



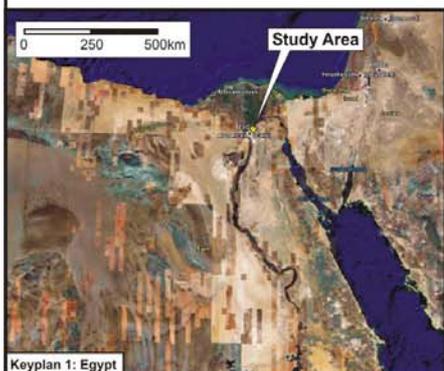
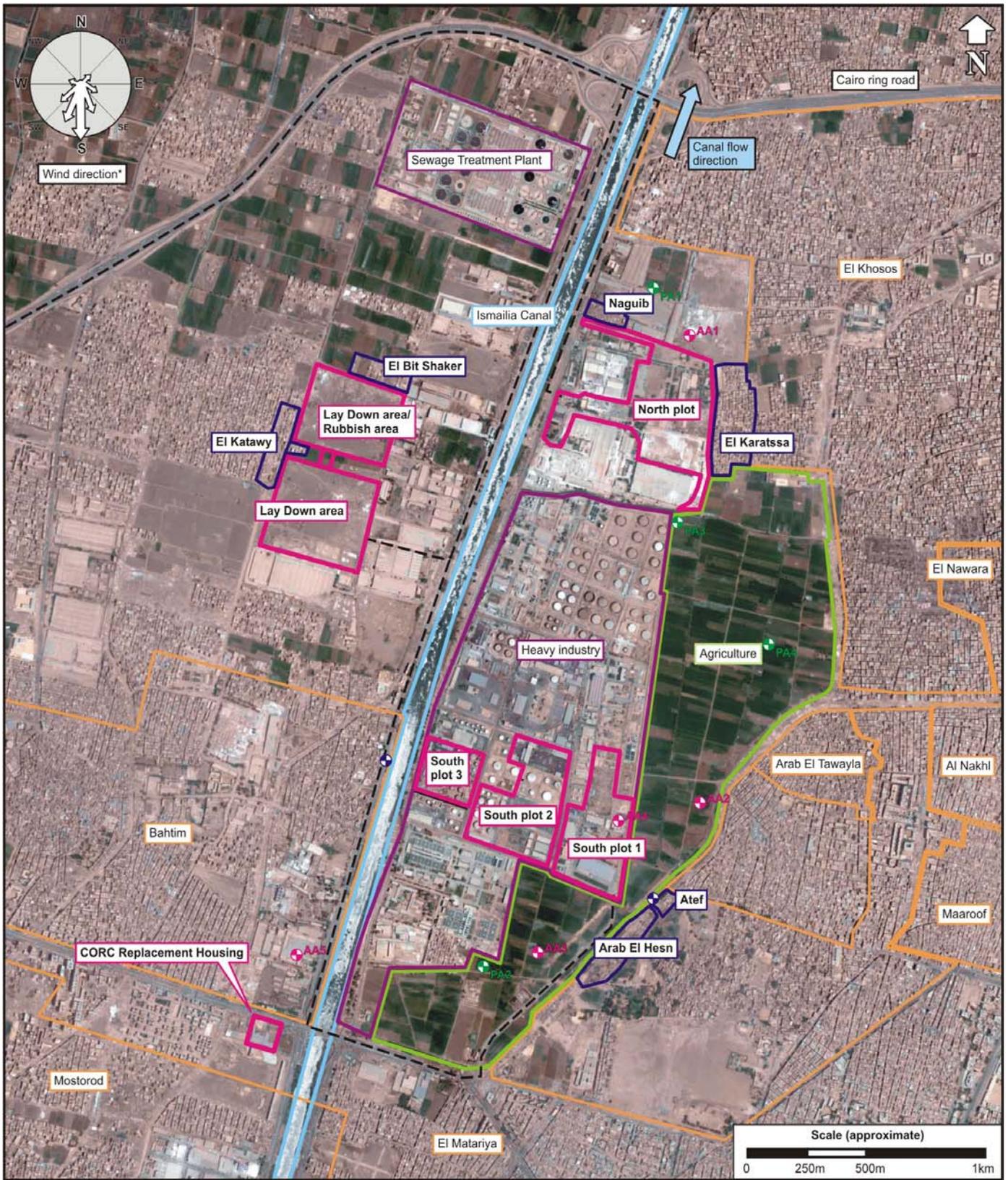
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

ERC Project, Mostorod

Non Technical Summary
July 2008



Egyptian Refining Company
الشركة المصرية للتكرير



Legend

Project Area	Heavy Industry
Traffic routes	Populated areas
Social & Health survey sites	Agriculture
	Canal

Active Air Sampling Location
 Passive Air Sampling Location
 Proposed Noise Monitoring Location

Note: Boundaries shown are approximate only
 * Wind data based on 5-year average
 Drawing reference: Image supplied courtesy of Google Earth

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Introduction

The Egyptian Refining Company has engaged a team of prominent international and Egyptian environmental professionals and social scientists to assist in the development of an Environmental and Social Impact Assessment (ESIA) of the Project. This process follows international and Egyptian "best practice standards" to assess potential impacts which the Project might have on the environment and neighboring communities and other stakeholders. Where potential risks or impacts are identified, either affecting the environment or social considerations, mitigation measures are identified and management plans/ tools are put in place to address the key areas of concern.

Through an extensive series of consultations with the public, Government officials, NGOs and others, which will continue throughout the design, construction and operations phases of the Project, it is the Company's goal to communicate with all stakeholders, consider their views, concerns and needs and to address them to ensure that the Project gains their support and that a "good neighbor" relationship is established.

The Non Technical Summary of the Environmental and Social Impact Assessment is available in English and Arabic versions at this location www.ercegypt.com . In addition, a description of the positive benefits of the Project may be seen on this web site. The full report can be obtained from ERC (see back page for details).

The Project

In response to increasing demand for refined oil products in Egypt, a proposal for a project which will upgrade the existing Cairo Oil Refining Company (CORC) Refinery with additional product processing units has been put forward. The intention is that this Project which is to be located in the Mostorod District in the Kalyoubia Governorate, 40 km outside Cairo, will be built within the existing Mostorod Petroleum Complex (with some non-operating facilities such as offices, warehouses and workshops within the areas of the Chini and Glass Factories near El-Karatssa). It is anticipated that the facility will further process the oil products coming from the existing CORC refinery to produce several additional products including over 2 million Tonnes/Year of diesel for the domestic market from the beginning of 2012

Should the Project go ahead the construction activity will be over a 3-year period. The operational lifespan of the facility is expected to be 30 years.

Background

Egypt's economy has been developing and expanding rapidly and this increase in economic activity has been accompanied by an increase in domestic demand for petroleum products.

This increase in demand for both petroleum products and natural gas is considered the most important challenge that faces the oil and gas industry in Egypt. Domestic demand for final petroleum products is served by nine refineries, in five governorates across Egypt.



With the growing domestic demand these refineries cannot meet all domestic needs and therefore imports of finished product are required.

The **Egyptian Refining Company (ERC)** was incorporated to execute a Project to upgrade the existing CORC Refinery in Mostorod to further meet the domestic needs of Egypt. ERC shareholders include the Egyptian General Petroleum Corporation (EGPC) with 15% of the shares, plus other Egyptian and regional investors. To fund the project a number of International Lenders will be involved.



What is ESIA?

Environmental & Social Impact Assessment (ESIA) is a process which identifies, at the earliest possible stage, potential risks on the physical, biological and socio-economic environments. Once the potential risks – or impacts – are identified mitigation measures and management tools are proposed to address the key areas of concern. The ESIA process evolves as the Project develops and is often reported in a Phased approach which runs in parallel to the engineering design. As engineering design changes occur they become incorporated into the ESIA process and are re-evaluated. Often these design changes have come about following suggestion from the Environment and Social scientists that adverse impacts may result from the certain aspects of the Project. The goal is to achieve a Project which fully embeds the concerns of the environment and society into the decision-making

process to allow design changes to occur and thus prevent the need for complex mitigative measures. The concept of avoiding negative impacts is preferred.

ESIA is the first part of the process to ensure that the positive and negative impacts from the Project on the lives of individuals and groups of people are understood, that positive impacts are enhanced by Project design while negative ones are mitigated, without compromising the economic efficiency of the ERC Project and its economic benefits for Project Affected People (PAP).

Aims & Objectives

The aim of the Environmental & Social Impact Assessment (ESIA), is to follow Egyptian and international 'Best Practice Standards', to ensure that the environment and stakeholders experience Project benefits and are protected from potential negative impacts. The aim is that stakeholders will support the Project and develop a 'Good Neighbour' relationship with ERC.

The objectives of the ERC ESIA process are to:

- Meet and/or surpass the Egyptian and international environmental and social requirements.
- Record pre-Project, environmental, social, economic and health baseline conditions to provide stakeholders with an understanding of the valued resources, their constraints and other resource users in the area.
- To provide a forum for communities to become knowledgeable about this project.
- Ensure that the impacts of the Project on different environmental receptors, Project Affected People (PAP) and social groups are understood, recorded and considered.
- Identify environmental and social risks to the PAP and the Project and suggest risk mitigation options.
- Promote positive and counteract negative impacts, throughout the construction and

operational phases, through implementing an Environmental and Social Management Plan.

- To provide a baseline of management information essential to the long-term viability of the project, including monitoring and review requirements.

ERC's ESIA process is achieved through a series of environmental, social, cultural, institutional, political and economic surveys, comprising data recording, sample collection, analyses and consultations. These surveys, analyses and consultations allow for risk mitigation by presenting accurate and timely information and by managing concerns and expectations.

Investigations

The Environmental Investigations focus on air & climate, land, water and ecology which culminate in the selection of suitable valued receptors (VRs). Over a three-month period more than 6 field sampling campaigns to the Project Area were performed. These included:

- Overview visits (April and June 2008);
- Ecological surveys (April and June 2008);
- Noise monitoring (April, May, June 2008);
- Air quality monitoring (April, May, June 2008); and
- Water quality monitoring - Ismailia Canal, industrial discharges and existing groundwater wells (April, May, June 2008).

Social investigation was carried out by three different SIA teams: the consultation, socio-economic and health teams, and took place in five residential areas. The social investigations are being conducted in three phases and focus on:

- Scoping (March- April 2008).
- Phase 1 SIA (May- June 2008).
- Phase 2 SIA (surveys/monitoring to start in

October 2008).

By June 2008 over 10,000 people in El Khosos, El Karatssa, Ez Bit Naguib, Arab El Hessn, the Abdel Maqsoud Houses and El Katawi and Amal City had been reached through the SIA field work. Some of these were consulted on their views about the Project and others involved in data collection for the socio-economic and health baseline. Farmers around South Plot 1 and people who sell goods and conduct other livelihoods on the roads from the Project Plots to the Laydown Area were also consulted.

Policy, Legal and Administrative framework

The July 2008 ESIA report has been prepared to meet Lender expectations in terms of compliance with a number of environmental and social legislative requirements and guidelines. ESIA standards and guidelines include those of the Egyptian Environmental Affairs Agency (EEAA); International Finance Corporation (IFC) and World Bank guidelines; Equator Principles; European Investment Bank guidelines; and Korean EX-IM Bank Procedures and guidelines.

Purpose and Need for the Refinery Upgrade

The petroleum industry in Egypt is not only an important part of the economy, but is also required to meet the increasing demand for



power. Oil and gas reserves are healthy and production is expected to increase significantly. With the growing domestic demand existing refineries can not meet all domestic needs and therefore imports of finished product are required. The ERC Project will help meet the increased demand for lighter products, such as diesel and jet fuel, and prevents the reliance of the country on imports in these areas. ERC will decrease the need for foreign imports.

Petroleum is important in that it supplies about 92 percent of the primary power needs in Egypt. Oil reserves are currently estimated at 4 billion barrels and natural gas reserves over 73 trillion cubic metres. Current oil production is 705 000 barrels per day with an additional 30 000 per day expected to be on-line within months. Growth in the industry is supported by the proposed ERC project and if it is implemented would provide long-term benefits to the local and national economy. Oil and gas industry continues to thrive in Egypt– from which the local and national economy can benefit.

ERC Project Improvements

The new project will be 100% gas fired (i.e. no fuel oil in the refinery mix). The ERC Project will largely utilise feedstock from the CORC facilities' existing units and will sell its entire production of refined products to EGPC at international prices. ERC will produce European (EU V) grade diesel and IATA worldwide specification jet fuel for use solely in the domestic market of Egypt. The main products from ERC will include:

- Diesel and Gasoline;
- Jet fuel/Kerosene;
- Reformate, Naphtha;
- Liquefied Petroleum Gas (LPG); and
- Fuel Oil.

The new products produced by ERC will have a 99.9% sulphur recovery technology (i.e. virtually zero sulphur) leading to a reduction in air pollution and greenhouse gases from vehicles (approximately 93 000 T of sulphur annually) compared to the fuels currently being used.

Wastewater effluent will be subject to a three-stage treatment process meeting international standards. As a commitment to improving the existing industrial setting, ERC has committed to fund up to LE 20 million for CORC to implement various environmental improvements including:

- Providing double seals on several floating roof tanks to significantly reduce fugitive hydrocarbon and greenhouse gas emissions.
- Providing portable gas emission detection meters incorporated into the CORC facilities to enable CORC to establish a Leak Detection and Repair Programme.
- Incorporating an oil filter into the CORC facilities upstream of the wastewater discharge will reduce fugitive oil losses.
- Providing environmental measuring equipment, to enable daily measurements of volatile oil compounds.

The ERC Project will create up to 700 permanent jobs, in addition to the services that will benefit indirectly from the project. During the construction phase the project is expected to create over 8 000 direct temporary jobs.

The ERC philosophy is to minimise consumption of utilities and to maximise energy conservation within economic constraints.

Alternatives:

Preferred Option

Location

There were three potential locations for the project. These included:

- El Sadat new city, located 80 km north of Cairo.
- Badr new city, located 60 km east of Cairo.
- Mostorod, located 40 km from the centre of Cairo.

Based on the requirement for feedstock from CORC and numerous operational connections for intermediate products, the Mostorod location was chosen.



No-Action Option

This alternative (i.e. not constructing the facility) was evaluated and is not considered to be the preferred option. Not proceeding with the ERC Project would lead to the loss of investment to Egypt of around USD 3 billion and lost employment opportunities for approximately 700 Egyptian staff (during operations) for 25 years and up to 8 000 labour during construction (temporary phase). Reduced air emissions from the clean fuel would not be realised, whilst ERC is also planning to fund LE 20 million for environmental improvements within the existing CORC facilities. The “No-Action” alternative would lead to the loss of these investments, which include improved tank sealing and a leak reduction system to reduce fugitive emissions of hydrocarbons and the production of high value products by ERC using the latest technologies. In addition, the Government of Egypt would fail to receive over \$4B in revenues, taxes and customs over the life of the Project.

Once the Mostorod district was chosen the exact locations of the Project Areas were evaluated. The initial option in Mostorod was to position the Process Units on the North Plot and South Plot 1. However, following the social consultations and considering the current political and social environment in Egypt and in the area, ERC made a decision to approach EGPC to see if other land was available for the operating units. After considerable discussions, EGPC agreed to make alternative land available within the Mostorod Petroleum Complex. Although this will entail additional cost and time to make this land ready

for constructing the operating units, including taking all appropriate environmental and other steps to make South Plots 2 and 3 ready, ERC has taken this early decision to change the location to reduce possible negative perceptions by the local communities.

As part of ERC's due diligence effort and reviewing all risk parameters, a third party insurance advisor sent a risk engineering team to visit the site to perform an extensive/technical risk assessment of whether there could be a potential risk to the community, particularly in the North Plot, if there were a catastrophic incident relating to the equipment/units located on the North Plot and South Plot 1. This analysis concluded that any such risk would be contained within the boundaries of the Project (that is, not extend beyond the property walls).

Chosen Technology

At least three other technologies were assessed to determine the preferred technological option. The hydro-cracking complex will mainly comprise the following units:

- Hydro-cracking unit;
- Hydrogen plant;
- Kerosene and diesel hydro-treatment units;
- Naphtha hydro-treatment/CCR unit;
- Coker unit; and
- Sulphur recovery unit.

Each of these units was compared to other technological alternatives and in summary the chosen ERC technology:

- Produces higher yields of high quality middle distillate than the other technologies evaluated.
- Produces a higher purity hydrogen than the other alternatives.
- Kerosene and Diesel are of high quality. Impurities such as sulphur, nitrogen, halides and trace metal have been removed from the feedstock by reacting with hydrogen at high pressure.
- Produces Naphtha according to International specifications.
- Delayed coking remains a major method for residue upgrading. The technologies offered

by other companies are similar in terms of the environmental impacts.

- The sulphur recovery unit ensures a better performance by using the separate amine regeneration systems that is necessary in minimising hydrocarbon carry-over to the sulphur recovery unit.

Preferred Project Area

A number of sites will be required for the new ERC refinery. These sites, together referred to as the "Project Area", will include:

- North Plot.
- South Plot 1.
- South Plot 2.
- South Plot 3.
- Laydown Areas.
- CORC rehousing area (an apartment block under construction).

The **North Plot** comprising 193 000 square meters was purchased from three different industrial companies and is currently an operating glass factory. The North Plot will accommodate administrative buildings and a warehouse.

South Plots 1, 2, and 3 will accommodate the main process infrastructure. South Plots 2 and 3 are currently being used by Government product distribution companies. Prior to re-development by ERC these sites will undergo considerable investigation and remediation to demolish the infrastructure and remove existing contamination in the soils. South Plot 1 has three CORC-owned residential buildings, housing 21 employees and their families (107 individuals). See Resettlement Section.

To avoid traffic and construction work interference, a **Laydown Area** is necessary and needs to be separated from the actual construction sites, as the Project Area is space-constrained, particularly for equipment laydown and temporary storage. The Laydown Area has been divided into two parts, to avoid livelihood disruption to farmers growing crops in the centre of the site. However, the North section of this Area is currently used as an informal waste

dump, and is frequented by informal garbage collectors and waste recyclers. When the site is cleared, and used during construction, these affected people will not be able to continue their livelihoods and thus, would fall under economically displaced persons. In this connection, ERC has committed to conduct an in-depth study to address the concerns of these PAPs. ERC will not use this section of the Laydown area until resettlement surveys are completed during the Phase 2 SIA.

Benefits to the community

ERC will work actively to promote local access to Project employment in both the construction and the operations phases. To do this ERC and its contractors (the main Contractor is GS Engineering & Construction (GSE&C), South Korea; and Mitsui & Co., Japan) will produce transparent and fair employment policies and work with community NGOs on a skills audit of local communities. Some NGOs already consulted have 'job application' support services which ERC could engage with for mutual benefit of the Project and the people. If local workers are trained to take some of the jobs this could contribute to social development in the long term. ERC will identify the skills that it needs for its construction and operations phases that could be provided as part of a community skills development programme providing basic training in the communities through its Community Development Centres.

The Project will create over 8 000 jobs during construction and 700 direct employment opportunities and about 1 000 indirect opportunities during operation.

The staffing strategy for the construction and operation phases has not yet been finalised, and the extent to which the Project workers affect social cohesion will depend on the extent to which ERC will hire local workers, and the extent to which workers are given or choose to opt for accommodation (temporary or permanent) in local communities. The contractors have not yet established how they intend to accommodate workers from outside Cairo during the construction phase, and while ERC's intention is to provide transport for operational workers, the

company will not be able to prohibit workers moving into neighbouring communities. ERC however, will develop social policies for workers' induction, and best behaviour according to socio-cultural context, for interacting in these neighbouring communities.

Stakeholder Engagement and Consultation

Stakeholder engagement and consultation are key processes for the ERC Project, playing a vital role in building a positive relationship with Project



stakeholders. Stakeholder Engagement and Consultation have a number of purposes:

- Identification of stakeholders with an interest in the Project and/ or who could affect the outcome of the Project;
- Ensuring that Project stakeholders are informed about the Project and its potential to (positively or negatively) affect them;
- Identifying perceived and potential Project impacts;
- Giving Project stakeholders the opportunity to make inputs into the ERC's plans for avoiding, mitigating or managing Project impacts;
- Working with Project stakeholders to maximise the positive contribution that ERC will make to the development of its neighbouring communities; and
- Building a positive working relationship between Project stakeholders and the Project, to ensure that ERC is a 'good neighbour'.

Stakeholder engagement and consultation have been carried out since the initial Project planning (2006-2007), and are an integral part of the ESIA

and will continue during the construction and operational phases of the Project. ERC has developed a Public Consultation and Disclosure Plan which describes plans to ensure that engagement with stakeholders is an ongoing process throughout the life of the Project.

Consultation for the Project has involved discussions with women and men in the five residential areas targeted for fieldwork. There were also consultations with Non Governmental Organisations (NGOs), Community Based Organisations (CBOs) and Local and National Government. All those consulted have been given Project information verbally and/or through published materials where appropriate. As consultation and transparency of this nature is relatively new to Egypt the teams encountered a degree of suspicion which, after sufficient consultation, mostly lead to understanding and support for the Project.

Valued Receptor: Environment

Landscape and Geology

The Project Area is located within the Mostorod district and is earmarked for industrial development. Indeed, many of the Project Areas have already been used by industry. Given the current industrial context the landscape is not considered to be a particularly sensitive valued receptor (VR). Additionally, there are no geological features of interest within the Project Area. The Project will not negatively affect Landscape or Geology.

Ecology and Biodiversity

Flora and fauna across the sites are limited due to the industrial context of the area. A lack of semi-natural habitat and the presence of walls and fencing limit the potential for terrestrial species to migrate to and from the area. The Project will not negatively affect Ecology or Biodiversity.

Archaeological, Cultural and Protected Areas

The nearest archaeological site to the Project Area is about 800 m from the South-Eastern boundary of South Plot 1. This is the Obelisk

King Senusret.

A Mosque, currently abandoned, will be demolished on the North Plot. The demolition will



follow a specific Management Plan. The nearest protected area to the Project Area is located in the South-East of Cairo (petrified forest) approximately 20 km from the project. The Project will not directly affect any protected areas or sites of Archaeological importance.

Surface water

The main surface water resource in the study area is the Ismailia Canal, which is situated West of the ERC North Plot and South Plots 1, 2 and 3 and flows from South to North. The canal is an important water system in Egypt as it transports fresh water from the River Nile North of Cairo to the canal cities of Ismailia, Port Said and Suez. Locally the water within the Ismailia Canal is used for irrigation of the agricultural land situated to the East of the ERC plots, recreational fishing, drinking water (which is treated in a facility in close proximity of the ERC South Plot 1) and for the discharge of treated wastewater from industries in the local area.

Six surface water and six sediment samples and were collected from the Ismailia Canal (SW/S 1,2,3,4 and 6), and a surface water sample (SW5) was taken from an irrigation canal. From these analyses it is concluded that surface water within the Ismailia Canal fails to meet Egyptian standards (Law 48 of 1982, Regulating Industrial Wastewater Discharges to Canals) for a number of parameters (including chromium, mercury, oil and grease, organic nitrogen, fluoride and chemical oxygen demand). In addition the industries in the local area appear to be having a

detrimental impact to the existing surface water quality.

Wastewater from the ERC process will consist of cooling water, process water and sanitary sewage water. Following treatment on the ERC Plot, the proposed normal flow rate of the final treated effluent is 243.4 m³/hour, which will be directed to CORC's discharge system connected to the Ismailia Canal. ERC will have on-line monitoring using appropriate analysers/instruments to ensure that the quality of wastewater coming from ERC will comply with relevant Egyptian and international standards.

ERC understands that although their wastewater effluents will meet the relevant Egyptian and international standards the existing baseline water quality of the Ismailia Canal is of a poor quality. ERC, therefore has financially committed to develop a plan for proposals to improve overall effluent discharges from industries in and around the Mostorod Petroleum Complex.

A number of other industries currently discharge their wastewater to CORC. At present these separate waste streams have not been assessed, however ERC and CORC are committed to sampling and analysing these wastes and identifying sources of exceedance. Additional mitigation measures will then be implemented to ensure that the combined discharge from CORC will meet the relevant standards.

Groundwater

Groundwater is abstracted from the area to the East of the Project Area for irrigation. In addition the Plots are located on a major aquifer and lie within a groundwater protection zone for a public water supply. Due to Health and Safety concerns on the Plots, sampling was limited to groundwater samples GW2, GW3 and GW4 obtained from three groundwater wells situated to the East of the ERC plots. An additional sample was collected from the dewatering system used during the construction of the new wastewater collection system. Comparison against the World Health Organisation guidelines suggest that Lead concentrations are elevated.

Contamination was encountered which is

expected given the existing and current industrial settings in the Project Area. No direct groundwater contamination from ERC is predicted during routine construction and operations (minor fuel spills may occur), however the potential exists during ground works to mobilise existing contamination through induced flow for example during dewatering activities. Mitigation measures



will be in place to ensure that spills are rapidly contained and decontaminated.

The historical use of the Project Area for industrial activity suggests that contamination of the soil and groundwater are likely. This will likely be the case for North Plot, South Plots 1, 2 and 3. Therefore prior to any construction works a full site investigation and remediation strategy will be implemented by the Contractor to prevent the mobilisation of further contamination and to make the sites suitable for redevelopment. This remediation strategy will focus on the removal of contaminants from the sites thereby leading to an overall improvement of soil and groundwater conditions.

Air

Data from two permanent monitoring stations located 17 km North-West (Kaha) and 5 km South-East (Shoubra) of the proposed Project Area measure background maximum pollutant concentrations on a continuous basis. These data provide a regional overview of air quality. The Shoubra monitoring station dataset only includes SO₂ concentrations and the Kaha monitoring station only includes NO₂ and PM₁₀ data. The average background SO₂ concentrations measured for all periods at the

Shoubra station exceed the limits set by the Egyptian, World Bank and European standards. The average NO₂ background concentrations are significantly higher at Kaha station than the Egyptian and the World Bank Air Quality standards. The average daily PM₁₀ background concentration at the Kaha station exceeds the limit set by the Egyptian or European Air Quality standards.

In addition to the regional monitoring stations 9 active and passive sampling locations were chosen in the Project Area to better understand the local air quality. The results of these “snapshot” samples suggest that PM₁₀ and SO₂ were higher than the World Bank and EU standards.

An air dispersion model was run which estimates that the quantitative impact of NO_x, SO₂, CO, Particulate Matter and Total Hydrocarbons emissions from the modelled ERC sources are all below the Egyptian, WBG and EU standards. However, cumulatively when added to the existing baseline in the Project Area both SO₂ and PM₁₀ exceed the standards.

The ERC project includes a range of embedded mitigation and environmental improvements to CORC, including the reduction of fugitive hydrocarbons emissions which currently



contributes to the environmental baseline. It is also anticipated that the heaters that currently run on fuel oil will be gradually switched over to gas, which will result in further reductions. Furthermore, the new fuels produced by ERC will have virtually zero sulphur content leading to a

sulphur reduction annually compared to the present when these fuels are combusted in vehicle engines.

It is expected that overall the regional air quality of Cairo and Upper Egypt will improve as a result. The combination of the direct improvements at the CORC facility in addition to the reduction in sulphur emissions regionally can be expected to make a net positive contribution to future air quality.

Noise

The results from the baseline noise assessment suggested that there are currently a few locations which exceed the Egyptian limits for heavy industries and dwelling zones on a public road, in the day. The main additional source to industrial activities is traffic. For example, near paved roads, the levels reached up to 75 dB(A), which is due to the continuous movement of trucks, lorries and public transportation. During construction, the Contractor will apply best practice to reduce noise disturbance to nearby neighbours and will link into the Grievance mechanism to address any problems as they arise.

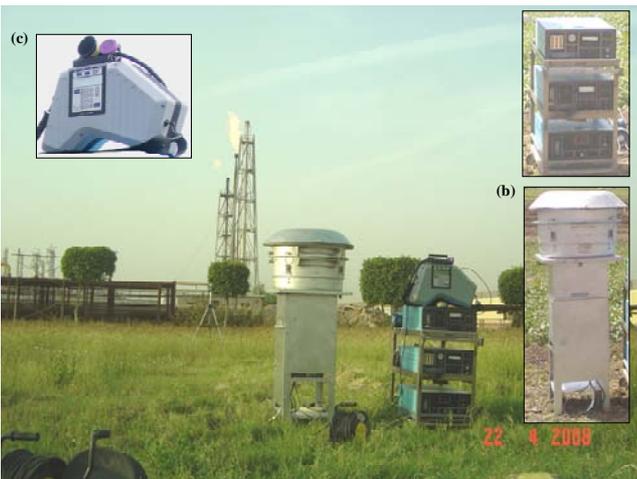
A noise prediction model has been conducted to determine the anticipated noise from the ERC facility. ERC are committed to ensuring equipment noise limits remain at (or are lower than) 85 dBA at a distance of one meter from source and this is specified in the technical contract.

Traffic

To evaluate potential effects on traffic flows, a Traffic Impact Assessment was conducted in May 2008 and was re-evaluated in June 2008, reflecting the change of layout. The Greater Cairo Region Ring Road bounds the Mostorod industrial area to the North. This road provides a high speed link to other parts of Cairo, and links into the rest of the Egyptian National Road Network. It connects the area with ports on the Mediterranean coast and the Suez Canal.

Two roads run parallel to the Ismailia Canal on either side. On the Western side of the canal,

the Cairo Ismailia Agricultural Regional Road connects Cairo with Ismailia on the Suez Canal. This road continues South towards central Cairo. The Al Khosos Road runs along the East bank. It primarily serves the sites within the Mostorod industrial area. Once North of the Ring Road, flows become very low, as it serves only a small agricultural community. Both these roads connect to the Ring Road and all movements are allowed at this junction. Vehicles can also cross between the East and West banks at the Al Khosos Bridge, located 5 km South of the Ring Road. It is possible to directly access the South



plot by travelling 600 m east from the Al Khosos Bridge then taking a left turn at a four arm intersection and travelling 700 m north east to the South East corner of the South site, cutting through agricultural land. This road links back along the South of the current CORC site and rejoins the East bank road. A smaller road continues Northwards along the east edge of the South Plot.

A number of major roads intersect the Cairo Ismailia Agricultural Regional Road at the point 2 km South of the Al Khosos Bridge where the Ismailia Canal changes alignment to East-West. These roads provide links to other major areas of Greater Cairo such as Heliopolis and Nasr City to the east, as well as Central Cairo to the South.

It is understood that peak traffic flows occur between 6:30 and 7:30 am and between 4:00 and 5:00 pm. This corresponds to the point at which shift changes in Mostorod coincide with the largest levels of background traffic. It is

understood that traffic flows are generally high throughout daylight hours, with these being the main peaks.

The majority of employees will be transported by bus from a wide variety of locations in Greater Cairo. A large number of buses will be provided. The first shift at the site will start at 6:30 am, in advance of the employees of the Mostorod refineries and factories who generally start at 7:30 am to minimise community disturbance. During operation the majority of employees will be transported by bus. Selecting working hours different from neighbouring companies will help to mitigate traffic problems. For all transportation activities under the control of ERC, a strict health and safety procedure will be in place and will prohibit the use of unsafe or old buses.

The vast majority of goods coming from any Egyptian Port to the Project Area will come via the ring road to the North and South plots or to the Laydown Area. This mitigation strategy will minimise the number of heavy transport vehicles passing through populated areas near the site.

Socio-economic

A socio-economic baseline survey (or situation analysis of social conditions) identified sensitive social receptors and attained a pre-Project record of the social situation against which any future impacts can be measured.

The surveys have been carried out in three phases. One for the SIA scoping phase in March 2008, where over 300 household consultations were undertaken in El Karatssa and Arab El



Hessn. For the Phase 1 SIA, carried out in May and June 2008, the survey focused on the direct impact zone (construction). These are the areas nearest to the sites in the Project Area and covered approximately 7000 people. It was found that many people in these areas are socio-economically vulnerable due to lack of secure income, low literacy rates and poor access to social infrastructure.

During the consultations and baseline data collection a number of key concerns have been raised. This section summarises those findings to date:

Community Organisation and Local Institutions

Access to decision-making: A consistent finding during consultation was that until now local residents have not been consulted on new Projects in the area. The ERC approach has the potential to positively impact on the current lack of access to decision-making by improving means for local people to influence Project decision making.

Representative community organisations: The



communities reached through consultation and social survey have a limited number of local (government and civil society) organisations able to represent and lobby for the interests of local women and men. One general finding is people state preference for representation by religious leaders, informal community leaders, or NGOs. ERC is committed to continue to consult with local people to ensure that it identifies and works with local representative community organisations that have broad based local support.

Social Services and Community Infrastructure

Electricity infrastructure: During the construction phase a potential impact is disturbance of the electricity cable for the community of Amal city at the Laydown Area. During consultations with residents it was explained that the electricity cable for the community is buried under an informal community road which is on the boundary of the Laydown Area. ESCO has required that the Laydown Area is fenced off by ERC to the edge of the land parcel owned by ESCO, to avoid encroachment onto their land during the construction period. Community members are concerned that if the electricity cable falls in the ESCO land this will mean that their service is severed. ERC is committed to use appropriate construction mitigation measures and due diligence to ensure that people will not be adversely affected, for example a contractual requirement will be the protection (and repair if damaged) of 3rd party services.

Sewerage

During the construction and operational phase of the Project there was concern expressed by stakeholders in El Khosos/ El Karatssa that the Project will use the already overloaded community sewerage system. The main sewer for this community has previously been blocked as a result of being used over capacity and is currently being reconstructed. ERC will not use this sewer for wastewater during construction or operation.

Sewerage is also an issue for the communities neighbouring the Laydown Area. Currently the households in these communities are only partially occupied due to the fact that they are not

connected to sewerage or water infrastructure. A number of people consulted in these communities expressed the belief that when the Laydown Area is in use (during the construction phase) it will need to be connected to the sewerage and water for workers and that this would therefore be an opportunity to connect neighbouring communities at the same time. If this does not happen the negative impact of raised expectations may result. Therefore ERC will engage with local stakeholders to keep them informed about Project use of the Laydown Area and proposed infrastructure upgrades in order to manage expectations.

Access to Public Transport: ERC will employ large numbers (over 8 000) of staff in the construction phase and 700 staff during the operational phase. These staff will work in shifts and the intention of the Project is to provide transport for these workers. The details of worker transport have not been finalised at this stage and it is not clear whether the system will serve all the areas in which Project workers live. If significant numbers of workers chose to use public transport, there may be an impact on public transport (overcrowding, ticket price inflation). Worker transport may also affect traffic congestion. ERC will address this issue with a robust traffic and worker transport plan.

Population and Socio-Demographic Characteristics

Social cohesion: The influx of over 8 000 construction workers, and to a lesser extent the ongoing presence of 700 operations workers, could have an impact on local social cohesion, by introducing a new population element into established communities. The extent to which this is likely, and the extent to which it would necessarily be a negative impact, is hard to forecast for two reasons. Firstly, the communities neighbouring the Project range in the level to which they are established. Secondly the staffing strategy for the construction and operations phases have not yet been finalised, and the extent to which the Project workers affect social cohesion will depend on the extent to which ERC hire local workers, and the extent to which workers are given or choose to opt for accommodation (temporary or permanent) in

local communities. The contractors have not yet established how they intend to accommodate workers from outside Cairo during the construction phase, and while ERC's intention is to hire from the local communities, for others they will provide transport for operational workers so that they do not need to move to locally neighbouring communities, the company will not be able to prohibit workers moving into neighbouring communities.

ERC will develop social policies for Project workers' induction, and behaviour standards according to socio-cultural context, for interacting with these neighbouring communities.

Socio-economic development: The ERC Project could have both negative and positive influences on socio-economic development in its neighbouring communities. Positive impacts could derive from: job opportunities at ERC for local people; multiplier effects on local ancillary services (local restaurants, shops, transport) and ERC's investment in socio-economic growth and community health support through its programme of Community Development investments. Negative influences could derive from increased inequality between vulnerable groups and Project employees. The SIA team has identified vulnerable groups who will be supported by ERC through partnerships development with civil society organisations, specifically the local NGOs which provide many of the socio-economic services in the communities such as skills development, livelihoods and health support.

Economic Environment

Cost of goods and services including housing: The purchase of local goods and services by the construction labour force and permanent ERC staff (e.g. use of local shops and restaurants, and housing purchase and rental markets) could potentially impact the local economy. This could be beneficial in terms of creating local economic development and employment but may also lead to local inflation. However, the fact that the Project is located in a densely populated urban area with many other demographic and economic processes in addition to the Project means that it is unlikely that local inflation or economic

development could be clearly attributed to the Project, except in the case of specific businesses likely to attract Project staff. ERC will consider the socio-economic baseline context and consult community leaders and civil society when making these agreements.

The quantitative data on the perceived ERC impacts on the economy was mixed. Such anomalies will be considered as part of Phase 2 SIA and the implementation of the Social Management Plan.

Employment, Livelihoods and Income Generating Activities

Project employment: In both the construction and operational phases there is an opportunity for maximising positive impacts from ERC through involving unskilled (and where possible skilled) labour from all Project Area communities. Around 30-50% of respondents expect improved local employment opportunities due to the Project with the highest expectation of employment being in Atef (at 49.6% of sample) and the lowest expectation of local employment opportunities being at Naguib (27.5%). There was a lower expectation of employment opportunities for nationals in general across all communities with the highest expectation of national employment opportunities being in Atef but only at 24.3%; the lowest expectation of national employment opportunities was in Naguib at 12.7%. This community has been promised work in the past by local industry but the job opportunities expected did not materialise.

The highest expectation of improved employment was recorded amongst those operating income generating activities along the transport route. Whilst it is expected that increased traffic due to the Project would bring increased environmental harm it was also expected that increased traffic would benefit business.

A concern expressed frequently during consultation was that practices of nepotism would influence the recruitment procedure, meaning that local people without connections would not get access to Project jobs. ERC, and contractors will produce transparent and fair employment policies

and work with community NGOs on a skills audit of local communities. Some NGOs already consulted have 'job application' support services which ERC could engage with for mutual benefit of the Project and the people.

Skills Development: If local workers are trained to take some of the jobs this could contribute to social development in the long term. ERC will identify the skills that it needs for its construction and operations phases that could be provided as part of a community skills development programme providing basic training in the communities through its Community Development Centres.

Quality of Life

Clean and peaceful local environment: The proposal for installation of additional oil processing units has led to concerns about community health and safety. ERC will put policies and training in place to ensure that Project staff adopt a code of conduct which guarantees respectful and appropriate behaviour towards community members, including the poor and vulnerable. This will be part of ERC's social and good neighbour policies.

Social inclusion: The ERC Project is one of the first projects in the Mostorod area to include the community residents, representatives and leaders in consultations that have led to a direct influence on Project design. Since consultation began ERC has made significant changes to its plans in order to include people's recommendations and needs. Further inclusion will happen as part of the Public Hearing process in July 2008. Care will be taken to consider vulnerable members of society and be inclusive of all members e.g. the illiterate should be considered when distributing Project information, advertising for jobs in the community etc. so they are not excluded from Project benefits. A specialist Communications Team will be engaged by ERC to ensure such social inclusion happens in the appropriate manner.

Law and order: One potential Project impact anticipated by residents at the Laydown Area is that improvements to infrastructure and local areas (specifically clearing, fencing and lighting the area)

would have a positive affect on reducing crime and improving the neighbourhood. ERC will ensure that these consultations are allowed to continue to reach the best solution for cleaning the environment in this area in partnership with the Mostorod leaders who have demonstrated goodwill in so doing.

Clean and peaceful local environment: The proposal of a new processing facility has led to concerns about community health and safety. In addition, construction noise and dust could have an impact on the Quality of Life of residents living in the immediate vicinity of Project sites and the transport corridor. During consultations at the Laydown Area, there are expectations of ERC cleaning up the Laydown Area. It should be noted, however, that opinions were mixed as garbage collectors and sorters also gain livelihoods from this area. ERC and contractors are designing construction practices to mitigate dust and noise and thus protect neighbouring communities from construction nuisance. ERC will monitor the effective application of the construction practices by contractors.

Traffic and Transport: The Project will rely on a significant number of vehicles, both for the transport of Project equipment and for Project staff. Stress on transport infrastructure may increase during the construction phase and with the transport of 8-10 000 workers a day at peak labour force. Traffic congestion emerged as a special concern in El Khosos during consultation as the main 'entrance' to the community (on the Ismailia Canal) is already vulnerable to blockages. ERC is adopting mitigation measures to reduce traffic impacts such as phased work shifts to not overload the public transport network at particular times. Also ERC vehicles will be maintained to highest standards with drivers well trained to reduce chances of accidents.

Accessibility: The fencing off of the Laydown Area could affect established access routes (roads and footpaths to the Ismailia Canal road) from the communities neighbouring the area during its use in the construction phase. ERC Project design has accommodated this by committing to a footpath along the edge of the fenced agricultural

area in the centre of the site. ERC should also provide pedestrian access along the walled road that runs from the edge of the Laydown Area to the road and along the walled road that runs down the east side of the Laydown Area to Amal City.

Health

The health baseline survey complements the socio-economic baseline by assessing the existing health status of the population potentially affected by the Project. This is of critical importance for the ERC Project given that one of the main concerns of local stakeholders in relation to the Project is its perceived impact on human (and particularly child) health. The health baseline was conducted so that, should the Project support community health services, the ERC teams know what health support they should provide to the communities to complement Project objectives and peoples needs. The recommendations will be part of the Health Management Plan.

The health surveys, carried out by Egypt's Health Care International included over 7000 people. The health team tracked all families visited by the social team, to interview one respondent in each family and to examine one family member from each household. Examinations were carried out in rented locations equipped by the health team in each community. Out of 1169 households visited, 1234 persons attended clinical examinations. In addition 20 interviews with key informants and 12 focus group discussions were conducted.

Worker Health and Safety: Construction works may expose workers to health and safety risks, including: noise and dust from demolitions and excavations; working with heavy equipment; working in confined spaces, heavy lifting, storage, handling and use of hazardous substances and waste, and working under noisy conditions. Excavations and transportation of materials may cause further health and safety negative impacts to the labourers at construction. ERC will adopt strict construction practices to ensure health & safety of its construction workers.

Community Health: hygiene and health problems on the construction site may be caused by pools of standing water which may create habitats for

insect disease vectors such as eye infections. Dust may also create health problems such as chest allergies and prolonged noise could not only cause livelihood disruption but maybe stress and/or depression. ERC has put in place dust and noise mitigation measure in its construction plan to reduce impacts such as no construction at night and removing buildings closest to communities carefully.

Resettlement/Rehousing

Although the Project's permanent land take is limited to industrial sites with formal owners willing to sell or lease their land, the presence of CORC employee accommodation on the South Plot, the proximity of residential areas and businesses to the North Plot, and the informal uses of the Laydown Area by garbage collectors and sorters means that a Resettlement Action Plan process is required to anticipate and mitigate any impact on livelihoods. It is worth mentioning that there will be no physical resettlement for houses except for the 21 families living inside the CORC refinery.

Three sites have the potential to displace livelihoods: (i) The principal South Plot 1 land within the existing industrial area owned by CORC and leased to ERC; (ii) North Plot land within the existing industrial area acquired by ERC through open public tender; and (iii) Laydown Area land to the west of the industrial area leased from a private company, ESCO.

The South Plot has three CORC-owned residential buildings, housing 21 employees and their families (107 individuals) who are provided subsidised rent, and who will be re-housed when construction begins. The selection of the apartments was based on proximity to the refinery for convenience with transport and social networks, and better living environment (outside the refinery complex). The tenants were happy to move, as the old apartments were not in good condition.

The Laydown Area will be used during the construction period to temporarily store all materials. The North of this site is currently used as an informal waste dump, and is frequented by informal garbage collectors and waste sorters. When the site is cleared, and used during

construction, these affected people will not be able to continue their livelihoods and thus, would fall under economically displaced persons. In this connection, ERC has committed to conduct an in-depth study in the absence of baseline data among the informal garbage collectors in the area. The North of the Laydown Area will not be used until resettlement surveys are completed during the Phase 2 SIA.

In Phase 2 SIA, ERC will take a number of measures to complete the Resettlement Action Plan. These will include ensuring consultation and public information dissemination on resettlement through meetings with affected persons, local authorities, NGOs and other stakeholders. A survey and in-depth study will be conducted of the garbage collectors in the Laydown Area and in the vicinities of North and South Plots to fully understand the magnitude and nature of garbage collection among the very poor and vulnerable groups around the Project sites. This study will also help plan for appropriate community development interventions and activities.

Cumulative Impacts

The definition of 'Cumulative' is "increasing by one addition after another". In the context of ESIA, cumulative effects refer to the combined effects of different activities within the vicinity of the proposed Project or the combined effects of different aspects of the same Project on a particular receptor. This can be further explained using the following examples:

- Cumulative effects from different developments: For example, an individual industrial plant may have relatively low predicted emissions to air, with no exceedances of the relevant air quality standards. However, when the dispersion plume is modelled this may overlap with the plume of another development.
- Cumulative effects from different aspects of the same Project: For example, residents adjacent to a proposed new development may expect to experience degradation of local air quality, increases in noise levels and a higher volume of traffic that will change the character

of local roads. These effects in isolation may be considered acceptable, however together may result in a level of nuisance that is unacceptable.

In the majority of cases, consideration of the combined effects of a new development together with other developments will be limited to those Projects that are already begun or those that have

not been commenced but have valid planning permission.

Based on the Cumulative Impact Assessment engineering decisions can be made to determine the need for additional mitigation measures in order to reduce or avoid any combined effects.

Cumulatively, the most significant potential impacts are related to Air and Water Quality. The perceived impacts from the community also extend to traffic and health concerns. All of these will be addressed by ERC through mitigative actions and a Management Plan. Following these mitigation measures and improvements to neighbouring facilities (e.g. CORC) it is anticipated that negative impacts and the communities concerns will be managed successfully. It is anticipated that given ERC's commitment to incorporate appropriate environmental, health and safety controls, negative impacts will be minimal and with the added benefits of improvements to the CORC refinery, remediation of contaminated land and community health support, there is potential for positive impacts of the Project on health of local communities.

Mitigation and Environmental and Social Management

ERC will take a number of specific mitigation and management measures to ensure that the Project minimises or avoids any negative impacts and maximises positive benefits to local communities. These measures are being formalised into an Environment, Social and Health Management Plan (ESMP). As well as specifying measures to manage Project impacts, this plan will also include ERC's voluntary contributions to Community Development.

The ESMP includes for the continuation of social management aspects such as ongoing consultations and the grievance mechanism, such that the local community can make representations to ERC and their concerns be addressed. ERC intends to continue with the stakeholder engagement aspects through the ongoing development of the Community Development Centres and CLOs.

In recent years for large scale projects such as this, the delivery of project Environmental and Social commitments has come to the fore and best practice includes development of control plans in a transparent manner. Such plans are visible and auditable by any of the Project management stakeholders. Specific plans for the ERC project will include:

- Resettlement.
- Grievance mechanism.
- Community relations.
- Employment.
- Worker accommodation.
- Community safety.
- Site clearance and land contamination study.
- Construction related effects plan.
- Oils and fuel storage.
- Traffic management.
- Waste and emissions management.

Public Hearing

As part of ERC commitment to stakeholder engagement and consultation two Public Hearings are planned in July 2008. The first will include representatives from Governmental bodies, such as relevant Ministries and the second will include NGOs, Community leaders and the public and will be held in the communities adjacent to the refinery site.

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COMMUNITY RELATIONS

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