Environmental and Social Due Diligence of El Burullus Power Plant

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Environmental Alliance
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# Table of Contents

1. Introduction and Background ..................................................................................... 1  
   1.1 Introduction ........................................................................................................... 1  
   1.2 Project Description ............................................................................................... 3  
      1.2.1 Site Description ............................................................................................. 3  
      1.2.2 Technical Description .................................................................................. 5  
2. Due diligence findings ................................................................................................. 6  
   2.1 Methodology ......................................................................................................... 6  
      2.1.1 Meetings ........................................................................................................ 6  
      2.1.2 Desk Review .................................................................................................. 7  
      2.1.3 Site Visits ..................................................................................................... 9  
   2.2 Environmental Findings ...................................................................................... 9  
      2.2.1 Permits and Licences ..................................................................................... 9  
      2.2.2 Baseline Survey ............................................................................................. 10  
      2.2.3 Waste Disposal ............................................................................................. 10  
      2.2.4 Occupational Health and Safety Management ............................................ 10  
      2.2.5 Spill Control and Management .................................................................... 11  
      2.2.6 Air Emissions ............................................................................................... 11  
      2.2.7 Noise Emissions ........................................................................................... 11  
      2.2.8 Water Supply ............................................................................................... 12  
      2.2.9 Wastewater Discharge ................................................................................. 13  
      2.2.10 Hazardous Waste Generation and Management ....................................... 13  
      2.2.11 Other Aspects ............................................................................................ 13  
   2.3 Social Findings ..................................................................................................... 13  
      2.3.1 Land Acquisition .......................................................................................... 14  
3. Assessment of Due diligence findings ...................................................................... 15  
   3.1 Classification of Due Diligence findings .............................................................. 15  
      3.1.1 Comments Requiring Urgent Actions .......................................................... 15  
      3.1.2 Less Urgent Comments Requiring Corrective Actions ............................... 15  
   3.2 Proposed Corrective Action Plan ......................................................................... 18  
4. Conclusions and recommendations ......................................................................... 20  
Annex 1 Key permits for CNCPP .................................................................................. 21
List of Figures

Figure 1 El Burullus Power Plant Location Relative to El Burullus Lagoon inlet .................. 1
Figure 2 El Burullus power plant layout and boundaries ..................................................... 3
Figure 3 The location of El Burullus Power Plant ................................................................. 4
List of Tables:
Table 1 First Meeting at EEHC ................................................................. 6
Table 2 Second Meeting at EEHC ............................................................. 7
Table 3 Key permits for construction and operation of a power plant in Egypt .......... 9
Table 4 Minor due diligence comments ......................................................... 15
Table 5 Corrective Action Plan ................................................................. 18
### List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEAA</td>
<td>Egyptian Environmental Affairs Agency</td>
</tr>
<tr>
<td>EEHC</td>
<td>Egyptian Electricity Holding Company</td>
</tr>
<tr>
<td>EETC</td>
<td>Egyptian Electricity Transmission Company</td>
</tr>
<tr>
<td>EHS</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ESAP</td>
<td>Environmental Social Action Plan</td>
</tr>
<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
</tr>
<tr>
<td>HRSG</td>
<td>Heat Recovery Steam Generator</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Cooperation</td>
</tr>
<tr>
<td>LACF</td>
<td>Land Acquisition and Compensation Framework</td>
</tr>
<tr>
<td>LFO</td>
<td>Light Fuel Oil</td>
</tr>
<tr>
<td>MDEPC</td>
<td>Mid Delta Electricity Production Company</td>
</tr>
<tr>
<td>MWe</td>
<td>Mega Watt electrical</td>
</tr>
<tr>
<td>NCPP</td>
<td>New Capital Power Plant</td>
</tr>
<tr>
<td>OHTL</td>
<td>Over Head Transmission Line</td>
</tr>
<tr>
<td>OP</td>
<td>Operational Policy</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon Monoxide</td>
</tr>
<tr>
<td>NO₂</td>
<td>Nitrogen Dioxide</td>
</tr>
</tbody>
</table>
1. INTRODUCTION AND BACKGROUND

1.1 Introduction

For the aim of increasing the power generation capacities in Egypt, a new power plant is constructed at El Burullus area, following Kafr esh-Sheikh governorate. This power plant is within an agreement between Egyptian Electricity Holding Company (EEHC) and Siemens AG to construct and operate three combined cycle power plants of 4800 MW each at Beni Suef, El Burullus and New Capital.

Mid-Delta Electricity Production Company (MDEPC), a company affiliated to EEHC decided to locate El Burullus Power Plant at a selected site north of Kafr esh-Sheikh Governorate, which is along the Mediterranean Sea and about 17.5 km west of Burullus Lagoon inlet, as shown in Figure 1. The site is within an existing piece of land allocated to the MDEPC by the endorsement of the Kafr esh-Sheikh Governorate Executive Council on 25 November 2014 for the development of the power plant.

El Burullus power plant will utilize natural gas as its primary fuel to generate 4,800 MW by a combined cycle mode. The construction activities of the power plant are supposed to be finalized within about one year from now so as the power plant is intended to be partially operational in open cycle mode by the middle of the year 2017 and fully operational in Combined Cycle mode by mid-2018.
One of the other projects implemented to support the generation of electricity in Egypt is the EG-Giza North Power Project, which is financed by the World Bank. To achieve this objective, the project has three main components:

- **Component 1:** The Power Plant Component, which is the construction of 2,250 MW Combined Cycle Gas Turbine power plant;
- **Component 2:** The Construction of transmission lines to connect the power plant to the national grid
- **Component 3:** The construction of gas pipelines to strengthen the gas supply network to ensure gas supply gas to the power plant.

After the completion of the procurement of all the packages financed by the World Bank, there were financial savings available as part of the project to be utilized by the Government of Egypt. The World Bank received formal requests from the government of Egypt to utilize the financial savings of Giza North Power Plant project to procure natural gas pipelines in order to upgrade the natural gas network. One of these pipelines is El Gamil – Damietta gas pipeline which will support feeding El Burullus Power Plant (the subject of this study). One of the World Bank requirements is to undertake an environmental and social due diligence to any associated facility to a bank-assisted project to ensure that they are conforming the World Bank guidelines under OP/BP 4.01. El Burullus power plant is considered as an associated facility to El Gamil - Damietta gas pipeline project since it meets the following World Bank criteria for the identification of the associated facilities.

- Directly and significantly related to the Bank-assisted project (El Gamil - Damietta gas pipeline project)
- Necessary to achieve the objectives of El Gamil - Damietta gas pipeline as set forth in the project documents; and
- Carried out contemporaneously with El Gamil - Damietta gas pipeline project

This report was undertaken to check and identify the current and cumulative environmental and social impacts of the power plant as well as to ensure that the proposed/implemented environmental and social mitigation measures, including monitoring and reporting requirements are satisfactorily conform with the World Bank guidelines under OP/BP 4.01. Accordingly, corrective measures will be proposed if required.
1.2 Project Description

1.2.1 Site Description

El Burullus power plant is located at a selected site to the north of Kafr esh-Sheikh Governorate, which is along the Mediterranean Sea, and along the right side of the Coastal International Regional Highway at a distance 30 km west of Baltim city, and 17.5 km from El Burullus lagoon entrance. The power plant can be found at coordinates of 31°31'45.91"N and 30°48'42.14"E on an area of about 1,050,000 m². Figure 2 shows the power plant layout and boundaries.

![Figure 2 El Burullus power plant layout and boundaries](image)

The power plant land is determined by the coordinates shown in the following table:

<table>
<thead>
<tr>
<th>Point</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>BU 1</td>
<td>30°48'57.6&quot;N</td>
<td>31°31'41.3&quot;E</td>
</tr>
<tr>
<td>BU 2</td>
<td>30°48'42.9&quot;N</td>
<td>31°32'05.0&quot;E</td>
</tr>
<tr>
<td>BU 3</td>
<td>30°48'01.2&quot;N</td>
<td>31°31'50.2&quot;E</td>
</tr>
<tr>
<td>BU 4</td>
<td>30°48'17.7&quot;N</td>
<td>31°31'23.2&quot;E</td>
</tr>
</tbody>
</table>

As shown in Figure 3, the Burullus project area is located within a wider open uncultivated and uninhabited land, which is considered to be very close to the Mediterranean Sea coast. The site is located to the North of the Coastal International Regional Highway, and about 200 - 350 m south of the sea shoreline. The coastal area between the plant and the shoreline is where the cooling water intake and discharge will be located.
The nearest residential settlements to the plant are Izbet ash-Sharqiyyah to the east at around 2 km, Izbet Halawa to the South east, Izbet Qudaah to the South West and a Fish Farm to the South west.

The power plant is considered to be located in Burullus protectorate (the sandbar at the most western region of the protectorate) and along the Burullus Lake. The plant is constructed on the shoreline of the Mediterranean Sea, with the intake and discharge streams on the Sea and away from the lake.

The site location was a governmental owned land and was allocated to the MDEPC by the endorsement of the Kafr esh-Sheikh Governorate Executive Council on 24 November 2014 for the development of the power plant. As this land was not privately owned by any individuals or entities, it was assigned to MDEPC via Governmental Authorization.

According to the information obtained from the Meeting with EEHC, additional land was acquired by the contractor to be used as a laydown area. This land is also owned by the government; however, a separate study is being undertaken by an independent expert to ensure that no livelihood restoration is needed for the newly acquired land. Due to the lengthy procedure of visit permissions, and the tight schedule of the project, the due diligence team was not able to conduct a site visit to verify the status of the additional land.
1.2.2 Technical Description

The overall generating capacity of El Burullus Power Plant will be 4,800 MWe as it will consist of four modules; each module is composed of two gas turbine units of 400 MWe capacity and a steam turbine unit of 400 MWe capacity. The power plant will be firing natural gas as a primary fuel and diesel oil (light fuel oil) as an emergency fuel. The natural gas will be supplied to the power plant through underground pipelines while the emergency diesel oil will be transported from the nearest oil refineries by trucks and stored on site in storage tanks, with a capacity of 45,000 m$^3$ each.

The combined cycle power plant will consist of eight gas turbines generators; each of capacity 400 MWe, eight heat recovery steam generators (HRSG) and four steam turbines generators; each of capacity 400 MWe. The power plant will operate on wet cooling towers using water abstracted from the Mediterranean Sea. The required water for service and HRSG will be supplied from the Mediterranean Sea and will be used after pre-treatment and demineralization to provide process water makeup in the HRSG system. The cooling water discharge, blow down water, and collected storm water will also be discharged to the Mediterranean Sea.

A sewage treatment facility on the site will treat sewage water streams and produce an effluent suitable for discharge into the plantation irrigation system, while all oil waste effluents will be collected into a separate network and sent to an oil separator, then will be sold to a petroleum Company.

The natural gas will be combusted in the gas turbines generating electricity and hot gases which will be directed to the HRSG system. The hot gases will boil the demineralized water in the HRSG producing steam which will generate electricity in the steam turbines generators. The exhaust steam from the steam turbines will be directed to a condenser which is cooled by an wet cooling system then recirculated to the HRSG. The generated electricity will be fed to the national unified grid via the 500 kV switchgear to the 500 kV Over Head Transmission Line (OHTL) network.

Since the Burullus area is vulnerable to small to moderate kinds of earthquakes, the power plant should be designed and constructed to conform to the International Building Code (IBC 2003) for seismic zone 2A, according to US regulations for earthquake. The power plant has been designed to comply with the international code of the National Fire Protection Authority (NFPA), which requires particular specifications for fire protection.
2. DUE DILIGENCE FINDINGS

2.1 Methodology

In order to achieve the due diligence objectives, the work methodology followed included conducting meetings with the relevant entities to gather the available data and documents related to the power plant, doing desk review for the relevant project documents, in addition to planning for a visit to the power plant site. The desk review was done to evaluate all the gathered documents and studies prepared for the power plant. On the other hand, a site visit to the power plant was planned to check and assess the environmental and social conditions during the construction phase.

2.1.1 Meetings

<table>
<thead>
<tr>
<th>Entity</th>
<th>EEHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendees</td>
<td></td>
</tr>
<tr>
<td>Eng. Hekmat Abdulrahman Selim</td>
<td>General Director of the Environmental studies Department, Ministry of Electricity and Energy</td>
</tr>
<tr>
<td>Dr. Ismaail El Sawy</td>
<td>Senior Research Engineer at the Environmental Project Management Sector, EEHC</td>
</tr>
<tr>
<td>Dr. Mohamed Fathy Tash</td>
<td>Environmental Assessment Department Manager, Egyptian Natural Gas Co. (GASCO)</td>
</tr>
<tr>
<td>Dr. Amr Abd El Aziz</td>
<td>President, Integral Consult</td>
</tr>
<tr>
<td>Dr. Ahmad Wafiq</td>
<td>Technical Team Lead, Integral Consult</td>
</tr>
</tbody>
</table>

Table 1 First Meeting at EEHC

| Date | 9/5/2016 |
| Purpose | Gathering the available data and documents related to the 7 power plants fed by the natural gas pipelines financed by the World Bank (including El-Burullus) |

Summary

- EEHC clarified that all the power plants including El-Burullus have already obtained the environmental approval from the Egyptian Environmental Affairs Agency (EEAA).
- The social status of the power plants regarding the land acquisition aspect was discussed. EEHC clarified that out of the three new power plants (CNCPP, El Burullus and Beni Suef) a livelihood restoration action plan is only required for Beni Suef (currently under development), while no similar study is required for El-Burullus.
- EEHC will send to the due diligence consultant the EEAA approvals, lender approvals, land ownership documents, and Beni Suef livelihood restoration action plan once finalized.
- EEHC will also send to the due diligence consultant the contact details of the focal points inside the electricity production companies to get more specific data about each power plant.
Table 2 Second Meeting at EEHC

<table>
<thead>
<tr>
<th>Entity</th>
<th>EEHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendees</td>
<td>Dr. Ismaail El Sawy</td>
</tr>
<tr>
<td></td>
<td>Dr. Maher Aziz</td>
</tr>
<tr>
<td></td>
<td>Graham Macdonald</td>
</tr>
<tr>
<td></td>
<td>Dr. Amr Abd El Aziz</td>
</tr>
<tr>
<td></td>
<td>Eng. Esraa El Mitainy</td>
</tr>
<tr>
<td>Date</td>
<td>24/5/2016</td>
</tr>
<tr>
<td>Purpose</td>
<td>Gathering the available data and documents related to Cairo New Capital, El Burullus and Beni Suef Power Plants</td>
</tr>
</tbody>
</table>

Summary

- The meeting included discussion on the ESIA prepared for the three power plants.
- The required permits for constructing and operating the power plants were requested to be checked and reviewed as they were not included in the ESIA. Dr. Ismaail ensured that the permits are secured and will be sent to the due diligence consultant for review.
- The social status of the power plants regarding the land acquisition aspect was discussed. The meeting concluded that Beni Suef power plant included land acquisition and livelihood restoration plans that are being prepared and planned to be submitted to the lenders by the 1st of June, 2016. As for El Burullus power plant, no action was primarily taken, but at a recent stage of implementation, new land was acquired by the contractor, and an independent expert was hired to investigate the status of the acquired land.
- The due diligence consultant requested conducting site visits to the three power plants. They were asked to send their IDs for the permissions.

2.1.2 Desk Review

The due diligence activities included reviewing the national legal requirements pertinent to the construction and operation of power plants in Egypt. In addition to that, the World Bank requirements concerning the environmental limits and standards were investigated as well as the social requirements.

(i) Applicable Egyptian laws and regulations
The Environmental Egyptian Law 4 of 1994 amended by Laws 9/2009 and 105/2015 (with its executive regulations amended by Decree 1095/2011, 710/2012 and 964/2015) specifies the applications for a license for any project. According to the law, a full EIA must be prepared for the power plant and submitted to Egyptian Environmental Affairs Agency (EEAA) for consideration.

The executive regulations of the environmental law specifies the limits for different environmental aspects as ambient air quality, air emissions from the power plants stacks during operation, management of hazardous and non-hazardous solid wastes, ambient noise levels, air and noise quality in the work environment and wastewater discharge regulations to aquatic or marine environments.

According to the guidelines issued by the EEAA for the preparation of the EIA studies, Power Plants are categorized as facilities under Category “C”, which requires the preparation of a full EIA study.

(ii) Applicable World Bank regulations
In addition to the Egyptian Regulations, the World Bank operation policies were also considered in the process of reviewing the ESIA study underhand, as well as the IFC’s General Environmental, Health and Safety (EHS) Guidelines and the EHS Guidelines for Thermal Power Plants.

According to Operational Policy (OP) 4.01 - Environmental Assessment, the power plant project is classified as Category “A” project which requires the preparation of a full ESIA study. The different items included in the World Bank Operations Manual were reviewed by the due diligence team. Since El Burullus power plant project is located on the Mediterranean Sea Shore, which is considered as an international waterway, OP 7.50-Projects on International Waterways is applicable to this project. Also, as new land was acquired as a laydown area for the project, OP 4.12- Involuntary Resettlement will also apply here.

(iii) Power Plant ESIA Study
The current project proponent is the Egyptian Electricity Holding Company (EEHC). The power plant is a 4,800 MW capacity combined cycle power plant, with the co-ordinating initial mandated lead arrangers (the “CIMLAs”) being the Deutsche Bank AG, HSBC Bank Middle East Limited and KfW IPEX-Bank GmbH. The CIMLAs aim is to raise three loan facilities to partially finance the Projects, one of the supporters is the German ECA Euler Hermes Aktiengeselleschafter Belhaf of the German Government (“Hermes”).

The ESIA is prepared by independent experts not affiliated with the project in accordance with the national regulations and requirements, and the requirements of the IFC Performance Standards, the World Bank and IFC EHS guidelines as well as the Equator principles (2013). Until the time that this review was undertaken, the study has
been presented and accepted by the EEAA, and changes are still expected as per the review and requirements of the financing agencies.

2.1.3 Site Visits

El Burullus Power Plant is still under construction, and are expected to continue until the projected date for the preliminary plant commissioning is May 2017, where the plant is expected to operate as an open cycle. This is expected to last for approximately 1 year before being fully operational in Combined Cycle mode by mid-2018. The due diligence team has requested having a visit to the power plant site; however, due to the lengthy procedure of visit permissions, and the tight schedule of the project, the team was not able to conduct a visit before submitting this due diligence report draft.

2.2 Environmental Findings

This section will include the environmental findings and outcomes resulted from reviewing all the gathered data and documents related to the power plant.

2.2.1 Permits and Licences

The key permits required for the construction and operation of a power plant in Egypt are shown in the following table:

<table>
<thead>
<tr>
<th>Permit</th>
<th>Permitting Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction permit (for establishing power plant)</td>
<td>Regulatory Body</td>
</tr>
<tr>
<td>Construction permit (for buildings)</td>
<td>Burullus, Kafr esh-Sheikh Governorate</td>
</tr>
<tr>
<td>Environmental permit</td>
<td>Egyptian Environmental Affairs Agency (EEAA)</td>
</tr>
<tr>
<td>Water abstraction and discharge permit</td>
<td>Egyptian General Authority for Shore Protection, Ministry of Water Resources and Irrigation (MWRI) in conjunction with EEAA</td>
</tr>
<tr>
<td>Stack construction permit</td>
<td>Armed Forces Operations Authority (Ministry of Defence and Civil Aviation Authority) and Ministry of Transport</td>
</tr>
</tbody>
</table>

All of these permits were not included in the ESIA, but during the second meeting of the due diligence team with EEHC, EEHC representative ensured that the mentioned permits are secured for El Burullus Power Plant. However, until the time that this due diligence
2.2.2 Baseline Survey

The baseline survey included an investigation of the ambient air quality, noise levels, marine and aquatic ecology, terrestrial ecology, archaeological and cultural artefacts and the traffic and transport.

The ESIA mentions that the plant location is considered a part of El Burullus protectorates, which was verified against the protectorates map issued by the EEAA. However, as the plant will be constructed on the shoreline of the Mediterranean Sea, with the intake and discharge streams away from the lake, it is not expected to have a negative impact on the aquatic ecology.

The main comment to be considered for the baseline is that no ground water or soil quality surveys were undertaken for the project site. According to the second meeting of the Due diligence team with the EEHC, it was mentioned that a consultant was already contracted to undertake this task, and that it should be ready before the beginning of the plant operation.

2.2.3 Waste Disposal

According to the ESIA, the generated solid waste from El Burullus power plant will be collected and evacuated by a licensed contractor as well as the hazardous waste that will be handled by a specialised contractor. Final disposal of wastes will be to local landfill sites, as agreed by the relevant Competent Administrative Authority.

The ESIA did not mention the exact offsite landfill site(s) that will receive the collected waste during the construction nor the operation of the power plant.

2.2.4 Occupational Health and Safety Management

Based on the ESIA review, an occupational health and safety plan for the construction phase should have been prepared by the 4\textsuperscript{th} quarter of 2015, and implemented at the 2\textsuperscript{nd} quarter of 2016. The same dates were also applicable to the preparation and implementation of occupational health and safety plan for the operation phase.

These plans should have been finalized and found on site for implementation and review when requested. Due to the inaccessibility of having site visit before submitting this due
diligence report draft (because of the reasons mentioned above), the due diligence team did not have chance to check the availability of these documents nor to review them.

2.2.5 Spill Control and Management

Also according to the ESIA, an oil spill contingency plan should be prepared and implemented by the 1st quarter of 2015 to be applied during the operation of the power plant for monitoring and handling of the light fuel oil delivered to the site.

This plan should have been finalized and found on site for review when requested. Due to the inaccessibility of having site visit before submitting this due diligence report draft (because of the reasons mentioned above), the due diligence team did not have chance to check the availability of these documents nor to review them.

2.2.6 Air Emissions

According to the ESIA, ambient air measurements were conducted at four points at the corners of the project site to monitor and record the air quality at the project area. These measurements show the concentration of the gaseous and suspended particles (TSP, PM$_{10}$ and PM$_{2.5}$) pollutants in the project area before implementing the project.

In addition to that, an air dispersion model was conducted to predict the air quality at the project area during the operation of the power plant. This air model was performed only for nitrogen dioxide NO$_2$ as Carbon monoxide (CO), sulphur dioxide (SO$_2$), and particulate matter less than 10 microns (PM10) were considered negligible. The air model results for NO$_2$ predicted that the overall ambient NO$_2$ concentrations will be within the Egyptian limits and the World Bank Guidelines. Assuming that CO emissions will be negligible is not a common practice in power plants, and also contradicts with the expected emission inventory already mentioned in the ESIA.

2.2.7 Noise Emissions

Ambient noise measurements were conducted at 9 points around the project site boundary to monitor and record the noise levels at the project area. These measurements show the noise levels in the project area before implementing the project, which were reported to be low. In the absence of World Bank or Egyptian standards for construction noise, British Standard BS5228 was used to represent good international practice for assessing and controlling noise during the construction phase.

In addition to that, a noise model was conducted to predict the noise levels at the project area during the operation of the power plant. The closest sensitive receptors to the plant were identified at a distance of around 200 - 350 m South, South East and South West of the plant boundary at the other side of the International Coastal Highway.
The result of the noise model indicated that due to the close proximity of the sensitive receptors, the noise levels were predicted to exceed the allowable limits of the Egyptian Environmental Law. As a mitigation measure a noise barrier is required to be erected on the south border of the plant (for example the fence can reach 6 m).

According to the ESMP, the noise mitigation measure was planned to be implemented during the first year of operation. However, due to the sensitivity of some of the surrounding activities it is recommended that this measure could be implemented before the operation phase.

### 2.2.8 Water Supply

Based on the ESIA, the water supply for El Burullus power plant will be different during the construction and operation phases. During the construction phase, potable water and water for the construction activities should be supplied through the local water supply system of Kafr esh-Sheikh governorate.

During the operation phase, the plant will incorporate a wet cooling towers system using water abstracted from the Mediterranean Sea. The abstracted water is planned to undergo pre-treatment and demineralization before being used as: process water, make-up water in the boiler (HRSG) system and as potable water.

An intake and discharge pipes are planned to be buried beneath the shoreline reaching to the sea. As per the ESIA, the discharge pipe will be used for the cooling water blow down and the storm water from the plant. As part of the ESIA study, a “flow model” was carried out to simulate the effect of the discharge water on the sea temperature, wave movement and the expected shoreline changes.

The approval of the General Authority for shore protection under MWRI for the operation water is mentioned in the ESIA as one of the permits required and was mentioned to be secured, however, it was not included in the ESIA. This approval was also requested to be submitted to the EEAA, as per the environmental approval.

The EEAA approval also requested the submission of the sea survey done by the “Hydraulics research center” in the project area and a separate scoped EIA for the water demineralization plant as well as the intake and discharge pipes containing a model for brine water discharge to the sea.

According to discussions with EEHC about the Environmental approval terms, the due diligence consultant was informed that the permit from MWRI is already secured by the contractor, and a brine water discharge model has been prepared and submitted to MWRI as part of the approval process. Also it was mentioned that the scoped EIA was not yet submitted to the EEAA, and will be submitted at a later stage. However, until the
time that this review was undertaken, the due diligence team did not receive the documents.

### 2.2.9 Wastewater Discharge

As mentioned above in section 2.2.8, wastewater will be discharged to the environment (The Mediterranean Sea) through a discharge pipe. The wastewater will be collected in a wastewater basin, and is expected to be generated from cooling water blow down, neutralization water (acid and soda) and the storm water from the plant. The waste oil will be separately collected and disposed of through a specialized contractor.

The ESIA stated that the sewage effluent generated during the operation of the power plant will be treated in an onsite facility, and that the treated water will be used for plantation irrigation. The design of this sewage treatment facility was not clarified in the study.

### 2.2.10 Hazardous Waste Generation and Management

Although a natural gas power plant does not produce significant amounts of waste, the ESIA did not mention the hazardous waste that may generate during the construction and operation of the power plant. The ESIA mentioned only the procedures for storing and transporting the hazardous waste.

### 2.2.11 Other Aspects

After the review of the available data, the due diligence team did not have comments on the following aspects:

- Operational and Maintenance Program
- Solid Waste Generation and Management

According to the discussion with EEHC representative about the EEAA approval terms, the following positive points were mentioned:

- The EIA study for the power plant’s OHTL was already submitted by the Egyptian Electricity Transmission Company (EETC) and the EEAA approval acquired.

- Coordination between EEHC and the Burullus protectorate administration is already underway and several meetings are planned to be conducted in the upcoming period.

### 2.3 Social Findings

Based on the ESIA review and the meetings conducted with EEHC, this section will conclude the social findings related to CNCPP.
2.3.1 Land Acquisition

The power plant is planned to be located on an area of about 1,050,000 m² on the shoreline of the Mediterranean Sea, which was a vacant governmental owned and unused land. This land was allocated to MDEPC by the endorsement of the Kafr esh-Sheikh Governorate Executive Council on 24 November 2014.

The land allocated for the plant was initially owned by the government, and there was no evidence of a private ownership in this location. However, according to the meeting of the due diligence team with EEHC representative, the acquisition of an additional land to be used as a laydown area was discussed, and accordingly an independent expert was contracted to update the Land Acquisition and Compensation Framework for the power plant which will be complying with the IFC requirements.

However, to the date of this draft submission, the report was not yet in place and due to the inability to of the team to conduct a site visit, the situation of this acquisition could not be verified.
3. ASSESSMENT OF DUE DILIGENCE FINDINGS

3.1 Classification of Due Diligence Findings

The following section will classify the due diligence findings into comments requiring urgent actions and less urgent comments that only require corrective actions.

3.1.1 Comments Requiring Urgent Actions

After reviewing the prepared ESIA and conducting meetings with EEHC representatives, and based on the data available till the submission of this draft, El Burullus power plant is considered in compliance with the World Bank environmental and social standards. None of the comments mentioned in the previous section may pose any environmental or social threats on the successful construction and operation of the power plant.

Applying the mitigation, monitoring and management measures mentioned in the ESIA will ensure the compliance with the World Bank standards for the lifetime of the power plant.

3.1.2 Less Urgent Comments Requiring Corrective Actions

Table 4 Minor due diligence comments

<table>
<thead>
<tr>
<th>Item</th>
<th>Aspect</th>
<th>Comments (based on the ESIA review)</th>
<th>Updates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Key permits</td>
<td>All the key permits for the construction and operation of a power plant were not included in the ESIA.</td>
<td>The due diligence consultant was informed that the permits are secured and will be sent for review; however, they are not yet received.</td>
</tr>
<tr>
<td>2.</td>
<td>Baseline survey</td>
<td>The baseline survey did not include soil and ground water analysis</td>
<td>The due diligence consultant was informed that complete soil and ground water contamination investigation reports are currently conducted and will be finalized before the operation.</td>
</tr>
<tr>
<td>3.</td>
<td>Water supply</td>
<td>The approval of the General Shore Authority for the water intake and discharge was mentioned</td>
<td>The due diligence consultant was informed that the permit is already</td>
</tr>
<tr>
<td>Item</td>
<td>Aspect</td>
<td>Comments (based on the ESIA review)</td>
<td>Updates</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to be secured but not provided.</td>
<td>secured by the consultant and will be sent for review; however, they are not yet received.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N/A</td>
<td>As per the environmental permit, a scoped EIA study is required to be submitted to the EEAA for the intake and discharge and demineralization plant. According to the information obtained, this study is not yet submitted to EEAA.</td>
</tr>
<tr>
<td>4.</td>
<td>Wastewater discharge</td>
<td>The wastewater (from the wastewater basin) discharge permit should have been provided.</td>
<td>The due diligence consultant was informed that the permit is secured and will be sent for review; however, they are not yet received. The design of the sewage treatment plants was not provided in the ESIA.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The due diligence consultant was informed that an updated ESIA will be submitted before the operation of the power plant including the treatment plants design.</td>
</tr>
<tr>
<td>5.</td>
<td>Air dispersion model</td>
<td>The air model was only conducted for NO₂ emissions, while no runs for CO emissions were conducted.</td>
<td>Since it is not expected that CO will not have a major impact due to complete combustion of natural gas, this issue is considered to be minor and no need for follow up action on it.</td>
</tr>
<tr>
<td>Item</td>
<td>Aspect</td>
<td>Comments (based on the ESIA review)</td>
<td>Updates</td>
</tr>
<tr>
<td>------</td>
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<td>-----------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>6.</td>
<td>Waste disposal</td>
<td>The ESIA did not specify the location of the waste disposal landfill that will be used during the construction and operation phases.</td>
<td>N/A</td>
</tr>
<tr>
<td>7.</td>
<td>Hazardous waste generation and management</td>
<td>The ESIA did not mention the hazardous waste that may generate during the construction and operation of the power plant.</td>
<td>N/A</td>
</tr>
<tr>
<td>8.</td>
<td>Spill Control and Management</td>
<td>A spill oil contingency plan should be in place on site.</td>
<td>The due diligence team was informed that this plan should be available onsite, however, due to the inaccessibility of having a site visit this could not be verified.</td>
</tr>
<tr>
<td>9.</td>
<td>Occupational Health and Safety</td>
<td>The occupational Health and Safety Plans (during construction and Operation) should be prepared and implemented for construction onsite.</td>
<td>The due diligence team was informed that this plan should be available onsite, however, due to the inaccessibility of having a site visit this could not be verified.</td>
</tr>
<tr>
<td>10.</td>
<td>Noise</td>
<td>The ESIA included a mitigation measure for the increased noise level on the nearby sensitive receptors during operation phase. This action was planned to be implemented during the first year of operation, which could adversely affect nearby areas.</td>
<td>N/A</td>
</tr>
<tr>
<td>11.</td>
<td>Land Acquisition</td>
<td>N/A</td>
<td>Additional land was acquired by the power plant contractor to be used as a laydown area. The due diligence consultant was informed that an</td>
</tr>
</tbody>
</table>
### Item | Aspect | Comments (based on the ESIA review) | Updates
--- | --- | --- | ---
12. | General | N/A | During the due diligence team meeting with EEHC representative it was mentioned that a detailed Environmental Social Action Plan (ESAP) was prepared for the power plant, however this document was not available for review.

### 3.2 Proposed Corrective Action Plan

**Table 5 Corrective Action Plan**

<table>
<thead>
<tr>
<th>Item</th>
<th>Aspect</th>
<th>Recommended action</th>
<th>Time frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Baseline Survey</td>
<td>Preparing complete soil and ground water contamination investigation reports for the power plant site.</td>
<td>9 months</td>
</tr>
<tr>
<td>2.</td>
<td>Wastewater discharge</td>
<td>Preparing complete design for the sewage treatment plants in the power plant.</td>
<td>9 months</td>
</tr>
<tr>
<td>3.</td>
<td>Noise</td>
<td>It is recommended that the noise mitigation measure be applied before the beginning of the actual operation of the plant.</td>
<td>9 months</td>
</tr>
<tr>
<td>4.</td>
<td>Waste disposal</td>
<td>Specifying the exact landfills that the project will dispose its hazardous and non-hazardous wastes (construction landfill, and landfill during operation phase) and finalizing the contractual</td>
<td>2 months for construction phase</td>
</tr>
<tr>
<td>Item</td>
<td>Aspect</td>
<td>Recommended action</td>
<td>Time frame</td>
</tr>
<tr>
<td>------</td>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>agreements with them.</td>
<td>6 months for operation phase</td>
</tr>
<tr>
<td>5.</td>
<td>Land Acquisition</td>
<td>Preparation of the Land Acquisition and Compensation Framework (LACF) report detailing the methodology followed for the land acquisition process.</td>
<td>3 months</td>
</tr>
<tr>
<td>6.</td>
<td>Water Supply</td>
<td>Preparation and Submission of the required Intake, Discharge and water demineralization Scoped EIA study as soon as possible to comply with the environmental Approval conditions.</td>
<td>2 months</td>
</tr>
</tbody>
</table>
4. CONCLUSIONS AND RECOMMENDATIONS

Based on the review of the available data and the meetings and discussions conducted with the EEHC representatives, the due diligence team concluded that El Burullus power plant is considered to be in compliance with the World Bank environmental and social safeguards operational policies. None of the comments mentioned in the previous section may pose any environmental or social threats on the successful construction and operation of the power plant. However, the following recommendations need to be considered:

- Preparation and Submission of the Scoped EIA study for the Intake, Discharge and water demineralization plant as soon as possible to comply with the EEAA Approval conditions.

- Finalization of the LACF report for the land acquisition process followed for the power plant site and additional land.

- Specifying the exact landfills that the project will dispose its hazardous and non-hazardous wastes (construction landfill, and landfill during operation phase) and finalizing the contractual agreements with them.

- Preparing complete soil and ground water contamination investigation reports for the power plant site.
ANNEX 1 KEY PERMITS FOR CNCPP

Figure A-1 EEAA approval for construction and operation of El Burullus Power Plant (1)
Environmental and Social Due Diligence for El Burullus Power Plant

Figure A-2: EEAA approval for construction and operation of El Burullus Power Plant (2)
Environmental and Social Due Diligence for El Burullus Power Plant

Figure A-3 EEAA approval for construction and operation of El Burullus Power Plant (3)