Tafila Wind Energy Project
Tafila Governorate
(Hashemite Kingdom of Jordan)

Environmental and Social Mitigation and Management Plan
(ESMMP)

Report No. 11-1-3058b_rev.1
Project Company:

Prepared by:
CUBE Engineering GmbH
Al-Rawabi Environment & Energy Consultancies
18th of June, 2013
This revision 1 of the ESMMP issued in May 2013 is based on the ESIA rev. 1, issued in May 2013 and it’s “1st Supplement Tafila ESIA - Spring Migration Monitoring 2013” and includes all mitigations coming from both reports.

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**Project Developer and Owner:**
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This report has been prepared independently and with all reasonable skill, care, diligence and best practice by CUBE Engineering GmbH and REEC - Al-Rawabi Environment & Energy Consultancies on behalf of and with support from JWPC, as the developer of this project.

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Jordan Wind Project Company (JWPC) and Tafila Wind Project Company (TWPC) are committed to preserving and protecting the environment.

JWPC complies with all national and international environmental regulations and laws, wisely investing resources toward managing environmental affairs, and training employees in the knowledge and skills necessary to carry out their job in a safe and environmentally responsible way. JWPC strives to provide leadership and excellence, by operating its facilities in accordance with good international practices. JWPC will strive to achieve injury-free and healthy, and fulfilling working conditions for all employees, enhance the lives of residents and safeguard the balance of the environment that its activities impact.

JWPC commits to the following:

**Sustainable Development:**
Conserve natural resources and minimize or eliminate adverse effects on Environment, Health, and Safety associated with the Tafila Wind Farm.

**Competence**
Raise the awareness amongst all employees, contractors, and residents on health and safety requirements and the need to protect and conserve the environment.

**Compliance**
Comply with all applicable Environmental, Health, and Safety requirements, to meet or exceed all applicable targets and benchmarks. Regularly evaluate the effectiveness of the system by conducting audits and reviews.

**Integrity**
Suppliers and contractors are chosen according to commitments towards responsible operations and ESH performance and are involving in pertinent Environmental, Safety and Health procedures.

**Waste Reduction & Disposal**
The creation of Waste is minimized by the reuse and recycling of materials. All Waste is to be stored in a safe and sustainable manner.

**Risk Reduction**
Environmental, health, and safety risks to employees and residents are reduced by utilizing safe and state of the art technology and operational procedures and by constantly being prepared for emergencies.

**Quality Management**
The quality of JWPC’s performance is secured by regular inspections and audits of the Company’s operations.
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<tr>
<td>CO₂</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>COMSA</td>
<td>Construction and Operation Management Services Agreement</td>
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<tr>
<td>the CONTRACTOR</td>
<td>DBOM Contractor (here Vestas Mediterranean)</td>
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<tr>
<td>CUBE</td>
<td>CUBE Engineering GmbH</td>
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<td>DBOM Contract</td>
<td>Design Build Operate Maintenance Contract</td>
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<tr>
<td>EIB</td>
<td>European Investment Bank</td>
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<td>EPGE</td>
<td>EP Global Energy Ltd</td>
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<td>EPR</td>
<td>Environmental Policies Representative / Environmental Manager</td>
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<td>ERP</td>
<td>Emergency Response Plan</td>
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<td>ESAP</td>
<td>Environmental and Social Action Plan</td>
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<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
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<td>ESMMP</td>
<td>Environmental and Social Mitigation and Monitoring Plan</td>
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<td>ESMS</td>
<td>Environmental and Social Management System</td>
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<tr>
<td>GWh</td>
<td>Gigawatt hours</td>
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<tr>
<td>HGV</td>
<td>Heavy Goods Vehicles</td>
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<tr>
<td>H&amp;S</td>
<td>Health &amp; Safety</td>
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<tr>
<td>IBA</td>
<td>Important Bird Area</td>
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<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
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<tr>
<td>IOE</td>
<td>Independent Ornithological Expert</td>
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<tr>
<td>JWPC</td>
<td>Jordan Wind Project Company PSC</td>
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<tr>
<td>kV</td>
<td>Kilovolt</td>
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<tr>
<td>the LENDERS</td>
<td>lenders of the Project (here EIB and IFC)</td>
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<tr>
<td>MM</td>
<td>Mitigation Measure</td>
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<tr>
<td>MW</td>
<td>Megawatt</td>
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<tr>
<td>OE</td>
<td>Owner’s Engineer</td>
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<td>OHS</td>
<td>Occupational Health and Safety</td>
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<td>PPA</td>
<td>Power Purchase Agreement</td>
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<td>PPE</td>
<td>Personal Protection Equipment</td>
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<tr>
<td>REEC</td>
<td>Al-Rawabi Environment &amp; Energy Consultancies</td>
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<tr>
<td>RSCN</td>
<td>Royal Society for the Conservation of Nature</td>
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<td>SEP</td>
<td>Stakeholder Engagement Plan</td>
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<tr>
<td>TCA</td>
<td>Transmission Connection Agreement</td>
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<tr>
<td>the OWNER</td>
<td>the owner and developer of the Project, here JWPC</td>
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<tr>
<td>TOM</td>
<td>Technical and Operational Management</td>
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<td>TWPC</td>
<td>Tafila Wind Project Company LLC</td>
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<tr>
<td>WTG</td>
<td>Wind Turbine Generator</td>
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1. Introduction

As an outcome of the Environmental and Social Impact Assessment (ESIA) of the Tafila Wind Farm, the Environmental and Social Mitigation and Monitoring Plan (ESMMP, or plan) has been developed. This ESMMP is a stand-alone document, and summarizes the impact assessment results, as well as the mitigation and monitoring measures relevant for the project lifetime.

The mitigation and monitoring measures are elaborated to be taken to reduce or eliminate potential negative impacts arising from individual or combined activities are described for each phase of the Project in this document. The mitigation measures are numbered throughout the report in the following way: “MMx-xx”. Continuous improvement in the identification and mitigation of environmental impacts is the desired outcome of this plan, with a corresponding benefit to the region from the lessened environmental impact of the project.

This plan is a living document, and will be updated and expanded in line with specific requirements of Jordanian law, as well as items necessitated by the specific characteristics of the project area. The purpose of this document is to define rules for the avoidance of negative environmental impact and accidents. Responsibility for the drafting of the plan and ultimate adherence to the goals of the plan is the task of the Owner of the Wind Farm, JWPC. Actual implementation of the measures required in the plan will be borne by JWPC and the Construction / Operations / Maintenance Contractor(s), and the obligation to fulfill the guidelines listed in chapter 9. The IFC performance standards will be included in contract agreement documents between the Owner and Contractor(s).

The ESMMP is an overarching document on underlying plans mentioned in this document, such as the Waste Management Plan, the erosion Control Plan or the Traffic Management Plan.

2. Project summary

The proposed project is a 117 MW wind energy project (the Wind Farm or the Project) to be located in rural land in the Governorate of Tafila. The Project is located to the northeast of the existing Lafarge Rashidiya Cement plant, and east of the town of Gharandil. The Developer and Owner of the Tafila Wind Farm is the Jordan Wind Project Company PSC (JWPC).
Figure 1: Layout of planned Tafila Wind Farm
The Wind Farm will supply Jordan with approximately 386 GWh/a of clean, renewable and environmental-friendly electricity and will save approximately 245,992 t CO₂/a compared to electricity from primary energy.

The area was selected based on its low density of human habitation, proximity to existing transmission infrastructure, favorable wind resource, and moderate to low environmental sensitivity. The common usage of the area of the Tafila Wind Farm is some seasonal grazing activity (sheep, goats), and agriculture (wheat) in small areas. There are no permanent dwellings or other structures in the project area that would be affected by the construction or operation of the project. The site is periodically used by farmers and shepherds who camp in the region during summertime.

There are no water sources available at surface level. Water for the area is obtained from wells in the nearby town of Gharandil, and from wells located to the north of the project area.

The project components will include the following:

- 38 wind turbine generators (WTG) with tubular steel towers;
- 38 steel-reinforced concrete foundations;
- One project substation (electrical substation), including equipment for electrical protection, transformation, and metering;
- Grid connection to existing 132kV overhead line via overhead cables;
- Underground electrical & communication cables;
- Access roads;
- Crane pads and laydown areas;
- Permanent wind measurement tower;
- Temporary construction compound;
- Spare part compound, warehouse and Site operation building, located close to substation.

The Project will be developed and executed in four phases.

- **Pre-construction**, until autumn of 2013 – e.g. site assessment, wind measurement, grid assessment, design, environmental and social impact assessment;
- **Construction**, until 2015;
- **Operation** until 2035;
- **Decommissioning** in 2035 – deconstruction of the entire Wind Farm and restoration of the area.
3. Review and Updating of the ESMMP

The ESMMP shall be reviewed on a regular basis throughout the lifetime of the project to ensure that the document reflects the most up to date understanding of environmental and social aspects of the project and contains the most appropriate mitigation measures. It is proposed that the ESMMP be reviewed and updated, as a minimum:

- Prior to the commencement of construction following the implementation of all pre-construction monitoring and/or mitigation measures.
- Every 3 months during construction
- Post construction and prior to operation;
- Twice annually during operation for the first 3 years (following the results of spring and autumn migration) then annually thereafter.
- Following any significant changes to project scope; and
- Following any significant incidents.

The Document List of Revision will be updated following any change to provide details of date of review, summary of change and will be signed by the Project Manager and other representatives of the Owners Engineer and JWPC as appropriate.

Should no updates to the ESMMP be deemed to be required then the Document List of Revision shall state “no revision required” on the date of review and be signed off by all parties concerned.

4. Roles and Responsibilities

4.1. Proposed Organization

JWPC is the Owner of the Project, and is the named party in all authorizations, permits, and agreements for the project. It is responsible for the contracting of the construction works for the project, as well as the procurement of financing.

The developer of the project is EP Global Energy Ltd of Cyprus (EPGE). EPGE is a private company, a member of the Paraskevaides Group and developing renewable energy facilities. EPGE entered into a development agreement with the Project Company JWPC, to develop the Project on behalf of the Sponsors.

For the construction and operation phases of the Project, it is proposed that EPGE hands over to Tafila Wind Project Company LLC (TWPC), the Operating Company of JWPC, under a Construction and Operation Management Services Agreement (COMSA). The COMSA is designed to ensure continuity and provide all required resources and services under a single document. Under the COMSA, all services needed during the construction and operation shall be procured, to provide any required functions and skill sets from EPGE resources and/or procured from international and local resources, as well as outsourcing certain functions to subcontractors.
Construction Phase
In line with the requirements of the DBOM, JWPC shall have a contract with an Owner’s Engineer (OE). The Contractor's adherence to budget, schedule, and specifications will be managed at the site by the Owner’s Engineer, which will report to the Wind Farm Manager and TWPC Board. The Wind Farm Manager will be on the TWPC Board, and be the focal point for interactions with the OE.

Operations Phase
For the normal Operations phase, TWPC shall procure on an outsourced basis certain “Wind Farm Technical Operations functions” from a Technical and Operational Management (TOM) provider. The concept of outsourced Operations is not new and is increasingly deployed in the sector to extract maximum value from Wind Farms.

Figure 2: Proposed Structure for Construction and Operation

4.2. Proposed Organization during Construction

Responsibilities of Owners Engineer (OE)

The OE shall be the main interface with the Contractor during the design and build phase together with the Wind Farm Manager, reporting to TWPC.

The OE will deploy the following key resources on site:

- Senior Project Manager
- Project Manager
- Project Engineer,
- Civil & Electrical site supervisor: permanently during the execution of the respective works;
- H&S Manager
- Environmental expert
- Electrical Expert
A qualified Occupational Health and Safety Manager (H&S Manager) will be appointed to supervise the Contractor’s adherence to the HSE plans applicable for the Project and to report directly to the project manager.

EPR and H&S Manager may be the same person if qualification can be demonstrated.

OE will appoint an Environmental Policies Representative (EPR), also referred to as Environmental Manager or Expert, who is responsible for the environmental monitoring and the supervision of the performance of the Contractor for adherence to the social and environmental measures outlined in this document. The EPR will be supported by an Archaeological Consultant who will monitor the adherence to the procedures for the preservation of cultural heritage which is detailed in Attachment 1 of this ESMMP. Furthermore the EPR will be supported by an Independent Ornithological Expert (IOE) who is responsible for the monitoring of the avifauna (detailed in chapter 11.3).

Further details on organizational structure and the obligations of the OE during the construction phase are defined in the OE contract.

Responsibilities of Tafila Wind Project Company (TWPC)

TWPC will also implement its own in-house resources to fulfil Construction / Operation responsibilities. The Wind Farm Manager will be responsible for day to day interaction with the OE and general oversight of the performance, budget reviews and reporting. He will be a key member of the management team of TWPC.

It is the responsibility of the Wind Farm Manager to design his team and to hire the staff. However, for budgeting purposes, the following is envisaged. During the Construction Phase JWPC will engage following key positions:

- Site Assistant Manager – This role will continue on past construction into an Operations Assistant Manager, who would assist in day to day running of the plant.
- Finance Manager / Controller
- Staff Engineer (1) – Staff Engineer would assist in substation and SCADA operation, and provide additional presence at the Wind Farm operations center in order to guarantee an around the clock presence at the project site.
- Land Administrator Amman (1) – Land lease administration, payment tracking, dispute resolution
- Land Manager Tafila (1) – Landowner relations, dispute resolution, payment processing.
- HSE Manager (1) – Part time. HSE Audit, Reporting.
- Admin / Secretary (1)
The below figure show the proposed organization of the construction phase

Further details on organizational structure and obligations of TWPC during the construction phase are defined in the COMSA contract.

4.3. Proposed Organization during Operation

Management of and implementation of the JWPC Contracts such as DBOM, PPA, TCA, and other (collectively referred to as the Project Contracts) and the Financing Agreements, and also all reporting requirements of Investors and Lenders shall be the responsibility of TWPC under the COMSA.

Under the COMSA, TWPC is responsible to adhere to applicable health, safety and environmental procedures as per the applicable environmental and social management plan. TWPC shall procure TOM services from an operations provider to perform those aspects of such services that cannot be performed by the Service Provider through its own resources. Such provider will mobilize to the project area before commissioning has completed, and have local capability established and ready in time for full commissioning and commercial operations.

Further details on organizational structure and obligations of TWPC during the operation phase are defined in the COMSA contract.
4.4. Contractor

The Contractor, Vestas, will be responsible for the design of the plant, as well as construction works through to commissioning. At point of commercial operation date, the Wind Farm will be handed over to the Owner, JWPC, though the Contractor will take over the maintenance responsibility for the plant on behalf of the Owner. The Contractor, through its appointed EPR, will be responsible for complying with the provisions of the ESMMP, as well as guidelines for health, safety, and environmental performance.

4.5. ESMS System / Recordkeeping

In order to meet the obligations of this ESMMP the Owner (JWPC), or subsidiary TWPC, or its designated OE or TOM provider should develop and implement an Environmental and Social Management System (ESMS) according to the IFC Performance Standard 1 (IFC PS1) for both construction and operation phase.

Recordkeeping will be centralized at the Project construction compound. The record keeping system will be managed by the Owner or through the OE acting on its behalf. Documents and records will be maintained in physical and / or electronic format. Examples of documents / records to be included but are not limited to:

- ESIA;
- ESMMP;
- Stakeholder Engagement Plan (SEP);
- Permits / authorizations;
- Jordanian Laws on Health, Safety, Environment;
- Environmental and Social Policies;
- Training materials (English, Arabic);
- Staff handbook
- Incident reports;
- Monitoring reports;
- Audit reports;
- Operating manuals for tools, equipment (English, Arabic);
- Emergency procedures;
- Land lease data
- Contact lists.
- Any necessary additional management plans (e.g. habitat management plan etc.)
4.6. **Subcontractor Management Procedures**

As part of the ESMS appropriate contractor management procedures must be developed which should include the following but which are not limited to:

- Statement of JWPC’s environmental, social and H&S corporate policy;
- Requirement that subcontractors will adhere to JWPC policy and requirements;
- Reporting requirements for subcontractors;
- Monitoring of Contractors performance.

It is mandatory that any sub-contractor adheres to JWPC’s environmental and social management requirements.
4.7. Organizational chart ESMS / ESMMP / ESAP

Figure 4: Organizational Chart of Environmental Monitoring during Construction and Operation
5. Occupational Health and Safety Plan

It is required to implement safety measures for the construction and operation of the Tafila Wind Farm which includes: the WTGs, the Wind Farm substation, up to the medium voltage level the Wind Farm roads. Especially in the construction phase accidents can occur due to the extensive works on site. The aim of JWPC and its contractors is to secure the project participants and other persons safety and to prevent the project components from greater damages.

An Occupational Health and Safety plan (OHS plan) will be implemented by JWPC’s OE prior to the start of construction works and another one prior to the start of Wind Farm operation which adherence is then binding for all project participants.

The OHS plan describes the general project aspects like location, execution time schedule and climatic conditions, general codes of behavior in the project area and particular precautionary measures for individual tasks during the project phases. JWPC’s OE will hire an H&S manager who will supervise the adherence to the rules defined in the OHS plan or otherwise requested by law.

The Contractor will be obliged to set up the detailed OHS plan for the construction phase of the project.

The OHS will include an Emergency Response plan (ERP) to encompass all project activities and all potentially significant incidents.

JWPC/TWPC will be obliged to set up OHS plan for its own staff and subcontractors for the construction and operational phase of the project which covers the following requirements but is not limited to:

- Job and task specific hazard analysis and controls for clean energy activities;
- PPE provision, use and maintenance;
- Safety training for all personnel in their language;
- Review and approval of contractors OHS plans to meet same standards as ESMMP;
- Oversight of Contractor OHS implementation, including mandatory reporting;
- Formal grievance mechanism for employees and contractors and disseminate information about its uses to the workforce;

An annual report on OHS issues including accident statistics and training (by JWPC and contractor workforces) is required. The OHS shall be in line with the IFC PS 2.

The OHS plan shall be review and updated as needed and require contractor updates.

6. SEP (Stakeholder Engagement Plan)

A separate stakeholder engagement plan was issued on the 15th of Mai, 2013, together with the ESIA and this ESMMP including e.g. grievance mechanisms, communication with stakeholders and reporting to the Lenders.
7. Training

Training of site personnel will be organized prior to the start of construction to make all personnel engaged in on site works aware of the environmental and safety requirements of the Project. The training will be organized and implemented by either:

- JWPC;
- Consultants on behalf of JWPC;
- Contractor.

The trainings will be held in English, Arabic, or another language as required by the nationality of the site workers. The trainings will be accompanied by material which will be given to the site workers, and records of the training sessions completed by employees will be maintained at the project construction compound.

The goals of the training program for the employees will be to:

- Inform the employees of environmental, health and safety requirements during construction;
- Emphasize methods and techniques that can be used to reduce environmental impact and increase worker safety;
- Make participants aware of extreme environmental conditions that may cause unsafe conditions during construction phase (e.g. lightning or increased wind speeds);
- Enable employees to respond to emergency situations in a safe and effective manner;
- Improve communication between all parties engaged in site work related to the environmental and safety aspects of the project.

8. Auditing

In order to measure compliance with the requirements of the ESMMP, ongoing audits will be agreed and organized between the Owner and its consultants, as well as the Contractor. The audits will be conducted at agreed intervals (i.e. monthly, weekly, daily, random), with the results of audits to be compared over time to gauge rate of improvement in performance areas. A record of non-compliance issues and corrective action will be kept and made available for inspection if required.

In the case of decline in measurable performance areas, additional training, incentive programs, or other systems can be agreed and implemented to improve performance to acceptable levels, with the goal of continuous improvement in the metrics over time.

The program of auditing will undergo revision and expansion continuously in line with ongoing discussions with the Contractor.
9. International EHS Guidelines and Performance Standards

As a requirement from the Lenders of the Tafila Wind Farm project the following standards and guidelines must be complied with. JWPC and the Contractor shall work according to the following guidelines during construction and operational phase of the project:

- IFC Performance Standard PS1: Assessment and Management of Environmental and Social Risks and Impacts;
- IFC Performance Standard PS2: Labor and Working Conditions;
- IFC Performance Standard PS3: Resource Efficiency and Pollution Prevention;
- IFC Performance Standard PS4: Community Health, Safety and Security;
- IFC Performance Standard PS5: Land Acquisition and Involuntary Resettlement;
- IFC Performance Standard PS6: Biodiversity conservation and Sustainable Management of Living Natural Resources;
- IFC Performance Standard PS7: Indigenous Peoples;
- IFC Performance Standard PS8: Cultural Heritage;
- ILO Core Conventions;
- EIB Covenant of Integrity;
- EIB’s Statement of Environmental and Social Principles and Standards;
- EIB Environmental and Social Practices Handbook;
- EIB Anti-Fraud Policy;
- Equator Principles;
- World Bank EHS Guideline.

The above listed standards and guidelines are attached to this document in Appendix 2.

10. Labor and Working Conditions

For JWPC and its sub-contractors a staff handbook shall be prepared to include provisions for general terms and conditions, holiday entitlement and grievance procedures which covers both, temporary workers and freelancers.

The staff handbook shall be in line with the IFC PS 2.
11. Biodiversity

11.1. Introduction
A baseline biodiversity study was conducted based on a detailed desktop study and based on 12 months field survey (October 2011 till September 2012). This baseline biodiversity study can be found in the Environmental and Social Impact Assessment (ESIA).

As required by the project lenders an additional monitoring of the migration period 2013 was conducted from the 27th February till the 18th May, 2013. This comprehensive background data of the avifauna migrating over the site is analyzed and presented in “1st Supplement Tafila ESIA - Spring Migration Monitoring 2013”.

The Jordan rift Valley is the main and the only major migratory route for birds in the Middle East, in the Dana important bird area (IBA), as well as in the Dana Biosphere Reserve, which are close to the planned Wind Farm. Even though the site does not belong to the Jordan rift valley, migratory birds were observed during the migration monitoring in spring 2013.

During the spring migration seasons 2013, researchers of this study observed and recorded 20,302 migrating and 871 resident breeding species. A total of 21,173 bird observations were recorded. Especially two migratory species, the honey buzzard (*Pernis apivorus*) (61%) and the Steppe Buzzard (*Buteo buteo vulpinus*) (30%), were recorded passing over the site during migration.

Species that were observed during the monitoring program are listed in the ESIA for the Tafila Wind Farm and in the document “1st Supplement Tafila ESIA - Spring Migration Monitoring 2013”.

To secure that rare and endangered flora and non-avian species are not threatened by the Project the construction sites of the WTG and of the roads are pre-inspected before the construction will be conducted. Identified endangered or rare species that are directly affected by the Project will be relocated to a place with similar habitat conditions.
11.2. Mitigation and monitoring measures – Biodiversity

Different mitigation measures for the biodiversity were discussed and agreed in the preconstruction phase. These are listed below and in Table 11-1 through Table 11-6.

All workers will be made aware of the procedures to be followed to secure the effectiveness of the mitigation measures before construction starts.

Selection of appropriate turbines
Choosing a turbine type that is less attractive for birds reduces the risk of bird mortality through collision significantly. Turbines with a lattice tower offer many perch possibilities for birds, especially raptors and soaring birds. Choosing a tubular tower for the turbine reduces these possibilities to a minimum reducing as well the collision risk significantly.

The Vestas V112 has a tubular tower with no perch possibilities for birds and the impact, that the turbines are used as perch is avoided.

Use of a smaller number of higher capacity turbines
Fewer turbines of a type with a high nameplate capacity are necessary to produce the same energy than multiple turbines with lower rated power. The V112 as a 3 MW machine has a high power outage and thus only 38 turbines are required. At an early stage also a 2 MW turbine was considered, but a total of 58 turbines would have been necessary to obtain similar capacity. A larger type was chosen in order to cause less impact on the environment. These larger turbines also have a greater distance to each other. The greater distance between the WTGs is an advantage for the avifauna due to a larger area to maneuver through the Wind Farm. More powerful turbines as the Vestas V112 also have a slower rotation speed which is beneficial for the birds to recognize the obstacle and avoid it.
### Table 11-1: Mitigation and monitoring measures for the flora during construction phase

<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation Measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collecting wood by workers</td>
<td>Collecting wood from natural plants and vegetation for household fire by workers.</td>
<td>☒ To prohibit workers from collecting wood; [MM6-10] ☒ The Contractor is working under the ISO 14001 Environmental standard and will strictly control its own workers as well as its subcontracted workers related to environmental behavior on site. [MM6-11]</td>
<td>☒ Responsibility to limit impact, , to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor ☒ supervision from the Owner: -Recording in weekly or monthly Site Supervisor Report -Photo documentation in case evidence of non-compliance with MM is found. ☒ [MM6-10] In case of non-compliance verbal and written warnings by Owners HSE staff, which can lead to disciplinary action, up to expulsion of non-compliant employees. ☒ [MM6-11] Written warnings for non-compliance and disciplinary action</td>
<td>Contractor</td>
</tr>
<tr>
<td>Dust</td>
<td>Dust generated during construction phase by moving vehicles and construction work.</td>
<td>☒ Cover each spot where excavated material is stored when climate conditions requires to. [MM6-15] ☒ Dust control by usage of dust suppression substances. [MM6-16]</td>
<td>☒ Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor ☒ supervision from the Owner: -Recording in weekly or monthly Site Supervisor Report -Photo documentation in case evidence of non-compliance with MM is found.</td>
<td>Contractor</td>
</tr>
<tr>
<td>Impact</td>
<td>Description</td>
<td>Mitigation Measure [MM]</td>
<td>Monitoring measures</td>
<td>Responsibility</td>
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</tbody>
</table>
| Removal of Topsoil  | During the construction activities parts of the topsoil will be removed. Removing the topsoil, which has a high nutrient content, will cause the loss of micro-habitats for common vegetation. | - To limit construction activities within the Wind Farm site; [MM6-1]  
- Reduce / optimize amount and size of new roads and transmission cables as much as possible; [MM6-2] – regarded to be finished in Design phase  
- Store the natural soil in designated areas and reuse it when back-fill activities are needed; [MM6-3]  
- Bring natural vegetation and rich soil of the construction sites to designated areas. [MM6-4]  
- Use good construction activities and minimize clearing of natural vegetation [MM6-5]  
- Ensuring that locally obtained construction materials come from legal and environmentally sustainable sources. [MM6-6]  
- Restore cleared areas with natural top soil where feasible [MM6-7]  
- Avoid creation of new landscape [MM6-8]  
- Good management of non-hazardous and non-toxic debris in allocated sites to be reused for fill activities; [MM6-9]  
- A flora expert will monitor the construction sites and its vicinity before construction. All endangered flora species found on the construction site will be moved to different, suitable sites that are not affected by construction activities and that are similar to the original habitat. Areas of botanical importance adjacent to the construction site will be clearly marked to be avoided.[MM6-12] |  
- Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the sponsor Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Photo documentation in case evidence of non-compliance with MM is found.  
  
- [MM6-2] Technical planning documents from Contractor to be submitted with chosen plan and a short report with reasons why the cable routes and roads are placed the way they are.  
- [MM6-4, MM6-6] Contractor to provide proof of sourcing for all materials to JWPC.  
- [MM6-9] In case of non-compliance verbal and written warnings by Owners HSE staff, which can lead to disciplinary action, up to expulsion of non-compliant employees. | Contractor |
<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation Measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat alteration and</td>
<td>Habitat alteration resulting from wind energy projects include changes in</td>
<td>Decommissioning of the temporarily required areas and restoring the original conditions</td>
<td>General responsibility to limit impact and the auditing thereof lies within the tasks of the owner.</td>
<td>Owner and Contractor</td>
</tr>
<tr>
<td>fragmentation</td>
<td>plant communities that would affect the fauna and avifauna.</td>
<td>as far as practicable at the end of the construction phase. [MM6-13]</td>
<td>Follow-up research will be conducted by the Owner to monitor change in behavior of species and assess its impacts. If necessary special mitigation measures need to be developed during the operation phase.</td>
<td></td>
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<td></td>
<td>Minimize intervention and or negative impacts by the following measures:</td>
<td>Conserve locally and internationally endangered and rare plant species. Endangered and</td>
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<td>rare plant species relevant in this context are displayed in table 6-3 in the ESIA of the Tafila Wind Farm; [MM6-43]</td>
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<td>Land will be used in the same form as before the Wind Farm projects; [MM6-44]</td>
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<td></td>
<td>Avoid to bring foreign plant species to the Wind Farm site e.g. on the wheels of construction vehicles [MM6-45]</td>
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<tr>
<td>Solid and liquid waste</td>
<td>Solid and liquid wastes will be either domestically generated or result from construction activities. (Liquid waste is defined as grey water, oil and any lubricants); If such wastes were not handled adequately, the wadi beds may be</td>
<td>Develop a waste management plan to guide management of all wastes to be generated during construction [MM6-37]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collect all wastes, solid and liquid, in sealed containers to be disposed in proper disposal sites in accordance with the waste management plan; [MM6-14]</td>
<td>supervision from the sponsor Owner: -Recording in weekly or monthly Site Supervisor Report -Photo documentation in case evidence of non-compliance with MM is found. [MM6-37] Guidance of all waste to be generated during construction</td>
<td></td>
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<td></td>
<td></td>
<td>The Contractor is working under ISO 14001 accreditation for environmental management. It is forced to care also for all its subcontractors. [MM6-11]</td>
<td>[MM6-14] Contractor will present proof of proper disposal to Owners HSE team.</td>
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<tr>
<td></td>
<td></td>
<td>A completely closed container must be built to collect domestic wastewater. It must be emptied frequently and transported to the nearest municipal wastewater treatment plant. [MM7-3]</td>
<td></td>
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</tr>
<tr>
<td>Impact</td>
<td>Description</td>
<td>Mitigation Measure [MM]</td>
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<td>contaminated during runoff which would also affect the flora in the area. Additionally such waste may attract animals to the area. The significance of this impact may be of medium level, especially on the surrounding area to the proposed locations of the project, like the wadi systems nearby the site.</td>
<td>@ Technical inspection of trucks (e.g. for leakage) that stay on-site for long periods (such as excavation machinery and cranes) during construction; [MM7-11] @ Special considerations for fuel trucks and inspections of all vehicles and equipment for leaks before use near water during construction [MM7-12]; @ Spill clean-up procedures must be in place, clean-up kits shall be carried in all vehicles and equipment during construction and operation phase; [MM7-13] @ Ensure safe storage and transfer of oils and waste oil during construction and operation phase. [MM7-14] @ Any Fuel Storage tanks need to be placed away from main traffic routes and surface water features. [MM7-15] @ Provided impermeable containment sufficient to hold 110% of the total volume of fuel stored in such tanks [MM7-16] @ Conduct fuelling operations and use chemicals / solvents only over prepared impermeable surfaces [MM7-17] @ Training for drivers and equipment operators, and others who use fuel, oil or other hazardous materials [MM7-18]</td>
<td>[MM6-14] - In case of non-compliance verbal and written warnings by Owners HSE staff, which can lead to disciplinary action, up to expulsion of non-compliant employees.</td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>Description</td>
<td>Mitigation measure [MM]</td>
<td>Monitoring measures</td>
<td>Responsibility</td>
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<tr>
<td>Solid and liquid wastes</td>
<td>The amount of domestic wastes will be marginal during operation phase. The oily waste from maintenance work of the engines may be of importance although the quantities are not significant. The operator must ensure proper and adequate management of such waste according to the regulations and best practices.</td>
<td>Collect all wastes in sealed containers to be disposed in proper disposal sites [MM6-14]  Develop a waste management plan to guide management of all wastes to be generated during operation [MM6-37]  Technical inspection of trucks (e.g. for leakage) that stay on-site for long periods (such as excavation machinery and cranes) during construction; [MM7-11]  Spill clean-up procedures must be in place, clean-up kits shall be carried in all vehicles and equipment during construction and operation phase; [MM7-13]  Ensure safe storage and transfer of oils and waste oil during construction and operation phase. [MM7-14]  Training for drivers and equipment operators, and others who use fuel, oil or other hazardous materials [MM7-18].</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  supervision from the Owner:  -Recording in periodical Site Supervisor Report  -Photo documentation in case evidence of non-compliance with MM is found.  [MM6-14] Contractor will present proof of proper disposal to Owners HSE team.  [MM6-14] -In case of non-compliance verbal and written warnings by Owners HSE staff, which can lead to disciplinary action, up to expulsion of non-compliant employees.  [MM6-37] Guidance on all waste to be generated during operation</td>
<td>Contractor</td>
</tr>
</tbody>
</table>

| Destruction of flora   | Vehicles shall not leave given routes and destroy the vegetation. Plants | Prevent leaving the roads and crane pads with vehicles unless there is no other way of performing emergency repair works. If leaving the roads or crane pads becomes necessary it must be decided by the Project Manager in | Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  [MM6-25] Contractor  [MM6-38a*] Contractor | |

Table 11-2: Mitigation and monitoring measures of the flora during operation phase
<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
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</thead>
<tbody>
<tr>
<td>shall not be</td>
<td>agreement with the Environmental Manager. [MM6-25]</td>
<td>Do not use herbicides to control vegetation on site or transmission line corridor</td>
<td>supervision from the Owner:</td>
<td>and Owner</td>
</tr>
<tr>
<td>devastation through</td>
<td>[MM6-38a]</td>
<td>[MM6-38a]</td>
<td>- Recording in periodical Site Supervisor Report</td>
<td></td>
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<tr>
<td>herbicides</td>
<td></td>
<td></td>
<td>- Photo documentation in case evidence of non-compliance with MM is found.</td>
<td></td>
</tr>
<tr>
<td>Disturbance and Noise</td>
<td>Noise of the construction may frighten animals currently residing on the</td>
<td>Reduce loud construction as much as possible [MM6-17];</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>site to leave and / or dissuade new animals from coming onto the site.</td>
<td>Reduce vehicle movements to a minimum extent (as defined in the Vestas contract and</td>
<td>internal auditing thereof lies within the tasks of the Contractor</td>
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<td></td>
<td>However the construction activities are for a limited period of time only.</td>
<td>their transportation handbook) and supervise speed limits (20 km/h on grated roads) of</td>
<td>- Recording in weekly or monthly Site Supervisor Report</td>
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<td>the vehicles during the construction phase. [MM6-18]</td>
<td>- Photo documentation in case evidence of non-compliance with MM is found.</td>
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<td>All excavations will be equipped with animal ladders, either wooden or of earth</td>
<td>[MM6-17] In case of non-compliance verbal and written warnings by Owners HSE staff,</td>
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<td></td>
<td>slopes, to secure the possibility for animals to leave the excavation pit.</td>
<td>which can lead to disciplinary action, up to expulsion of non-compliant employees.</td>
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<td></td>
<td></td>
<td>Construction workers will check each excavation before the start of construction and</td>
<td>[MM6-18] Written warnings for non-compliance and disciplinary actions.</td>
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<td></td>
<td></td>
<td>will contact the Environmental Manager if an animal is trapped, who will remove it.</td>
<td>[MM6-36] Contractor reporting to Owners supervisor. Owner supervisor to lenders</td>
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<td></td>
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<td>[MM6-48]</td>
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<td>An environmental expert will search the construction sites shortly before construction.</td>
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<td></td>
<td></td>
<td>Special emphasis is placed on reptile habitats such as scrubs, rock piles or</td>
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</tbody>
</table>

In the ESIA revision 1 and in its 1st supplement this Mitigation Measure was referred to as [MM 6-38] and was correct here in to be [MM6-38a] (for herbicides) and [MM6-38b] (for collision avoidance).
<table>
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<th>Impact</th>
<th>Description</th>
<th>Mitigation Measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
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<tbody>
<tr>
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<td>holes. All species will be allowed to leave the construction site by its own or will be safely removed to similar habitats. Endangered animals will be picked up and will be brought to a similar habitat which is not affected by the project. All caught and moved species will be marked on the rear and near the tail (not on the top of the animal to avoid an increase of predation rates) with a permanent non-toxic marker to monitor whether the specie returned. In this case the construction site needs to be fenced. [MM6-24]</td>
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<td></td>
<td>The Independent Ornithological Expert will look for bird nests before construction. If endangered (according to the Annex 1 of the Bird Directive 2009/147/EC and according to the IUCN Red List of Threatened Species), nesting species and or a significant amount of nests are found it has to be reported and assessed if construction activities can be shifted to another turbine location. Especially nests of endangered species have to be protected and construction works must be avoided at nesting sites till the young birds are fledged. Nevertheless there are bird species of which the juvenile birds can walk shortly after hatching. If such a species is observed, the nest can be moved as soon as the juvenile birds can walk and the construction work can start. [MM6-36]</td>
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<td>Impact</td>
<td>Description</td>
<td>Mitigation Measure [MM]</td>
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</tbody>
</table>
| Light | During night-time large vehicles will bring the Wind Farm components to the site. These vehicles generally drive during night-time to reduce the traffic disturbance by large trucks in the day. The light and noise may scare animals into leaving the site. These night activities on the site may have also the effect that animals get killed by accident while moving equipment on the project site. This impact is of low magnitude. | Limitation of drives during night. 376 night drives are estimated for the construction phase. This number can still change, depending on the transport company. [MM6-19] | Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Photo documentation in case evidence of non-compliance with MM is found.  
[MM6-19] - In case of non-compliance verbal and written warnings by Owner HSE staff, which can lead to disciplinary action, up to expulsion of non-compliant employees. | Contractor |
<table>
<thead>
<tr>
<th>Impact</th>
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<th>Mitigation Measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidental killing</td>
<td>Accidental killing of animals e.g. by vehicles from service.</td>
<td>To report any accident to Owner to report all accident to lenders. The Environmental Manager will record each animal fatality and, if necessary, will discuss alternative working measures with the Site/Project Manager. [MM6-20]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>An environmental expert will search the construction sites shortly before construction. Special emphasis is placed on reptile habitats such as scrubs, rock piles or holes. All species will be allowed to leave the construction site by its own or will be safely removed to similar habitats. Endangered animals will be picked up and will be brought to a similar habitat which is not affected by the project. All caught and moved species will be marked on the rear and near the tail (not on the top of the animal to avoid an increase of predation rates) with permanent non-toxic marker to monitor whether the specie returned. In this case the construction site needs to be fenced. [MM6-24]</td>
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<tr>
<td>Hunting</td>
<td>Disturbances of species due to construction work may lead to changed living modes of wildlife. A possible change may be the shifting of the normal habitat.</td>
<td>To prohibit workers from hunting and produce awareness materials such as: [MM6-22]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor</td>
<td>Contractor</td>
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<td></td>
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<td>Signs;</td>
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<td>Training manuals and material;</td>
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<td>Posters;</td>
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<td>Brochures;</td>
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<td>Toolboxes.</td>
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<td>The Contractor is working under ISO 14001</td>
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<tr>
<td>Impact</td>
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<td>Monitoring measures</td>
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</tbody>
</table>
| Solid and liquid wastes | Domestic wastes may attract some wildlife species to the site which may initially threaten the workers on the site. The waste may threaten the animals as well, if it is contaminated with hazardous wastes produced by the construction activities. This impact is of medium magnitude. | To collect all wastes in sealed containers; to be disposed in proper disposal sites; [MM6-14]  
To prevent feral and wild animals from using the solid waste sites for feeding. [MM6-23]  
A completely closed container must be built to collect domestic wastewater resulting from workers. It must be emptied frequently and transported to the nearest municipal wastewater treatment plant. [MM7-3]  
Technical inspection of trucks (e.g. for leakage) that stay on-site for long periods (such as excavation machinery and cranes) during construction; [MM7-11]  
Special considerations for fuel trucks and inspections of all vehicles and equipment for leaks before use near water during construction [MM7-12];  
Spill clean-up procedures must be in place, clean-up kits shall be carried in all vehicles and equipment during construction and operation phase; [MM7-13]  
Ensure safe storage and transfer of oils and waste oil during construction and operation phase. [MM7-14] | Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Recording in weekly or monthly Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found.  
[MM6-14] Contractor will present proof of proper disposal to Owners HSE team  
[MM6-23] Written warnings for non-compliance and disciplinary action | Contractor |
<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bat casualties</td>
<td>Bat appearance on the project site was not recorded up to date. Nevertheless the literature review shows that bat habitats exist in the Dana Biosphere Reserve.</td>
<td>To verify that results from the baseline study further investigations have to be conducted. If the occurrence of bats is detected, adequate mitigation measures have to be implemented. A minimum duration of bat monitoring is 1 year. Bat detection will be done with portable detectors during nightly transects at least twice a month. After gathering enough data, quantification on the significance of bat activities can be given. Nationally and internationally endangered species have to be protected in any case. [MM6-21]</td>
<td>Owner</td>
</tr>
</tbody>
</table>

- Any Fuel Storage tanks need to be placed away from main traffic routes and surface water features. [MM7-15]  
- Provided impermeable containment sufficient to hold 110% of the total volume of fuel stored in such tanks [MM7-16]  
- Conduct fuelling operations and use chemicals / solvents only over prepared impermeable surfaces [MM7-17]  
- Training for drivers and equipment operators, and others who use fuel, oil or other hazardous materials [MM7-18]  

- Responsibility to monitor bat activities and mortalities on the project site and the auditing thereof lies within the tasks of the Owner. If bat activity (enough to require mitigation) of nationally and or internationally endangered species or of bats species known to be at risk from turbines is found, a mitigation program will be implemented. This could include measures like the increase of cut-in wind speeds at peak activity of bats or targeted turbine shut down at peak activity of bats if increased cut-in wind speeds are not effective.  
  After setting mitigation measures bat activities have to be monitored for three years, including driven bat transects (as conducted in the preconstruction monitoring) and carcass searches
Impact | Description | Mitigation Measure [MM] | Monitoring measures | Responsibility
--- | --- | --- | --- | ---
Displacement and habituation | Displacement of resident birds such as larks, wheatears, warblers and other passerines is expected to be possible. Displacement could deprive the birds mentioned above from feeding and breeding on the project site due to disturbance. | Conduct follow-up researches on the impact of the project on the fauna. Comparison between existing species before and after the construction of the Wind Farm [MM6-26] | Follow-up research will be conducted and a reported will be issued. If significant negative impacts are revealed upon regional or international endangered species, adequate measures have to be established. Significant impacts are represented by the disappearance of such species from the project site or by reduction of their presence with more than 50% than in pre-construction phase. Mitigation of such impacts has to include recreation of suitable habitats for feeding and breeding. | Owner

Table 11-4: Mitigation and monitoring measures of the fauna **during operation phase**
<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Solid and liquid wastes| The amount of domestic wastes will be marginal during operation phase. The oily waste from maintenance work of the engines may be of importance although the quantities are not significant. The operator must ensure proper and adequate management of such waste according to the regulations and best practices. | - Collect all wastes in sealed containers to be disposed in proper disposal sites [MM6-14]  
- Develop a waste management plan to guide management of all wastes to be generated during operation [MM6-37]  
- Technical inspection of trucks (e.g. for leakage) that stay on-site for long periods (such as excavation machinery and cranes) during construction; [MM7-11]  
- Spill clean-up procedures must be in place, clean-up kits shall be carried in all vehicles and equipment during construction and operation phase; [MM7-13]  
- Ensure safe storage and transfer of oils and waste oil during construction and operation phase. [MM7-14]  
- Training for drivers and equipment operators, and others who use fuel, oil or other hazardous materials. [MM7-18] | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the Owner:  
  - Recording in periodical Site Supervisor Report  
  - Photo documentation in case evidence of non-compliance with MM is found.  
- [MM6-14] Contractor will present proof of proper disposal to Owners HSE team.  
- [MM6-14] - In case of non-compliance verbal and written warnings by Owners HSE staff, which can lead to disciplinary action, up to expulsion of non-compliant employees.  
- [MM6-37] Guidance of all waste to be generated during operation | Contractor                  |
<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Hunting by workers   | This impact is expected to be of low magnitude level due to the infrequent interaction of workers during the operational phase | To prohibit workers from hunting and produce awareness materials such as: [MM6-22]  
- Signs;  
- Training manuals and material;  
- Posters;  
- Brochures;  
- Toolboxes.  
The Contractor is working under ISO 14001 accreditation for environmental management. It is forced to care also for all its subcontractors. A Health and Safety and Environmental Manager must be on-site during the construction works. [MM6-11] | Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor and the Owner  
- Recording in periodic Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found.  
- Written warnings for non-compliance and disciplinary action | Contractor and Owner |
| Accidental killing   | Accidental killing of animals e.g. by vehicles from service.                | To report any accident to the Owner. The Owner reports all accidents to the lenders[MM6-20]  
To reduce vehicle movements (preferably only for maintenance works) and supervise speed limits (20 km/h on graveled roads) of the service vehicles during the operation phase [MM6-18] | Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor and the Owner  
- Recording in periodic Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found. | Contractor and Owner |
| Disturbance and noise| Vehicles on the site may cause disturbance on the fauna, especially on species that got currently used | Reduce vehicle movements (preferably only for maintenance works) and supervise speed limits (20 km/h on graveled roads) of the service vehicles during the operation phase [MM6-18] | Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor and the Owner  
- Recording in periodic Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found. | Contractor and Owner |
### Table 11-5: Mitigation and monitoring measures of the avifauna during construction phase

<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Impact to the WTG.                    | This impact is expected to be of low magnitude level due to the fact that vehicle movements close to the WTG are rare during the operational phase.                                                       | ☑ Protect inlets at WTG that birds and bats are not able to enter the turbines for refuge or to nest there [MM6-33] | - Recording in periodic Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found. | Contractor            |
| Good Maintenance                      | There are some inlets at the WTG (e.g. at fans) which potentially can be used by birds or bats for nesting or refuge                                                                                         | ☑ Protect inlets at WTG that birds and bats are not able to enter the turbines for refuge or to nest there [MM6-33] | [MM6-33] Proof by photo documentation by Site Supervisor                           | Contractor            |
| Bird nests on the project site        | If birds are breeding on the project site construction activities will harm the juvenile birds as long as they cannot leave their nests.                                                                  | ☑ Before the breeding period starts all construction sites will be cleared of the topsoil to avoid nesting activities. [MM6-49]  
☑ The IOE will look for bird nests at the construction site (including crane pads, roads, turbine bases, etc.) shortly before the start of construction work. If nests are found Jordanian legislations on nesting birds will be followed. If endangered (according to the Annex 1 of the Bird Directive) nesting species are found it has to be reported and assessed if construction activities can be suppressed. | ☑ Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
☑ Supervision from the Owner:  
- Recording in weekly or monthly Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found.  
[MM6-36] Contractor reporting to Owners | Contractor            |
<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision prevention</td>
<td>Collisions between birds and guy wires of meteorological masts and overhead cables may occur.</td>
<td>① Choose Wind Farm layout with least impact on known avifauna flight paths; [MM6-28]</td>
<td>① [MM6-28] Comprehensive bird monitoring was carried out during the planning phase and before the construction of the Wind Farm. Several independent parties were involved. Collision risk modeling was carried out. The most western turbines were moved further to the east to reduce collisions with local species; ② [MM6-30] Proof by photo documentation by Site Supervisor if necessary.</td>
<td>① All MMs hereunder Owner, except of ② [MM6-29] Contractor; ③ [MM6-30] Contractor;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>② Underground cables instead of overhead will be constructed; [MM6-29]</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>③ Mark guy wires with barrier tape or similar objects (depending on local conditions) for better visibility. [MM6-32]</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>④ To increase the visibility for birds, and also for aviation reasons, each tip of the rotor blades will be painted with two red stripes each of a size of 6 meter. [MM6-30]</td>
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</tbody>
</table>
Table 11-6: Mitigation and monitoring measures of the avifauna *during operation phase*

<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision</td>
<td>Collisions between birds as mentioned in the ESIA and the wind turbines can happen during the operation phase. Furthermore collision with guy wires meteorological mast to the ground may occur.</td>
<td>Reporting of any dead birds or bats below or in the vicinity of the turbines [MM6-41]</td>
<td>[MM6-41] Proof by photo documentation by finder and immediate reporting (date, time, location, specie, size, photo) to Owner is required</td>
<td>All MMs hereunder Owner, except of [MM6-32] The Owner of the mast is responsible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduct bird monitoring and mortality monitoring to analyze impacts of the Wind Farm on the avifauna; The frequency of this monitoring is described in chapter 11.3. [MM6-31]</td>
<td>[MM6-31] and [MM6-40] Bird monitoring as an obligation during the first three years of operation with emphasis on the migration periods (spring and autumn), including survey of breeding birds and carcass searches. A bird monitoring plan is detailed in chapter 11.3.</td>
<td>[MM6-32] The Owner of the mast is responsible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduct periodical carcass searches of birds and bats. [MM6-47]</td>
<td>[MM6-47] The frequency of carcass searches is defined in chapter 11.3.4.</td>
<td>[MM6-39] Owner, notification in case of findings also required from Contractor, after start of construction phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collect dead animals (e.g. sheep, goat, camel) from the site which attract birds (e.g. Griffon Vultures). This mitigation measure will start at least six months before construction. [MM6-39]</td>
<td>[MM6-39] Reporting of any dead animals found in the Wind Farm area which may attract birds</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Create bait places for scavenger species at appropriate places outside the Wind Farm. A common evaluation with Dana / RSCN, lenders and or other stakeholders if such mitigation is appropriate. This mitigation measure will start at least six months before construction. [MM6-40]</td>
<td>[MM6-40] It must be observed (for example with remote cameras) if bait places are accepted by local birds. If this mitigation is proofed to be ineffective, it could be stopped on demand.</td>
<td></td>
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<td></td>
<td></td>
<td>Removal of stone piles (except of archaeological valuable stone piles) existing in a 100 m range of each turbine (stone piles are generated by land owners who remove the stones from agricultural land artificially creating very good habitats for reptiles – for hiding and sunbathing- which attracts avian raptors, especially common and lesser kestrels). Prevention measures to avoid the creation of such stone piles have to be conducted throughout the entire life of the project.</td>
<td>[MM6-38b*] Reporting of birds in collision risk area incl. number, time, height and behavior and reporting if shut-down successfully avoided a collision.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[MM6-46] Proof by photo documentation by Site supervisor</td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>Description</td>
<td>Mitigation measure [MM]</td>
<td>Monitoring measures</td>
<td>Responsibility</td>
</tr>
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<td>------------------</td>
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</tr>
</tbody>
</table>
| Shut down turbines if large numbers of migrating birds or nationally or internationally endangered species are observed on the project site in rotor height. An appointed IOE shall be enabled to temporarily shut-down individual turbine(s) to avoid collisions during the migration periods and for the residential sensitive species such as Griffon Vulture (*Gyps fulvus*). [MM6-38b]
| Electrocution    | As with electricity projects in general, collisions with transmission lines may occur. The electricity in the Tafila Wind Farm is transferred to a substation. In the substation the voltage is stepped up and fed into the transmission line. | Conduct periodical bird carcass searches underneath overhead power lines belonging to the project. If necessary, derive possible mitigations. [MM6-35] | MM6-35] Proof by photo documentation by finder and immediate reporting (date, time, location, specie, size, photo) to Owner is required | [MM6-35] Owner, notification also required from Contractor |

* In the ESIA revision 1 and in its 1st supplement this Mitigation Measure was referred to as [MM 6-38] and was correct here in to be [MM6-38a] (for herbicides) and [MM6-38b] (for collision avoidance).
11.3. **Avifauna Monitoring Plan**

11.3.1. **Preconstruction monitoring**
Preconstruction monitoring will be conducted in the summer period 2013 (19th May, 2013 till mid of August), in the autumn migration period 2013 (mid of August till end of October) and in the winter period 2013/2014 (November till end of February) by independent ornithological experts.
For the summer and winter period this monitoring will comprise avifauna monitoring on 12 hours per vantage point (VP) (three vantage points) per month. The VPs were defined in during the spring migration monitoring and are displayed in the 1st supplement of the ESIA.
For the autumn migration period the same approach will be undertaken as done in the spring migration monitoring 2013 which is described in the 1st supplement of the ESIA. This will comprise 12 man days per week with 8 hours of observation on two VP out of three. The locations of these VP are the same as for the summer/winter VP.
Records will be taken on the same recording sheets as used in the spring migration monitoring.
Responsible for the preconstruction monitoring is the Owner.

11.3.2. **Construction Monitoring**
After the monitoring during winter 2013/2014 monitoring with a fixed schedule will stop. There will be an environmental expert on the site to monitor the construction sites for fauna [MM6-24 and MM6-36] (responsibility lies within the scope of the Contractor), to search the project site for dead animals [MM6-39] (responsibility lies within the scope of the Owner), to care for the bait places for scavenger species [MM6-40] (responsibility lies within the scope of the Owner) and to watch the avifauna flying over the project site (responsibility lies within the scope of the Owner). Therefore avifauna monitoring during construction will not be as comprehensive as during the preconstruction monitoring. All avifauna findings will be recorded on the same recording sheets as used in the spring migration monitoring.

11.3.3. **Operation monitoring**
The different avifauna monitoring procedures during the operation phase will be conducted in the first three operation years and will be repeated in year 5, year 10, year 15 and year 20 of the operation. To change the frequency of the monitoring the results of the monitoring will be reviewed annually.
Changes in the monitoring plan will be agreed with an independent ornithological expert (IOE).
The monitoring of the operation phase will start with the operation of the Wind Farm. Furthermore monitoring with the same effort as described below will be done during all WTG tests when the rotor is moving.
Responsible for the avifauna monitoring during operation is the Owner.

**Griffon Vulture Monitoring**
To secure the population of the locally endangered Griffon Vulture, turbine shut downs are required.
Therefore the project site has to be monitored every day for the whole year, unless weather conditions do not allow for (e.g. bad weather with no visibility, heavy snow or dust storms). Under such conditions the observers are released from monitoring.
The observation will predominantly be done from vantage point 1 of the spring 2013 migration monitoring.
All avifauna findings will be recorded on the same recording sheets as used in the spring migration monitoring.

Daily monitoring continues for the shorter of either 10 hours per day or starting two hours after sunrise and ending two hours before sunset. If there are distinct patterns of Griffon Vulture movements that prove an update to this is appropriate this can be agreed with an IOE annually. The effectiveness of the observation point and of the observation hours requires regular review. The ornithologist will immediately interact with the Wind Farm operator in case of a needed shut down of single or several turbines if Griffon Vultures are approaching the Wind Farm. The operator will be responsible to follow the instructions of the ornithologist in case of potential collision risk event. According to the turbine manufacturer the turbine shut down time is approximately 30 seconds which has to be considered by the ornithologist to shut down turbines in due time. This monitoring requires an annual review. If it is revealed to be ineffective or unnecessary as the Griffon Vultures are avoiding the Wind Farm, the frequency of monitoring can be reduced. Nevertheless it might be also necessary to follow this strategy for the whole project lifetime.

**Migration Monitoring**

Further to the Griffon Vulture observation the migration seasons requires additional avifauna monitoring. The spring migration season is considered to start in the beginning of March and ends in mid-May. The autumn migration season lasts from mid-August till the end of October. Both periods are flexible to the observed migration and may start or end earlier/later.

For the migration monitoring it is required to employ two additional ornithologists (1 observer for the Griffon Vultures and 2 observers for the migration). All three observers will be enabled to shut down single or more turbines if species of conservation concern (irrespective of number) or more than 10 birds in a flock pass the Wind Farm in height of the rotor swept area. Each year this monitoring measure and the turbine shut down strategy will be reviewed for its necessity and discussed with an IOE.

In year 5, year 10, year 15 and year 20 of the Wind Farm operation the migration has to be monitored at least for with the same approach as done in the spring 2013 migration monitoring which can be cancelled if agreed with an IOE.

All avifauna findings will be recorded on the same recording sheets as used in the spring migration monitoring.

**Breeding Bird Monitoring**

The breeding bird survey needs be done in the first three operation years and will be repeated in year 5, year 10, year 15 and year 20 of the operation. It will be based on the same approach as undertaken during the spring migration monitoring, which was done according to the Scottish Natural Heritage Guidance on Methods for Monitoring Bird Populations at Onshore Wind Farms (January 2009) and the Scottish Natural Heritage Guidance “Survey methods for use in assessing the impacts of onshore wind farms on bird communities”.

The same protocol papers used during the spring migration monitoring will be used to record findings. The transects will be completed in the early morning and will be the same as defined in spring 2013. On an annual basis the findings will be reviewed and discussed with an IOE. Based on these discussions the frequency of breeding bird monitoring can be changed.
11.3.4. Carcass searches

Mitigation measure [MM6-47] requires carcass searches of birds and bats underneath the wind turbines at least during the first three operation years of the Tafila Wind Farm. The frequency of the carcass searches will be discussed annually with an IOE. The decisions are based on the results of the field surveys and scavenger removal trials which are described below.

The carcass searches will show the effectiveness of mitigation measures such as turbine shut down or bait places for scavenger species. Furthermore the carcass search measure allows to estimate the annual number of avian and bat fatalities by the project.

The carcass searches will be conducted throughout the whole year. During the migration periods (approximately beginning of March till mid-May and mid-August till the end of October) the carcass searches will be conducted on a weekly base, outside the migration periods the carcass searches will be conducted twice per month.

The first carcass search will be conducted within the first 30 days of the Wind Farm operation.

All carcasses that are found, regardless of the specie, will be recorded and the cause of death will be determined, if possible. The total number of collisions will be estimated by adjusting for removal bias, searcher efficiency bias and the sampling effort. Carcasses where the cause of death is not apparent will be included in the fatality estimate which will lead to an overestimate of the true number of casualties of the project.

The area of carcass searches will be 130m x 130m with each plot centered on a turbine, the site oriented north/south, east/west. The plots will be marked at each corner. Transects will be laid in this plot that will be walked each time as precise as possible, using compass and GPS. The transects are 10m apart, with the searcher looking 5 m on either sides. The duration for the carcass search per turbine will need between 1.5 and 2.5 hours, depending on the terrain.

Each found carcass will be recorded according to the following:

- **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 with signs of being fed upon by predators/scavengers or a part of a carcass such as a wing, skeletal remains, legs, etc.;
- **Feather spot** – 10 or more feathers or two or more primaries at one location indicate a carcass which was removed or eaten by a predator/scavenger

Found carcasses will be labeled and frozen for future reference, together with a copy of the data sheet that is recorded for each carcass finding. The records will include the following:

- **Specie**;
- **Sex**;
- **Age** (if possible);
- **Date of collection**;
- **GPS location**;
- **Condition of the carcass (intact, scavenged or feather spot)**;
- **Photo of the carcass as found on the site**;
- **Map showing the infrastructure of the site and the spot where the carcass was found**;
- **Further comments on the cause of death**.
If carcasses are found by maintenance personnel or others, the finding will be documented using a reporting form which is kept in each on-site vehicle. The Environmental Manager will be informed or delegated carcass searcher will be informed to conduct the complete “carcass procedure” as described above.

If a carcass is found outside the search area, this finding will be treated as incidental recovery. Findings in the search area, but outside a scheduled search are included in the fatality estimation.

Injured species that are found will be carefully captured by a trained technician and will directly be brought to a wildlife rehabilitation center or veterinary clinic.

To estimate the efficiency of the carcass searches searcher efficiency and carcass removal trails will be conducted in three similar habitats like the Wind Farm area, at least 1 km away. The project site is not used for this to reduce the attraction of scavengers to the Wind Farm. The three sites will be marked like the search regions around the wind turbines.

During each trail approximately 15 carcasses will be placed on the ground. The carcasses will be dropped from a waist height to the ground. The carcasses for the removal trails will be species such as chickens (including dark colored species) and pigeons. For bat carcass removal trails small brown birds or bad carcasses will be used. All carcasses for this purpose will be marked discreetly to identify them later. The GPS location of each carcass will be noted and signed on a map.

Depending on the weather conditions these trails will take place in March, late September and January for 20 days. The trails will be checked on day 1, 2, 3, 4, 7, 10, 14 and 20. The state of each carcass will be noted as described above.

On completion of the scavenger removal trials the frequency of carcass searches may be modified.
12. Geology, hydrology and hydrogeology

12.1. Introduction

The selected project site is located in a desert-like area with numerous hills composed of unconsolidated soil and rocky ground of different grain-sizes (sand, gravel, pebble-size and larger stones of at least 5-10 cm diameter, basically made of the mineral chert).

The vegetation in the project area is generally sparse. Buildings and trees in the site are very limited. Only rural houses and trees close to the nearest village exist permanently in the area.

Water resources in the study area consist of three sources, namely groundwater resources, surface water and treated wastewater sources. Groundwater resources in the study area are represented by the pumped wells and the springs encountered in the catchment area, while surface water includes spring flow and flood flow. It is to be noted that there are no spring water flows in the immediate project area, and that the only surface water which would possibly be present would be in the form of flood flows which would temporarily result from rain or snowfall in the project area.
### 12.2. Mitigation and monitoring measures

Table 12-1: Mitigation and monitoring measures for geology and water resources during all phases as described below

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measure</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Wadi crossings by construction traffic                                 | - If possible conduct construction works when no water flow is expected and allowance of drainage. [MM7-1]         | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
 - Supervision from the Owner:  
    - Recording in Daily Site Supervisor Report  
    - Photo documentation in case evidence of non-compliance with MM is found.          | Contractor                                                                |
| Water demand for construction camp                                     | - Minimize water consumption / abstraction as much as possible. [MM7-2]                                           | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
 - Supervision from the Owner:  
    - Recording in Daily Site Supervisor Report  
    - Photo documentation in case evidence of non-compliance with MM is found.          | Contractor                                                                |
| Contamination of water on site by wastewater from construction camp    | - A completely closed container must be built to collect domestic wastewater resulting from workers. It must be emptied frequently and transported to the nearest municipal wastewater treatment plant. [MM7-3] | - Acceptance and documentation of cesspool construction by Site Supervisor  
 - Contractors will present proof of proper disposal to HSE team  
 - In case of non-compliance verbal and written warnings by HSE staff, which can lead to disciplinary action | Contractor                                                                |
<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measure</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Dust, raised by vehicles during construction that may lie down on plants and hinder their photosynthetic processes or impact human residences | - In order to reduce the use of water for dust-reduction purposes, excavated piles of soil will be covered with tarpaulins during times of unfavorable weather conditions, where possible, instead of being watered to reduce dust production. [MM7-4]  
- Special dust suppression material could be used instead of water. [MM6-16] | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Photo documentation in case of evidence of non-compliance with MM is found. | Contractor |
| Sedimentation in wadis during construction                             | - Develop and implement an Erosion Control Plan in order to assess and minimize the flow of eroded soil to wadis due to rainwater and snowmelt runoff in the winter (sedimentation), manage erosion control system. [MM7-5] | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Photo documentation in case evidence of non-compliance with MM is found. | Contractor |
| Habitat loss or disruption during construction                          | - Soil excavation for foundations will cause habitat loss or disruption around the turbines. Nutrient rich top soil can be stored at special sites to be reused for backfill activities. [MM7-6]  
- Deeper ground layers, such as limestone, shall be transferred for reuse elsewhere in filling or stones crushing. [MM7-7] | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Photo documentation in case evidence of non-compliance with MM is found.  
  - [MM7-7] Proof of transfer to be submitted by Vestas, if applicable | Contractor |
<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measure</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erosion caused by heavy rainfall</td>
<td>Minimizing the amount of earth disturbed during design and construction phase; [MM7-8]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor.</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>Avoiding construction on steep slopes wherever appropriate during design and construction phase; [MM7-9]</td>
<td>Supervision from the Owner:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Develop and implement erosion control plan to cover all site operations. Review and revise as needed; [MM7-10]</td>
<td>- Recording in weekly or monthly Site Supervisor Report</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cover excavated soil with suitable tarpaulins. For spoil that cannot be used at all or for some extend period of time, provide erosion control protection. [MM7-4]</td>
<td>- Photo documentation in case evidence of non-compliance with MM is found.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Store soil in prepared designated areas approved by authorities (if necessary) and protected from erosion (to be specified in erosion control plan) [MM7-19]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution of water through spills of</td>
<td>Technical inspection of trucks (e.g. for leakage) that stay on-site for long periods (such as excavation machinery and cranes) during construction; [MM7-11]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor.</td>
<td>Contractor</td>
</tr>
<tr>
<td>leaks of fuels and oils</td>
<td>Special considerations for fuel trucks and inspections of all vehicles and equipment for leaks before use near water during construction [MM7-12]; Spill clean-up procedures must be in place, clean-up kits shall be carried in all vehicles and equipment during construction and operation phase; [MM7-13]</td>
<td>Supervision from the Owner:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure safe storage and transfer of oils and waste oil during construction and operation phase. [MM7-14]</td>
<td>- Recording in periodical Site Supervisor Report</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training for drivers and equipment operators, and others who use fuel, oil or other hazardous materials [MM7-18]</td>
<td>- Photo documentation in case evidence of non-compliance with MM is found.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[MM7-18] Approval from authorities if necessary and documentation thereof</td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>Mitigation measure [MM]</td>
<td>Monitoring measure</td>
<td>Responsibility</td>
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</tr>
</tbody>
</table>
| Pollution of water through domestic solid waste (rubbish) | ✈️ Waste will be collected in special containers and transported periodically to the nearest solid waste disposal area during construction and operation phase [MM6-14] | ✈️ Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
✈️ supervision from the Owner:  
- Recording in weekly or monthly Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found.  
✈️ [MM6-14] Contractor will present proof of proper disposal to Owners HSE team.  
✈️ [MM6-14] - In case of non-compliance verbal and written warnings by Owners HSE staff, which can lead to disciplinary action, up to expulsion of non-compliant employees. | ✈️ Contractor |
| Pollution of water through accidental leakage of Fuel Storage tanks or during fuelling of tanks during construction | ✈️ Any Fuel Storage tanks need to be placed away from main traffic routes and surface water features. [MM7-15]  
✈️ Provided impermeable containment sufficient to hold 110% of the total volume of fuel stored in such tanks [MM7-16]  
✈️ Conduct fuelling operations and use chemicals / solvents only over prepared impermeable surfaces [MM7-17] | ✈️ Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
✈️ supervision from the Owner:  
- Recording in weekly or monthly Site Supervisor Report  
- Photo documentation in case evidence of non-compliance with MM is found. | ✈️ Contractor |
13. Noise

13.1. Introduction
Noise from wind turbines has the potential to cause annoyance to people living near such installations. Sensitive noise receptors are considered to be dwellings, but not roads or footpaths. The planned Wind Farm is located in a remote area, where no occupied dwellings exist within a distance of about 1.1 km.

The Vestas V112 reaches its highest noise emission level of 106.5 dB (measured noise level stays below) at a wind speed of 7 m/s; at wind speeds above 7 m/s the noise emission level does not increase.

Noise which may impact the surrounding dwellings will occur during:

- The construction phase from machinery and traffic;
- The operational phase of the WTG;
- The decommissioning phase from machinery and traffic.
### 13.2. Mitigation and monitoring measures

Table 13-1: Mitigation and monitoring measures for noise impacts during project phases as described below

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbance of people through noise from construction / decommissioning works</td>
<td>Limit the working hours during construction and decommissioning from Saturday to Thursday 7 a.m. – 7 p.m. or if otherwise regulated by the authorities if possible [MM8-1]. Indeed, some flexibility is required during the delivery, erection of turbines and depending on weather conditions. Final time schedule of the transport movements will be clarified with the authorities and communities. Inform locals on the different construction/ decommissioning steps. Especially for blasting operations near areas open to the public [MM8-2] Equipment will be turned off when not in use; [MM8-3] The staff will be informed of any noise sensitive receptors in the vicinity of the site, and they will be advised regularly by the project manager of the quietest best practice methods of operating plant and tools and to report any damage to noise control measures immediately when they are identified; [MM8-4] Reduce noise for workers. [MM8-5]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor supervision from the Owner: - Recording in weekly or monthly Site Supervisor Report - Documentation of noise in case evidence of non-compliance with MM is found. [MM8-2] Meet the obligations of the SEP and keep records of all public communication during the construction [MM8-5] Staff shall be made aware of noise risks associated with the construction and the need for hearing protection when the situation requires it. Hearing protection shall be issued to staff in working areas where noise levels exceed the permissible standards;</td>
<td>Contractor</td>
</tr>
<tr>
<td>Disturbance of people through noise by WTG operation</td>
<td>The noise limits of the Jordan law at the receptors are not exceeded by the normal operation of the wind turbines. In case of any unforeseen reason it is possible to activate noise reduced operation at the turbines [MM8-6]; Similar to the mitigation that will be carried out for shadow</td>
<td>[MM8-6] If exceedance is assessed affected turbines could be reduced until compliance is proved; [MM8-7] Proof by photo documentation [MM8-8] Noise modeling according to ESIA [MM8-9] A measurement of noise immissions level at</td>
<td>[MM8-6] till [MM8-9] Owner [MM8-10] Contractor</td>
</tr>
<tr>
<td>Impact</td>
<td>Mitigation measure [MM]</td>
<td>Monitoring measures</td>
<td>Responsibility</td>
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</tr>
<tr>
<td>Impact Mitigation measure [MM]</td>
<td>flickering, maps of noise propagations will be published on information boards within the Wind Farm to allow seasonal resident, such as Bedouins, to build up their tents in less affected areas of the Wind Farm [MM-7]; The Wind Farm layout in Tafila was optimized in order to minimize the impact of noise by keeping a sufficient distance to the surrounding properties. This has been one of the key factors during the design process [MM-8]; Noise immission measurement at the closest receptor will be conducted according to DIN-ISO 9613-2 after construction of the Wind Farm [MM-9]; To verify the guaranteed sound power level, one or more single turbines could be tested on its emission level following the IEC 61400-11 guideline. This will be done by an accredited independent company [MM-10].</td>
<td>representative receptors defined in the ESIA will be carried out by independent expert. [MM-10] Measurement from Independent Expert instructed by the Contractor</td>
<td></td>
</tr>
</tbody>
</table>
14. **Shadow flicker**

14.1. **Introduction**
Shadow flicker may occur when the rotating blades of a wind turbine pass through the sun’s rays seen from a specific location. This creates a fast-moving shadow with a “flicker” effect, which can be seen inside of homes and other buildings. The impact on nearby dwellings depends on conditions such as weather, topography, or the distance between the turbine and the building.

Predicted exposure of a particular building to this shadow flicker effect is measured in minutes per day and cumulative annual hours.

14.2. **Mitigation and monitoring measures**
The shadow flicker assessment has shown that, due to the movement and the different positions of the sun, it is not possible to exceed the annual and daily limits of accumulated shadow flicker at the closest receptors. Following there is no need for mitigation measures. Should these limits be exceeded by the planned project, a shut-off plan for shadow-flicker will be developed.

Seasonal residents are known to temporary pass through the project area and may rear sheep and goats between the WTG. To offer the possibility of choosing the best spots to up build tents for the shepherds a shadow map was calculated and will be published on information boards in the Wind Farm [MM9-1]. This map recommends areas between the turbines where the impact of shadow flickering is less significant. Responsibility of installation before operation phase lies within the Owner of the Wind Farm and must be documented within periodical reporting to the Lenders.
15. Air quality

15.1. Introduction
This chapter describes the potential impacts on air quality associated with the Tafila Wind Farm. The primary impact on air quality caused by the planned Wind Farm will be dust which is created and dispersed during the construction and decommissioning phases of the project. Excavations and works expose soil to the wind, which may be blown away as dust. Vehicles driving on the gravel roads on the site may also generate dust.

This dust is distributed by the air and may come to rest on nearby houses or other buildings, potentially creating a nuisance or health problem for people who frequent these locations.

The production and distribution of dust also depends in large part on the weather. Dry, windy conditions encourage dust production and may distribute the produced dust further, while wet weather or low wind speeds discourage the production of dust.

15.2. Mitigation and monitoring measures
Dust sources on the project site are located at approximately four times more than the distance at which sensitivity is considered to be low to negligible. In addition to this, baseline measurements show that the air quality in the vicinity of the project site is of good quality, which decreases the sensitivity of the receptors.

Because the site can be described as desert-like, prone to long periods of dry, windy weather, it is possible that unforeseen, extreme weather cases cause sand storms. The Project Owner is not responsible for any dust control measures during sand storms. If windy weather conditions lead to dust control being needed, any or all of the measures may be employed at the discretion of the construction supervisor.
Table 15-1: Mitigation and monitoring measures for impacts on the air quality during project phases as described below

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
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</thead>
</table>
| Construction work and vehicles raise dust which may settle on plants in the close surrounding covering the vegetation or disturb human residences. | ✏️ As it is necessary for weather conditions any transportation or storage on site of aggregate or fine materials will be properly enclosed so that dust escape is avoided; [MM10-1]  
✏️ Drivers of construction vehicles must be instructed not to leave vehicles idling when possible, in order to reduce the emission of exhaust fumes; [MM10-2]  
✏️ Dust control by usage of dust suppression substances. [MM6-16]  
✏️ Vehicles shall keep to a speed limit of 20 km/h on gravel access roads on site to minimize dust generation; [MM10-3]  
✏️ In case of extreme easterly winds, earth moving works may be reduced in order to avoid material impacts at the residential areas in Gharandil and at the Lafarge Rashidiya settlement. [MM10-4]  
✏️ Maintain vehicles, motors, and emergency generators to manufacturers’ specifications to minimize emissions [MM10-5] | ✏️ Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor supervision from the Owner:  
- Recording in weekly or monthly Site Supervisor Report  
- Documentation of noise in case evidence of non-compliance with MM is found. | ✏️ Contractor |
| Operation: Maintenance and repair vehicles raise dust which may settle on plants in the close surrounding covering the vegetation or disturb human residences. | ✏️ Vehicles shall keep to a speed limit of 20 km/h on gravel access roads on site to minimize dust generation; [MM10-3]  
✏️ Drivers of vehicles must be instructed not to leave vehicles idling (if necessary at all during operation), in order to reduce the emission of exhaust fumes. [MM10-2] | ✏️ Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor supervision from the Owner:  
- Recording in weekly or monthly Site Supervisor Report  
- Documentation of noise in case evidence of non-compliance with MM is found. | ✏️ Contractor |
<table>
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<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
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</table>
| Decommissioning work and vehicles raise dust which may settle on plants in the close surrounding covering the vegetation or disturb human residences. | ☑️ All vehicles carrying bulk, dust-producing materials into or out of the site will be covered to prevent dust emission; [MM10-1]  
  ☑️ Dust control by usage of dust suppression substances. [MM6-16]  
  ☑️ Vehicles shall keep to a speed limit of 20 km/h on gravel access roads on site to minimize dust generation; [MM10-3]  
  ☑️ Drivers of vehicles must be instructed not to leave vehicles idling (if necessary at all during operation), in order to reduce the emission of exhaust fumes. [MM10-2] | ☑️ Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor supervision from the Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Documentation of noise in case evidence of non-compliance with MM is found. | Contractor       |
16. Cultural heritage and archaeology

16.1. Introduction

An archaeological and cultural heritage survey was carried out by a team of specialists in order to establish the archaeological baseline data. The desktop stage of this study was based on literature review, research of databases of archaeological locations, and aerial map surveys. The desktop stage was followed by physical surveys of the project area, during which time the site was thoroughly examined by representatives from the Jordan Department of Antiquities, and locations of archaeological findings were logged in order to create a full database of critical areas in the project area.

The results of the archaeological survey show that archaeological artifacts and remains are widely spread and common on the Wind Farm site, as well as throughout the mountainous area on Jordan’s western half. Accordingly, the preliminary locations of a number of WTG were found to conflict with archaeological findings, and alternative locations were chosen. The final wind turbine layout does not conflict with archaeological and cultural heritage sensitive sites.

Proper mitigation measures to protect all the archaeological sites will be implemented during the construction phase to ensure areas are protected to the fullest degree reasonably possible.
### 16.2. Mitigation and monitoring measures – Construction Phase

**Table 16-1: Mitigation and monitoring for impacts on cultural heritage during construction**

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring Measure</th>
<th>Responsibility</th>
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</thead>
</table>
| Destruction or damage to visible or buried archaeological remains through direct vehicle impact on archaeological remaining, such as compaction, disturbance, wheel-slip, collision. | - Identification of sensitive areas to contractors; [MM11-1]  
- Keep vehicles on the construction site and on the tracks. [MM11-2] | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Documentation of noise in case evidence of non-compliance with MM is found.  
- In case of non-compliance verbal and written warnings which can lead to disciplinary action, up to expulsion of non-compliant employees. | Contractor  
- [MM11-1]  
Owner |
| Removal of archaeological layers by excavation | - Avoidance of known sensitive areas; [MM11-3]  
- Temporary presence of trained archaeological observers during excavations. [MM11-4]  
- Prepare and implement chance find procedure in line with IFC Performance Standard 8 [MM11-5]  
- In case of encountering actual or suspected archeological remains, an immediate stop of construction shall take place and the procedure for the preservation of cultural heritage as attached in Attachment 1 will be initiated. The JDA (Jordan Department of Antiquities) shall be informed immediately [MM11-7]  
- Training / briefing of relevant managers (e.g. project manager and others) of the Construction company [MM11-8] | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Supervision from the Owner:  
  - Recording in weekly or monthly Site Supervisor Report  
  - Documentation of noise in case evidence of non-compliance with MM is found.  
- Submission of supervision report by expert(s) with appropriate documentation  
- Documentation of following the procedure, in case a chance-find is made | [MM11-3], [MM11-8]  
 Contractor  
[MM11-4], [MM11-5], and [MM11-8]  
 Owner |
### 16.3. Mitigation and monitoring measures – Operation Phase

Table 16-2: Mitigation and monitoring for impacts on cultural heritage during operation

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring Measure</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destruction or damage to visible or buried archaeological remains through vibration from vehicles</td>
<td>Keep vehicles on the construction site and on the tracks. [MM11-2]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor&lt;br&gt;-supervision from the Owner:&lt;br&gt;-Recording in weekly or monthly Site Supervisor Report&lt;br&gt;-Documentation of noise in case evidence of non-compliance with MM is found.</td>
<td>Contractor</td>
</tr>
<tr>
<td>Creation of tracks and routes</td>
<td>Instruct contractor to stay on the construction site and in direct area of the tracks while constructing [MM11-9]</td>
<td>Supervision from the Owner:&lt;br&gt;-Recording in weekly or monthly Site Supervisor Report&lt;br&gt;-Documentation of noise in case evidence of non-compliance with MM is found.</td>
<td>Owner</td>
</tr>
<tr>
<td>Visible disturbance through presence of turbines, trackways, crane pads, etc.</td>
<td>Design Wind Farm layout and infrastructure with a view to minimizing impacts. [MM11-6]</td>
<td>Submission of final design for Wind Farm infrastructure by the Contractor and approval by Owner</td>
<td>Contractor</td>
</tr>
</tbody>
</table>

Impact | Mitigation measure [MM] | Monitoring Measure | Responsibility |
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<tbody>
<tr>
<td>Destruction or damage to visible or buried archaeological remains through direct vehicle impact on archaeological remaining, such as compaction, disturbance, wheel-slip, collision.</td>
<td>Keep vehicles on the construction site and on the tracks. [MM11-2]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor&lt;br&gt;-supervision from the Owner:&lt;br&gt;-Recording in weekly or monthly Site Supervisor Report&lt;br&gt;-Documentation of noise in case evidence of non-compliance with MM is found.</td>
<td>Contractor</td>
</tr>
</tbody>
</table>
17. Traffic and transport

17.1. Introduction

The main transportation, social and environmental effects will be due to the heavy goods vehicles (HGV) which will enter and exit the site during the construction and decommissioning phases of the Wind Farm.

Once the Wind Farm is operational, it is considered that the amount of traffic associated with the Wind Farm will be minimal and HGV will appear on site only in exceptional cases. During this time, only occasional maintenance and repairs will generate a small amount of traffic.
### Mitigation and monitoring measures

The following section establishes the measures that will be employed in order to avoid or mitigate various traffic-related effects.

#### Table 17-1: Mitigation and monitoring measures for impacts on traffic during construction phase

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measure</th>
<th>Responsibility</th>
</tr>
</thead>
</table>
| Hindrance to drivers of other motor vehicles                           | - Implementation of traffic management plan for transporting exceptional loads; [MM12-1]  
- Transportation in small convoys (conditional to transport company); [MM12-2]  
- Timed delivery to avoid peak traffic movements. [MM12-3]             | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Submission of documents by Vestas for a traffic management plan and proof of coordination with authorities  
- Recording in weekly or monthly Site Supervisor Report  
- Documentation of noise in case evidence of non-compliance with MM is found. | Contractor                                                                       |
| Decrease in traffic safety on transportation routes                    | - Set speed limit to 20 km/h on the Wind Farm site [MM10-3]  
- Reduce speed limit at sharp bends below 20 km/h [MM12-4]             | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor  
- Submission of documents by Vestas for a traffic management plan and proof of coordination with authorities  
- Recording in weekly or monthly Site Supervisor Report  
- Documentation of noise in case evidence of non-compliance with MM is found. | Contractor                                                                       |
| Increased levels of dust and dirt near or on roadways                  | - Construct last meters of project site roads as asphalted road to minimize dirt and dust on wheels by entering public roads. [MM12-5]                                                                                  | - Responsibility to limit impact, to submit proof of compliance if requested by JWPC and the auditing thereof lies within the tasks of the Contractor, under supervision from the Owner. | Contractor                                                                       |
18. Socio economics

18.1. Introduction
This section considers the socio-economic effects of the proposed Tafila Wind Farm. The proposed Wind Farm could have important positive and potentially some negative impacts on the local community and on the economy of the surrounding area. Considered socio-economic impacts are focus on the quality of life of local residents and business activity, both local and regional. Wider economic effects may well be felt on a national level.
## 18.2. Mitigation and monitoring measures

Table 18-1: Mitigation and monitoring measures for socio economic impacts during all project phases

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation measure [MM]</th>
<th>Monitoring measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact on Infrastructure</td>
<td>To protect the roads, trucks which will be used for transporting activities should have a gross weight within the axial permissible load [MM13-5].</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor</td>
<td>Contractor</td>
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<tr>
<td></td>
<td>Any occurred road damage caused during the construction and operation shall be repaired by the responsible company [MM13-6].</td>
<td>supervision from the Owner:</td>
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<tr>
<td></td>
<td>All materials shall be transported according to the health and safety manual and the local regulations [MM13-7]</td>
<td>- Recording in weekly or monthly Site Supervisor Report</td>
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</tr>
<tr>
<td>Restoration Concept</td>
<td>A restoration concept will be prepared prior to the decommissioning of the Wind Farm to identify activities for bringing back the original status of the project site. This shall be done for reclamation of land as well as for any residual impacts that may occur at that stage [MM13-8].</td>
<td>Implementation of such plan in line with the land owners contracts</td>
<td>Owner</td>
</tr>
<tr>
<td>Increase local employment opportunities</td>
<td>Employment of qualified local people in recruitment for skilled and non-skilled construction and operation staff; [MM13-1]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>supervision from the Owner:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Recording in weekly or monthly Site Supervisor Report</td>
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<td></td>
<td></td>
<td>- Documentation of noise in case evidence of non-compliance with MM is found.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>[MM13-1] Submission by the Contractor of proof of recruitment efforts and candidates' qualifications</td>
<td></td>
</tr>
<tr>
<td>Support of local businesses</td>
<td>Acquire all possible supplies, such as food and beverages and office supplies, from local stores during all project phases; [MM13-2]</td>
<td>Responsibility to limit impact, to submit proof of compliance if requested by JWPC and internal auditing thereof lies within the tasks of the Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>Impact</td>
<td>Mitigation measure [MM]</td>
<td>Monitoring measures</td>
<td>Responsibility</td>
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</tr>
</tbody>
</table>
| Use local vehicle maintenance workshops and oil change stations. [MM13-3] | Supervision from the Owner:  
-Recording in weekly or monthly Site Supervisor Report  
-Documentation of noise in case evidence of non-compliance with MM is found. |                                                                                      | Owner          |
| Providing noise and shadow flickering maps on boards, installed within the Wind Farm. Based on these maps tribes can choose the best locations to reside periodically without being affected by immissions [MM8-7] and [MM9-1] | Documentation of installed signs in periodical report |                                                                                      | Owner          |
| Compile a register of project affected persons and/or communities and provide details of compensations offered. Include the signed lease agreements in the register. [MM13-4] | Documentation and management in a register. Annual reporting to the lenders |                                                                                      | Owner          |

Further to the above listed supporting measures of the local society, Owner conducts a program of social improvements. The social programs are the following:
18.2.1. Partnership with the Royal Society for the Conservation of Nature (RSCN)

The Royal Society for the Conservation of Nature (RSCN) is Jordan’s foremost environment and sustainability organization and operates the Dana Nature Reserve, located approximately 5 km southwest of the project area. RSCN’s focus on environmental issues and their presence at the nearby Dana Reserve makes RSCN a natural choice for partnership with the Tafila Project.

The partnership with RSCN would bring expertise into quantifying and documenting the presence of the project on the local and regional environment, particularly the bird population. Findings from RSCN could be used to predict and analyze the impact of future Wind Farms on the Jordan environment.

18.2.2. Bird Monitoring by RSCN / Dana

During the construction and operation phase of the Wind Farm, local staff from the Dana reserve will be responsible for bird monitoring throughout the Wind Farm area.

18.2.3. Environmental Education Training at the Visitor Center

Following discussions with the Dana Reserve administration, JWPC will provide funds for the center to implement a unit for training the visiting school children on the environmental issues. This effort will be linked to be managed in conjunction with the Wind Farm Visitor Center (described in chapter 18.2.4 below) so that the center can organize supervised visits to the Wind Farm.

18.2.4. Visitor Information Center

It is planned to locate a visitor center in Dana or in the project site, which will also serve as a classroom area for local students visiting the project site. The visitor center will be staffed by JWPC and possibly RSCN representatives who will provide information on the features of the project, as well as the process of wind energy generation, and the local environment of the project area.

18.2.5. Local schools, university and municipality improvements

Improvements to local town infrastructure, in various forms possibly including high-efficiency heating / cooling / lighting, solar rooftop installations, communication equipment, and other possible improvements are planned to be provided by the project Owner. Provision of school equipment such as blackboards, or possibly computers, are planned for the schools in the vicinity. Such improvements will be discussed in detail with the local municipalities.

The technical university of Tafila will be sponsored possibly with financial support or educational collaboration

18.2.6. Land Lease Revenues

Local land owners have the advantage of participating in the economic presence of the project due to their annual revenues from the land lease agreements with JWPC.
19. Attachment 1: Archaeological Procedures for The Preservation Of Cultural Heritage

20. Attachment 2: International EHS Guidelines and Performance Standards

- IFC Performance Standard PS1: Assessment and Management of Environmental and Social Risks and Impacts
  
  Updated_PS1_Assessment and Management of Environmental and Social Risks and Impacts.pdf

- IFC Performance Standard PS2: Labor and Working Conditions
  
  Updated_PS2_Labor and Working Conditions.pdf

- IFC Performance Standard PS3: Resource Efficiency and Pollution Prevention
  
  Updated_PS3_Resource Efficiency and Pollution Prevention.pdf

- IFC Performance Standard PS4: Community Health, Safety and Security
  
  Updated_PS4_Community Health, Safety and Security.pdf

- IFC Performance Standard PS5: Land Acquisition and Involuntary Resettlement
  
  Updated_PS5_Land Acquisition and Involuntary Resettlement.pdf

- IFC Performance Standard PS6: Biodiversity conservation and Sustainable Management of Living Natural Resources
  
  Updated_PS6_Biodiversity conservation and Sustainable Management of Living Natural Resources.pdf

- IFC Performance Standard PS7: Indigenous Peoples
IFC Performance Standard PS8: Cultural Heritage

ILO Core Conventions

- ILO Convention 29 on Forced Labor;
- ILO Convention 87 on Freedom of Association and Protection of the Right to Organize;
- ILO Convention 98 on the Right to Organize and Collective Bargaining;
- ILO Convention 100 on Equal Remuneration;
- ILO Convention 105 on the Abolition of Forced Labor;
- ILO Convention 111 on Discrimination (Employment and Occupation);
- ILO Convention 138 on Minimum Age (of Employment);
- ILO Convention 182 on the Worst Forms of Child Labor

EIB Covenant of Integrity

The Project participants declares the following:
“We declare and covenant that neither we nor anyone, including any of our directors, employees, agents, joint venture partners or sub-contractors, where these exist, acting on our behalf with due authority or with our knowledge or consent, or facilitated by us, has engaged, or will engage, in any Prohibited Conduct (as defined below) in connection with the tendering process or in the execution or supply of any works, goods or services for Tafila Wind Farm (the “Contract”) and covenant to so inform you if any instance of any such Prohibited Conduct shall come to the attention of any person in our organisation having responsibility for ensuring compliance with this Covenant.
We shall, for the duration of the tender process and, if we are successful in our tender, for the duration of the Contract, appoint and maintain in office an officer, who shall be a person reasonably satisfactory to you and to whom you shall have full and immediate access, having the duty, and the necessary powers, to ensure compliance with this Covenant. If

(i) we have been, or any such director, employee, agent or joint venture partner, where this exists, acting as aforesaid has been, convicted in any court of any offence involving a Prohibited Conduct in connection with any tendering process or provision of works, goods or services during the five years immediately preceding the date of this Covenant; or

(ii) any such director, employee, agent or a representative of a joint venture partner, where this exists, has been dismissed or has resigned from any employment on the grounds of being implicated in any Prohibited Conduct; or

(iii) we have been, or any of our directors, employees, agents or joint venture partners, where these exist, acting as aforesaid has been excluded by the EU Institutions or any major Multi-lateral Development Bank (including World Bank Group, African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank or Inter-American Development Bank) from participation in a tendering procedure on the grounds of Prohibited Conduct,

we give details of that conviction, dismissal or resignation, or exclusion below, together with details of the measures that we have taken, or shall take, to ensure that neither this company nor any of our directors, employees or agents commits any Prohibited Conduct in connection with the Contract

In the event that we are awarded the Contract, we grant the Project Owner, the European Investment Bank (EIB) and the Banks in general and auditors appointed by either of them, as well as any authority or European Union institution or body having competence under European Union law, the right of inspection of our records and those of all our sub-contractors under the Contract. We accept to preserve these records generally in accordance with applicable law but in any case for at least six years from the date of substantial performance of the Contract.”

For the purpose of this Covenant, Prohibited Conduct includes:

- **Corrupt Practice** is the offering, giving, receiving or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party.

- **Fraudulent Practice** is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation.

- **Coercive Practice** is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of any party to influence improperly the actions of a party.

- **Collusive Practice** is an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party

- **Obstructive Practice** is
  (a) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation; and/or threatening, harassing or intimidating any party to prevent it from
disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
(b) acts intended to materially impede the exercise of the EIB’s contractual rights of audit or access to information or the rights that any banking, regulatory or examining authority or other equivalent body of the European Union or of its Member States may have in accordance with any law, regulation or treaty or pursuant to any agreement into which the EIB has entered in order to implement such law, regulation or treaty;

- **Money Laundering** is defined in the Bank’s Anti-Fraud Policy
- **Terrorist Financing** is defined in the Bank’s Anti-Fraud Policy
- **Project Owner** means the person designated as such in the tender documents or the Contract.

- **EIB’s Statement of Environmental and Social Principles and Standards**
  
  ![eib_statement_esps_en.pdf](eib_statement_esps_en.pdf)

- **EIB Environmental and Social Practices Handbook**
  
  ![environmental_and_social_practices_handbook.pdf](environmental_and_social_practices_handbook.pdf)

- **EIB Anti-Fraud Policy**
  
  ![EIB_anti_fraud_policy_20080408_en.pdf](EIB_anti_fraud_policy_20080408_en.pdf)

- **Equator Principles**
  
  ![equator_principles.pdf](equator_principles.pdf)

- **World Bank EHS Guideline**
  
  ![General EHS Guidelines.pdf](General EHS Guidelines.pdf)