procedures have been developed per PS4 requirements and WBG EHS Guidelines as outlined in the EMP.
The EMP also include a community grievance mechanism that includes keeping record of each grievance case and the associated process of resolution and outcome. Community Liaison Officers for each project are responsible for collective grievances and working with the communities.

During construction, workers will be provided official transportation to and from the site, minimizing the influx of unauthorized personnel to the sites. Project sites are currently fenced due to their location within private farms. Security for all sites will consist of an access control system where access to the site will be strictly allowed to authorized personnel only. Personnel entering or leaving the site will be required to sign in and out with the security officers. A third-party security provider will be hired and guards are expected to be unarmed. However, where armed guards are employed, MIGA will require that a security risk assessment is carried out in line with PS4 requirements. Mainstream has expressed concerns regarding the availability of qualified security contractors due to the logistical constraints some of the sites present. A security procedure for the construction and operation phases of the Projects will be developed for each project as part of each respective EMP and in line with PS4 requirements.

PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

The construction and operation of the Projects could result in disturbance, fragmentation and permanent removal of habitat as well as potential collisions of birds and bats with the wind turbines. Per South African legislative requirements, supplemental biodiversity and ecological impact studies were conducted for each Project site as relevant. Studies were designed and developed in accordance with the BirdLife South Africa Endangered Wildlife Trust guidelines.

Ecological and biodiversity sensitivities have been identified by relevant studies for each project site. Two of the proposed Projects, Kangnas and Perdekraal East, could have potential impacts on areas designated as Critical Biodiversity Areas as defined by South African National legislation. Key findings for each of the sites are detailed below as relevant.

Kangnas – During the ESIA it was determined that botanically sensitive succulent plants, including the Platbakkies Succulent Shrubland. This shrubland is contained only to the rocky hills within the Kangnas project area. These areas are considered important due to higher species richness and likelihood of finding endemic plants species. This specific succulent shrubland is not found on the sites where turbines will be developed therefore avoiding the risk of impact to them. Recommendations presented in the Pre-construction Botanical Walk-through Report (March 2016) and the ESIA including micro-siting of turbines, avoiding sensitive sites, and implementing buffer zones around sensitive areas, were adopted to further minimize the impact to the Platbakkies and other succulent plants.
As required by the Northern Cape Department of Environment and Natural Conservation (NCDENC), Mainstream is acquiring an off-site land parcel as means to offset any potential net impacts from the project development. Per the Kangnas Project EMP, the land parcel has been identified as the Oranjefontein Farm located a few kilometers from the project site. According to the Offset Agreement (October 2014) between Kangnas and the NCDENC the purchased land, which contains the succulents, will be declared as a nature reserve per Section 23 of the Protected Areas Act. The land must be purchased within six months of the initiation of construction activities of the wind farm, and must be made available solely for nature conservation purposes as agreed in 2014. Thus, the offset is legally binding and officially recognized under the Project’s Environmental Authorization. Despite the limited presence of the botanically sensitive succulents on site, the Pre-construction Botanical Walk-through Report considers the Kangnas project area as having a low to very low botanical sensitivity.

According to the results of the avifauna impact study, the Kangnas project site is considered to be of medium sensitivity in terms of the potential negative effects on the local bird community. During the ESIA stage, the presence of the Red Lark (Calendulaula burra), a species classified as vulnerable by BirdLife International due to global habitat loss, was identified in high numbers on site. The impact assessment identified the collision potential as low, however the concern for habitat loss remains. As a result, Mainstream has entered a collaboration agreement with BirdLife South Africa to commission a study with the objective of improving current levels of understanding of the Red Lark behavior and habitat use and needs, and mitigate potential impacts of the project development on the species.

Perdekraal East – The Tanqua Wash Riviere ecosystem vegetation is found in the northern portions of the project site. The ecosystem is not globally recognized as threatened. However, riparian vegetation has Very High Sensitivity and important conservation status nationally. Recent mapping by the Cape Winelands District Management considers the Tanqua Wash Riviere as a Critical Biodiversity Area (CBA) as defined by national regulation. The remainder of the Perdekraal study area is mapped as ecological support area. It is noteworthy that according to the ESIA, the CBA’s are based on modeled data and lack confirmation from detailed field studies.

With respect to avifauna, thirteen priority species are recognized as key in the assessment of avian impacts and could be negatively affected by the Perdekraal East project. The most prominent risk to the avifauna onsite is the seasonal presence of one bird species, the Ludwig’s Bustard (Neotis ludwigii) recognized in the IUCN Red List as ‘endangered’, which is highly susceptible to collision mortality on power lines and probably susceptible to turbine collision mortality. Additionally, there are two species of resident and breeding raptors recognized as threatened species and likely to occur regularly on site, which are potentially susceptible to collision with and displacement from the area by the turbines. Other considerations include the displacement of populations of Karoo endemics birds and the risk of collision of wetland species.

Extensive mitigation measures have been designed and implemented in the design phase of the Perdekraal project per the EMP. Measures include, but are not limited to, significant
reduction of turbines, revised micro-siting of turbines and redesign of turbine configuration, establishment of ‘no-go’ areas where development is prohibited, and monitoring of avifauna during pre-construction phase. Both the ESIA and avifauna impact assessment for Perdekraal indicate that adequate implementation of the measures outlined in the EMP will greatly minimize frequency with collision-prone species.

Regarding the Khobab and Loerisfontein 2 wind farms, an issue that remains uncertain whether there will be a collision risk for Lesser and Greater Flamingos associated with a pan situated approximately 2.5km from the closest proposed turbine position. It is worth noting that no flamingos were recorded at the pan during the monitoring periods, likely because the pan was dry. The occurrence of flamingos on the pan is likely to be sporadic and linked to major rainfall events. Nonetheless, a dead flamingo was recorded just north of the current proposed Loeriesfontein 2 turbine site. This area was excluded from the Project development as it was identified early on as sensitive for flamingo collisions. This issue will be covered during post-construction monitoring of the Khobab and Loerisfontein 2 Projects. The situation would have to be closely monitored during post-construction monitoring. Mitigation measures have been identified in the EMPs for the Projects and will be implemented as necessary.

Bat surveys were conducted for all Projects for the period of 2013 – 2016. Although several species and a number of positively identified bat roosts have been found in the surrounding area of the Projects, the sites were generally identified as having low sensitivity for bats.

The exception is the Perdekraal East wind farm where the sensitivity for bat collisions was identified as medium to high (without implementing mitigation measures), even after turbine rearrangement. Of the 11 potentially occurring bat species at Perdekraal East, four were confirmed: Egyptian Free-tailed Bat (*Tadarida aegyptiaca*); Cape Serotine Bat (*Neoromicia capensis*); Natal Long-fingered Bat (*Miniopterus natalensis*); and Long-tailed Serotine Bat (*Eptesicus hottentotus*). The collision risk assessment confirmed that the proposed wind farm is expected to have a higher significance on the Egyptian Free-tailed Bat in particular.

Specific mitigation measures were proposed and accepted by the Company and include: turbine cut-in wind speed of 7 m/s at hub-height at specific times of the year and temperatures for turbines that remain in medium-high and high sensitivity areas; and a turbine cut-in wind speed of 4.7 m/s at hub-height for those turbines that remain in medium sensitivity areas also at specific times and temperatures in the year. The company will also implement comprehensive long-term post-construction/ operational bat monitoring to inform adaptive mitigation management. During operational monitoring, quarterly progress reports and annual monitoring reports will be submitted to the South African Bat Assessment Association (SABAAP) and to the South African National Biodiversity Institute (SANBI) Bird and Bat Database.
The EMP for each Project clearly delineates the relevant regulatory requirements and necessary mitigation measures for the construction and operation of the Projects and are in line with WBG EHS Guidelines for Wind Energy. Required biodiversity monitoring reports will be provided to MIGA as part of the AMR.

PS 8 Cultural Heritage

Comprehensive archaeological and cultural impact assessments were undertaken for each Project site during the ESIA stage. As a result, potentially significant cultural heritage sites and artefacts were identified at the sites including pre-colonial artefacts, archaeology, art and rock tools. Potential impacts to heritage resources are expected to occur during the construction phase of the Projects. Therefore a chance find procedure along with a series of impact mitigation and protection measures have been designed, included in the EMP for each project site, and implemented for those sites where construction and pre-construction activities have taken place. Important heritage sites have been protected by establishing buffer zones and ‘no-go’ zones around them. Where possible, artefacts have been properly removed from the construction areas per permit specifications from the relevant authorities.

F. Environmental Permitting Process and Community Engagement

The public consultation and disclosure process for the Projects is mainly based on the stipulations under the South African EIA legislation. During the scoping phase of each project key stakeholders are identified. Public consultations in the form of community meetings are held where stakeholders have the opportunity to raised concerns about the proposed Projects. Consultations involve a series of meetings that allow stakeholder to provide input and understand how their concerns were considered in the project design. South African regulations also require public disclosure of the EIAs prior to their approval. All projects have obtained Environmental Authorizations, which imply approvals of the ESIs and the EMP. No significant grievances and concerns were expressed at the time of public consultation or since.

Mainstream works closely with the surrounding communities as part of their efforts to understand potential local work force availability and the Company’s local economic development commitments, are based on South African’s mandatory local economic development requirements. Through the assignment of an ESO and CLO, Mainstream maintains continuous stakeholder engagement throughout the construction and operation of the projects. Lekela also has a dedicated Socio Economic Development Manager and budget for community development and stakeholder relations during construction and operations, which allows for enhanced positive impacts on the stakeholder development program of each Project.

G. Availability of Documentation

The following documentation is available electronically as PDF attachments to this ESRS at www.MIGA.org.
• (Khobab) Final Environmental Assessment Report Proposed Construction of a 140MW Wind Farm on the Remainder of the Farm Sous No. 226 near Loeriesfontein, Northern Cape Province, South Africa (May 2013)
• (Loeriesfontein 2) Final Environmental Assessment Report Proposed Construction of a 140MW Wind Farm on the Remainder of the Farm Sous No. 226 near Loeriesfontein, Northern Cape Province, South Africa (May 2013)
• Final Environmental Impact Report Proposed Construction of a Wind Farm near Noupoort, Northern Cape Province, South Africa (April 2012)
• (Kangnas) Environmental Impact Assessment: Proposed Wind and Solar Energy Facilities near Springbok, Northern Cape (February 2013)
• Final Environmental Impact Report Proposed Renewable Energy Facility at the Perdekraal Site 2, Western Cape (May 2012)
• Environmental Management Programs: Khobab (April 2014), Loeriesfontein 2 (April 2014), Noupoort (April 2014), Kangnas (November 2015), and Perdekraal East (April 2016)

The supplemental documents below were added to this document on Oct. 25, 2016.

• Environmental Management Program Perdekraal East Annexures
• Perdekraal: Pre- Construction Bat Monitoring Assessment (May 2013), Bat Impact Assessment Amendment Report (June 2016), and Avian Impact Risk Assessment and Mitigation Scheme
• Kangnas: Bat Monitoring Final Report (October 2013); Avifauna: Avifaunal Walk-Through (February 2016); and Pre-Construction Botanical Walkthrough (March 2016)
• Noupoort: Long Term Bat Monitoring Study for the proposed Noupoort Wind Energy Facility, Northern Cape (May 2013); Avifaunal pre-construction monitoring (February 2013)
• Khobab and Loeriesfontein 2: Avifaunal pre-construction monitoring Loeriesfontein 2 and Khobab Wind Energy Facilities (January 2014)

It is also available for viewing at the following locations:

Mainstream Renewable Power South Africa
4th Floor Mariendahl House
Newlands on Main, Corner Main Road and Campground
Claremont 7708, Cape Town, South Africa

*MIGA supports its clients (as defined in MIGA Policy on Environmental and Social Sustainability) in addressing environmental and social issues arising from their business activities by requiring them to set up and administer appropriate grievance mechanisms and/or procedures to address complaints from Affected Communities.*

*In addition, Affected Communities have unrestricted access to the Compliance Advisor/Ombudsman (CAO), the independent accountability mechanism for MIGA. The CAO is mandated to address complaints from people affected by MIGA-guaranteed business activities in a manner that is fair, objective, and constructive, with the goal of*
improving environmental and social project outcomes and fostering greater public accountability of MIGA.

Independent of MIGA management and reporting directly to the World Bank Group President, the CAO works to resolve complaints using a flexible, problem-solving approach through its dispute resolution arm and oversees project-level audits of MIGA’s environmental and social performance through its compliance arm.

Complaints may relate to any aspect of MIGA-guaranteed business activities that is within the mandate of the CAO. They can be made by any individual, group, community, entity, or other party affected or likely to be affected by the environmental or social impacts of a MIGA-guaranteed business activity. Complaints can be submitted to the CAO in writing to the address below:

Compliance Advisor/Ombudsman
International Finance Corporation
2121 Pennsylvania Avenue NW Room F11K-232
Washington, DC 20433 USA
Tel: 1 202 458 1973 Fax: 1 202 522 7400
E-mail: cao-compliance@ifc.org
## Task Title & Description

**Construction**

- **Implement the Environmental Management Programs (EMP) for each wind farm as required by the national regulation. Develop and implement necessary environmental, social, security, health and safety, and cultural management plans and procedures for the construction phase as defined in each EMP.**
  - Anticipated Completion Date: 60 days prior to commencement of construction.

- **Develop and implement a workers retrenchment plan for the construction workforce in line with MIGA’s Performance Standard 2 requirements.**
  - Anticipated Completion Date: 60 days prior to commencement of construction.

- **Where armed personnel is retained to provide security services, a security risk assessment will be developed and security procedures in line with the requirements of Performance Standard 4.**
  - Anticipated Completion Date: 30 days prior to commencement of construction.

## Operation

- **Update the Environmental Management Programs (EMP) for each wind farm as necessary. Develop and implement required environmental, social, security, health and safety, and cultural management plans and procedures as defined in each EMP.**
  - Anticipated Completion Date: 60 days prior to the commercial operation date.

- **Provide evidence of hiring of avifauna experts to conduct the post-construction monitoring.**
  - Anticipated Completion Date: 30 days prior to commercial operation date and ongoing for at least two years after commercial operation date.

- **Implement post-construction bird and bat monitoring by qualified experts as specified in the EMP and in a manner consistent with WBG EHS Guidelines for Wind Energy in a manner satisfactory to MIGA.**
  - Anticipated Completion Date: 30 days from effective date of the Contract of Guarantee.

- **Implement post-construction bird and bat monitoring for the Noupoort wind farm by qualified experts as specified in the EMP and in a manner consistent with WBG EHS Guidelines for Wind Energy in a manner satisfactory to MIGA.**
  - Anticipated Completion Date: 30 days from effective date of the Contract of Guarantee.

- **Lekela will appoint an environmental, social, and health and safety (ESHS) manager at the local level to oversee the implementation of E&S requirements during the operation phase.**
  - Anticipated Completion Date: 60 days prior to commercial operation date.
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<tr>
<th>Task Title &amp; Description</th>
<th>Anticipated Completion Date</th>
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<tr>
<td>Develop a framework Environmental and Social Management System that covers all Lekela Projects clearly identifying the overarching environmental and social policy, management procedures, management structure, and roles and responsibilities.</td>
<td>60 days prior to commercial operation date.</td>
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<tr>
<td>Complete the acquisition of the biodiversity offset as per the Offset Agreement between Mainstream Kangnas and the Northern Cape Department of Environment and Natural Conservation.</td>
<td>No later than 6 months after commencement of construction.</td>
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