
Non-Technical Summary

SUEZ OIL PROCESSING COMPANY, EGYPT

May 2019

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1. Background

Introduction

The Suez Refinery is operated and owned by Suez Oil Processing Company (SOPC), a 100% fully owned subsidiary of the Egyptian General Petroleum Corporation (EGPC), an economic state corporation affiliated to the Egyptian Ministry of Petroleum.

The SOPC Refinery is proposing to upgrade our existing facility and this Non-Technical Summary (NTS) provides a description of the planned upgrade and describes the potential benefits and impacts associated with their construction and operation. It also describes how these will be mitigated and managed through all phases of the project and provides a summary of the public consultation activities and the approach to future stakeholder engagement.

Contact details at SOPC for this project are:

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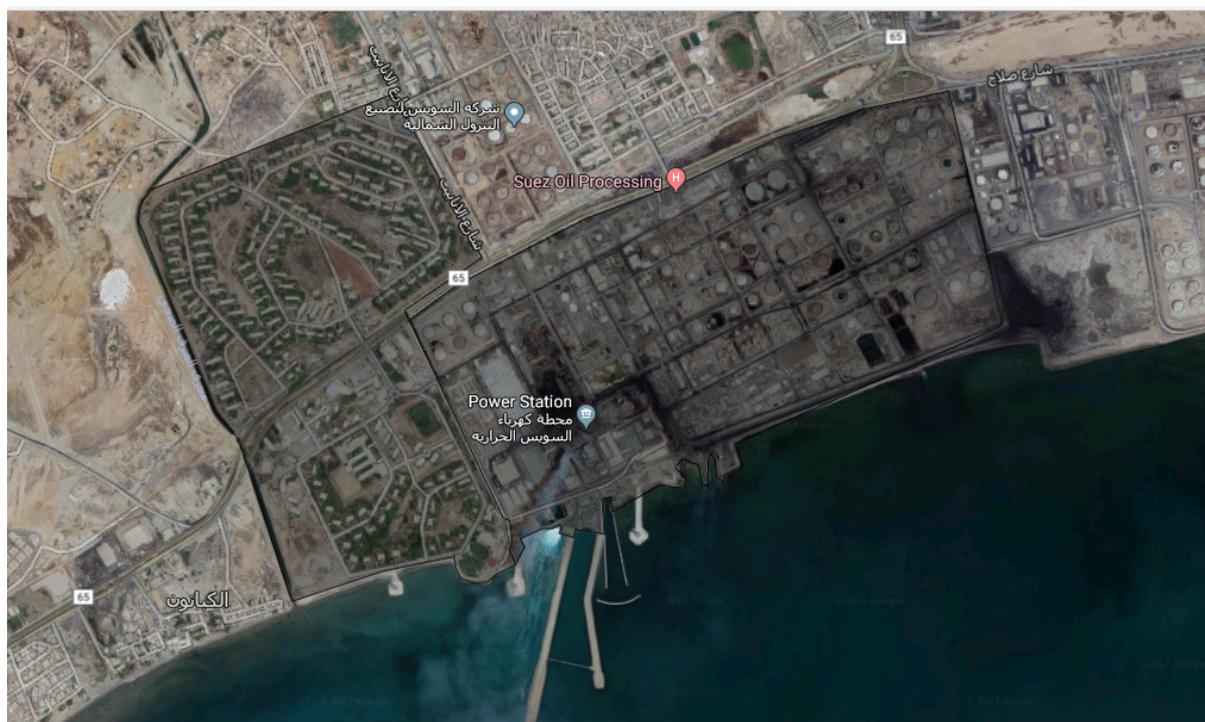
Site location

The Site is located inland in Suez Governorate, approximately 150 km east of Cairo and approximately 3 km to the west of the central business district (CBD) of the city of Suez. The total area of the refinery is approximately 340 hectares (ha). The topography of the refinery and immediate surrounding area are largely flat.

Figure 1 – Site Location within Egypt



Figure 2 - Site Location within Suez



The existing site is owned by SOPC and the new projects are to be undertaken within the confines of the existing refinery.

The nearest residential buildings are located adjacent to the western and north-western boundaries of the refinery site, and comprise accommodation for SOPC workers. Residential areas are also situated approximately 150 m north of the Site, on the opposite side of the Suez – Ain El Sokhna Road.

Overview of SOPC Operations

The refinery is located at the entrance of the Suez Canal adjacent to the city of Suez and has capacity of 3 million tonnes throughput per annum or 68,000 barrels of oil per day (bopd).

The typical crude supplied is heavy crude oil sourced locally from Ras Gharib and Belayim oil wells and the main products produced consist of gasoline 80 and 92, LPG, kerosene, gasoline and mazut (fuel oil), diesel, sulphur, asphalt and coke. The crude is supplied by 3 pipelines – one from the oil field, one from the port of Sadat (10 km from site) and one from the port of Suez.

An overview of the operations at SOPC is presented in **Table 1** below.

Table 1 - SOPC Operations

Number of Sites / Companies	SOPC is a subsidiary of the Egyptian General Petroleum Corporation (EGPC), an economic state corporation affiliated to the Egyptian Ministry of Petroleum. SOPC operates a single refinery site located approximately 3 km west of the city of Suez.
Employees	Approximately 5,800 permanent staff
Products	Products manufactured at the Site include: → Propane → Butane → Gasoline → Kerosene → Solar

- Diesel
- Middle distillates
- Mazut (fuel oil)
- Asphalt
- Coke

Current Production Operations

The major process units in the Suez Refinery include:

Distillation Complex

- Crude Oil Distillation Units (CDU-1, CDU-2) heats crude oil to split into different fractions such as LPG, naphtha, kerosene, gas oil & fuel oil
- Vacuum Distillation Unit (VDU) – feed is split into light and heavy fractions, including gas oil, wax distillates and vacuum residue

Catalytic Reformer Complex

- Naphtha Hydrotreating Unit (U-20)
- Catalytic Reforming Unit / Platforming Unit (U-21)
- Vapour Recovery Unit (U-22)

Hydrogen Plant (U-16)

Coker Complex

- Two-Stage Skimmed Crude Distillation Unit (U-10)
- Straight Run Unifining Unit (U-11)
- Delayed Coker Unit (U-12)
- Coker Distillate Unifining Unit (U-13)
- Cracked Gas Unit (U-14)
- H₂S Removal Unit (U-15)

Sulphur Recovery Unit (U-41)

Ancillary activities include:

- Raw water treatment
- Thermal power units
- Waste water treatment plant
- Tank farm and oil pipelines – SOPC reported that there are approximately 90 bulk hydrocarbon tanks
- Administration buildings
- Workshops and fabrication shops
- Medical clinic
- Fire station
- Canteens and welfare facilities
- Jetty and associated pipelines
- Security service

Overview of the project

The proposed investments (the Project) include:

- Coker Refurbishment / Upgrade: A Coker unit is an oil refinery processing unit that converts the residual oil from the vacuum distillation column into low molecular weight hydrocarbon gases, naphtha, light and heavy gas oils, and petroleum coke. Refurbishing the unit will provide a much improved closed loop system whereby less material is wasted and processing capacity is increased back to initial design capacity. A new plant would mean a more stable production system, with reduced plant outage periods and reduced energy demand. It will further enable the production of high grade fuels. The new Coker Unit will replace the old 6 drum design with a

modern two drum unit, with key improvements in coke processing, off gas utilisation and in final coke storage. Finally, some of the residual component from the Coker Unit will be transferred to the adjacent NASR Refinery for processing in the site's Hydrocracker Unit, which ensure further valorisation of these 'higher viscosity' feed materials. The transfer across the refineries will utilise a dedicated short pipeline with intermediary storage capacity on both sites.

- New Vapour Recovery Unit (VRU): A VRU captures vapours that are valuable to be recovered and returns them to the process. This upgrade will lead to a reduction in flaring / direct hydrocarbon air emissions and improved yields.
- An Energy Efficiency Investment Programme, which includes:
 - High pressure boiler.
 - De-aeration makeup water heating
 - Reduction of material losses
 - Energy management system
 - Crude distillation unit (#2) heat exchange network revamp
 - Water reuse and condensate recovery
 - Installation of variable speed drives
- Vacuum Distillation Unit Asphalt Plant: A new Asphalt Products Production Unit using a Vacuum Distillation Unit (VDU) system is proposed. This will remove lighter fractions from residues from the Atmospheric crude oil distillation units currently on the site. This VDU Asphalt plant will allow a better improved processing of the heavy end fractions of the feedstocks (from the site distillation unit and also the adjacent NASR Refineries heavy end products from distillation), rather than purely using these to produce lower-value heavy fuel oils.

These investments are expected to reduce annual greenhouse gas emissions by in excess of 289,000 tons per year and reduce water demand by 385,000 m³ per year.

2. What are the environmental, health, safety and social aspects (EHSS) of the project?

What environmental, health, safety and social assessment has been conducted for the project?

In October 2017, an Environmental and Social Due Diligence (ESDD) audit was undertaken at the SOPC facility in Suez on behalf of EBRD. This ESDD audit evaluated the environmental and social impacts and benefits of the project and evaluated them against the following criteria

- European Bank for Reconstruction and Development (EBRD) 2014 Environmental and Social Policy, which includes a comprehensive set of Performance Requirements (PR) covering key areas of environmental and social impacts and issues.
- Applicable European Union (EU) Reference Guidelines for Best Available Techniques (BREF), covering Best Available Techniques (BAT) for management of environmental impacts for relevant industrial sectors.

An update to the original environmental and social assessment of the project was undertaken in November 2018 to incorporate the proposed Asphalt Plant and coker upgrade from six to a two drum design.

Where the audit has identified the need for further mitigation measures to address impacts or improvements in corporate Environmental, Health and Safety and Social (EHSS) performance, an action has been proposed and incorporated into an Environmental and Social Action Plan (ESAP). This ESAP would enable compliance with relevant corporate, national, EU standards and EBRD Performance Requirements. The Project is being designed to fully meet these requirements. Where the due diligence has identified areas for improvement across the rest of the refinery, these are also included in the ESAP to bring the refinery as a whole closer to meeting EBRD's requirements in the shorter and medium term and achieving compliance in the long term

The EBRD has categorised the Project as B, since all upgrades will be undertaken on the current site, and reflect an overall improvement, when considered against the performance of the current processes on the site.

What is the environmental impact assessment process for the project?

The main legal instrument dealing with environmental issues in Egypt is Law 4/1994, amended by Law 9/2009 and Executive Regulation 1095/2011 which is amended by ER 710/2012. According to Article 1 of Law 4, the entity responsible for a given project is required to carry out an environmental impact assessment (EIA) of the project's potential impact on the natural and socio-cultural environment before embarking on the construction or the implementation of the project or the relevant expansions. The findings of the assessment are submitted to the Egyptian Environmental Affairs Agency (EEAA) for review and approval before other relevant governmental authorities can issue their permits for implementing the project. Subject to each project classification (A, B, or C), EEAA developed specific procedures to be followed and studies to be made and presented for review and approval prior to any construction activities.

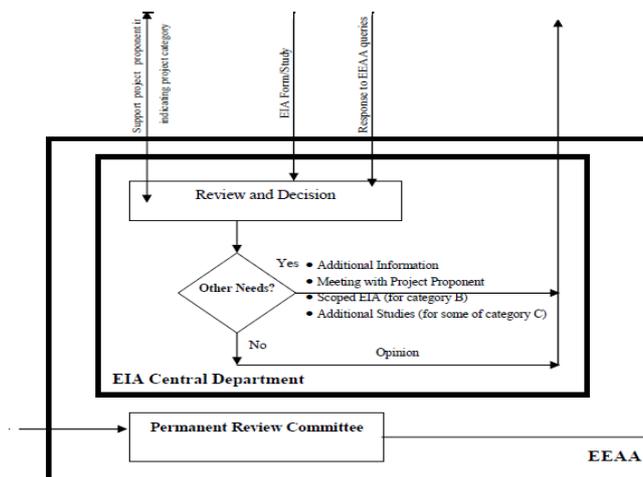
EEAA has developed detailed principles of the EIA system which include the following aspects:

- Identifying the projects subject to the EIA system;
- Indicating the rules and procedures for EIA;
- Categorising the projects according to their environmental impact and the level of assessment.

The EIA system assigns projects into three main categories according to severity of possible environmental impacts and location of the establishment and its proximity to residential settlements which mandates different levels of EIA requirements:

- Category (A): projects with minimum environmental impacts. These are required to complete an environmental impact assessment form A.
- Category (B): projects with potential adverse environmental impacts yet less adverse than category C. These are required to complete an environmental impact assessment form B.
- Category (C): projects which have highly adverse impacts. These are required to prepare a full EIA study.

The following process is followed when an EIA is submitted for review by EEAA;



EIAs have been conducted for several recent projects, including developments at the vacuum distillation unit, lube oil complex and tanker berth area. The EIA for the VRU project is in progress.

How will the environmental, health, safety and social aspects be managed?

The following table summarises the main potential positive and negative environmental, health, safety and social (EHSS) impacts related to the project, as well as a summary of the key mitigation measures to ensure that no significant impacts will be realised:

Environmental Resource	Impact Overview	Mitigation Measures Summary
Construction Phase		
Climate and Air Quality	Limited potential for impact, other than from dust very local to construction operations. There are no sensitive receptors adjacent to the construction activities	<ul style="list-style-type: none"> → Visual dust monitoring should be undertaken daily during construction, and dust dampening measures taken if required → A complaints hotline should be established for the duration of the works and the number should be displayed at appropriate locations on the site boundary
Noise and Vibration	There will likely be a noise impact during the construction phase. However no occupied buildings will be located within 50 meters of where the construction works will be taking place	<ul style="list-style-type: none"> → Hearing protection should be provided to construction workers exposed to 85 dBA and above. No workers should be exposed to noise levels over 87dBA
Hydrology: Surface Water and	There is limited potential for impact to water courses as a result of	Construction Best Practice for the storage of materials and clear-up of

Environmental Resource	Impact Overview	Mitigation Measures Summary
Groundwater	<p>construction activities</p> <p>All works will be undertaken within the site boundary and contaminated surface water run off will be captured by the site's drainage and treatment system.</p>	any accidental spillages.
Wastewater Management	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control.	Site welfare facilities will be available to construction workers
Geology and Land	No potential for impact outside of the project site.	Undertake a contaminated land survey to benchmark site soil conditions and identify any necessary remediation prior to construction
Ecosystems and Flora & Fauna	The projects will be constructed within the boundary of the current refinery installation. As such no flora or fauna under the protection of international agreements are likely to be impacted.	Not applicable
Geohazards / Seismic	The site is not located in a seismically active region.	Not applicable
Waste Management	Waste materials will be generated during construction.	<ul style="list-style-type: none"> → Compliance with relevant waste duty of care Regulations. → A waste management plan will be developed for the construction phase detailing collection, storage, treatment and /or disposal methods. → Staff will be trained to segregate and appropriately dispose of waste.
Cultural Resources	The impact on cultural resources is expected to be minimal.	Not applicable
Visual and Landscape	The projects will be constructed within the boundary of the current refinery installation.	Not applicable
Land acquisition	The projects will be constructed within the boundary of the current refinery installation.	Not applicable
Operational Phase		
Climate and Air Quality	<p>Coker Refurbishment</p> <p>The new coker unit will only be fueled on either on natural gas or refinery gas. The EU aligned air emission limits will be achieved for 'gas only'</p>	<ul style="list-style-type: none"> → Air quality is monitored for occupational hygiene purposes and medical surveillance is conducted on employees → Weekly monitoring of ambient air

Environmental Resource	Impact Overview	Mitigation Measures Summary
	<p>(100mg/Nm³ for nitrogen oxides), which are much lower than the current coker heater unit emission levels.</p> <p>Calcining of green coke does not take place on site. It is intended that the residual coke materials from the new coker unit will be stored in an enclosed silo, an improvement on the current 'open yard' storage.</p> <p>New Vapour Recovery Unit</p> <p>As part of the VRU project, all C1 product (fuel gas) from the new VRU fractionators will pass for sweetening via the sulphur recovery unit (SRU). This will significantly increase the emission of oxidised sulphur. The SRU will require upgrading and treatment of tail gas.</p> <p>New Asphalt Plant</p> <p>The Asphalt 'Vacuum Distillation Unit' (VDU) will be implemented on site to produce a number of higher valued products rather than the blending of these materials in low value heavy fuel oil. Product will include Asphalt (for mixing with gravels off site to form Bitumen) and also light and heavy vacuum gas oils. The Asphalt plant will be installed at the site of the former lubricating oil plant on site, so new land-take will not be necessary.</p>	<p>quality is conducted for occupational hygiene purposes</p> <p>→ ESAP actions have been included to ensure that full BAT aligned performance is achieved, as well as specific items in relation to effective emissions monitoring, and also ensuring that downstream associated plant is functional and effective (sulphur recovery systems and sour water stripper unit).</p>
Noise and Vibration	<p>There is potential for operational noise and vibration impacts on nearby sensitive receptors, particularly residential properties.</p> <p>The projects will exist within the boundary of the current refinery installation, with no occupied buildings /sensitive receptors within 50 meters.</p>	<p>→ Selection of suitable equipment, noise absorbers and isolation.</p>
Hydrology: Surface Water and Groundwater	<p>Due to corrosion and poor equipment condition, the sour water stripper unit on the effluent discharge is non-operational, leading to high levels of hydrogen sulphide and ammonia. The investments will increase overall effluent generation and further intensify this issue area.</p>	<p>→ All works will be within the site boundary and contaminated surface water run-off will be captured by the site's drainage and treatment system.</p> <p>→ An ESAP Action has been included to upgrade the sour water stripper to ensure reliable operation and also to provide treatment capability for the</p>

Environmental Resource	Impact Overview	Mitigation Measures Summary
		planned increases in production capacity.
Wastewater Management	No impact	Not applicable
Geology and Land	No impact	Not applicable
Ecosystems and Flora & Fauna	No impact	Not applicable
Geohazards / Seismic	The site is not located in a seismically active region.	Not applicable
Waste Management	The projects themselves will not generate effluent/waste. However, their implementation serves to increase process throughput overall at the site, so waste generation will be increased.	Compliance with relevant waste 'duty of care' Regulations to ensure responsible disposal.
Cultural Resources	No impact	Not applicable
Visual and Landscape	The projects will be constructed within the boundary of the current refinery installation.	Not applicable
Land acquisition	The projects will be constructed within the boundary of the current refinery installation.	Not applicable

What are the overall benefits of the project?

The Project is expected to reduce annual greenhouse gas emissions by in excess of 295k tons per year and reduce water demand by 385k m³ per year. It will reduce waste generate and allow the refinery to produce higher grade fuels. Further production capacity will be return to design capacity. The Asphalt Plant will improve overall recovery of heavy end materials from the atmospheric distillation units and also the crude distillation unit at the adjacent NASR refinery. In addition an Environmental and Social Action Plan (ESAP) has been developed in order to align the existing operation and the proposed investment with the EBRD performance requirements. The proposed action areas will result in improved EHSS performance and risk management and benefit enhancement across SOPC operations, as well as Contractors' operations.

Key actions in the Environment and Social Action Plan for the Project include:

- Develop and implement a safety management system in line with international standards of ISO14001 and OHSAS 18001 (to become ISO 45001 or equivalent).
- Conduct a water balance assessment to characterise water circulation across the site, including discharge routing, processes supplied and usage volumes (both anticipated and actual) for each process. The results of the assessment should be used to assess potential opportunities for usage reduction and recirculation of water back into processes.
- Undertake a detailed options study against the EU BAT Reference note / Best Available Techniques (BAT) conclusions for the Refining of Mineral Oil and Gas to inform the development of an upgrade programme for Oil / Products Storage across the sites, in terms of pollution avoidance.

- Conduct a review of the composition of waste water streams entering the effluent plant and based on the results, the treatment system should be modified accordingly to minimise pollution discharge.
- Develop and implement a formal procedure for waste management, covering segregation, storage and disposal to improve current waste management practices.
- Develop and implement a system to formally manage fuel selection and optimisation
- Upgrade the sulphur recovery unit should to ensure reliable operation and also to provide treatment capability for the planned increases in production capacity.
- Review sampling and analytical methods for the monitoring of all sulphur based compounds and species within industrial waste water being discharged to the site.
- Complete the feasibility study for a new steam heater unit.
- Develop and implement a formal process for monitoring contractor EHS performance, such as periodic audits / inspection of contractor operations, and/or definition and monitoring of key performance indicators (accident frequency, etc.).
- Progress the chemicals warehouse upgrade, including appropriate containment and capacity for segregation, including signage and physical barriers where necessary.
- Conduct periodic analysis of potable water for chemical and biological contaminants to ensure that it meets the relevant Egyptian drinking water standards.
- Include plans of the escape routes and assembly points in emergency plans.
- Develop a communication strategy to engage with the public (and privately owned companies not part of the Suez Geographical Area) to ensure they understand the potential major accident hazards, the safety measures taken and what to do in case of a major accident. This dialogue should include information on emergency plans and alarms indicating that a major accident event has taken place.
- That the design of the Asphalt Plant will ensure that emission levels for each combustion gas pollutant from the pre-heater unit, are aligned with EU BAT levels.
- That the tanks for the new Asphalt VDU plant will all have a bund which is aligned with EU BAT requirements.
- Installation of pressure release venting systems on the Asphalt Product Tanks, or venting to a flared gas stream, or other abatement methods, unless monitoring demonstrated that this is not required.

3. How will stakeholders be engaged in the project?

What is the stakeholder engagement plan (SEP)

A Stakeholder Engagement Plan (SEP) has been developed for SOPC with the objective of identifying key stakeholders and ensuring that, where relevant, they are informed in a timely manner of the potential impacts of projects. The plan will also identify a formal grievance mechanism to be used by stakeholders for dealing with complaints, concerns queries etc. It will be reviewed and updated on a regular basis. If activities change or new activities relating to stakeholder engagement commence, the SEP will be brought up to date. The SEP will also be reviewed periodically during project implementation and updated as necessary.

The SEP includes the following:

- Project description, location of the site and key environmental and social issues;
- Public consultations and information disclosure requirements;
- Identification of stakeholders and other affected parties;
- Overview of previous SOPC's stakeholder engagement activities;
- Stakeholder engagement programme and methods of engagement and resources; and
- A grievance mechanism.

Who are the key stakeholders?

Stakeholders could be individuals and organisations that may be directly or indirectly affected by the project either in a positive or negative way, who wish to express their views. The definition applied to identify key stakeholders is:

'any stakeholders with significant influence on or significantly impacted by, the work and where these interests and influence must be recognised if the work is to be successful'.

Key stakeholders have been identified from the following categories: international (EBRD); governmental (Republic of Egypt, EEAA, relevant Ministries, Municipalities and other relevant local authorities); advisory non-government; services / suppliers; clients; institutions (universities, think tanks, etc.); the industrial sector (trade bodies, other industrial sites, contractors, suppliers), internal stakeholders (employees); local communities (towns, villages, farmers, other potentially affected people, fishing communities and bodies); public groups (local schools, hospitals, etc.); and the media.

What is the procedure for communicating with stakeholders?

The SEP outlines the methods that SOPC will adopt to ensure effective stakeholder engagement is undertaken, providing details of the programme of future public consultation and information disclosure that will be recorded for major projects. SOPC will record the following information on an ongoing basis:

- Type of information disclosed, in what forms (e.g. oral, brochure, reports, posters, radio, etc.), and how it was released or distributed.
- The locations and dates of any meetings undertaken to date.
- Individuals, groups, and / or organisations that have been consulted.
- Key issues discussed and key concerns raised.
- Company response to issues raised, including any commitments or follow-up actions.
- Process undertaken for documenting these activities and reporting back to stakeholders.

If there are questions, queries, complaints or grievances regarding future projects, a grievance mechanism has been developed to address these issues and a grievance form will be used to record this information. The grievance form and the outline on how to use the grievance form is provide below.

A grievance mechanism will be adopted in which the grievance form presented below will be used as required to handle grievances from non-employees. The mechanism will be as follows:

- Grievance received
- Grievance recorded in a register
- For an immediate action to satisfy the complaint, the complainant will be informed of corrective action
- Implement corrective action, record the date and close case
- For a long corrective action, the complainant will be informed of proposed action
- Implement corrective action, record the date and close case

A grievance should be recorded by the complainant using the grievance form below, ensuring that contact details are provided with the preferred method and language of communication. A clear description should be provided of the incident or grievance. SOPC will respond to grievances within one month of receiving the form.

A grievance form is attached to this NTS, to the stand-alone SEP (Stakeholder Engagement Plan) and will be available from the SOPC offices within the Suez refinery and on the SOPC's website www.suezprocessing.com.

Public Grievance Form

Reference No:					
Full Name <i>Note: you can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent</i>	My first name _____ My last name _____ I wish to raise my grievance anonymously I request not to disclose my identity without my consent				
Contact Information Please mark how you wish to be contacted (mail, telephone, e-mail).	By Post: Please provide mailing address: _____ _____ _____ _____ By Telephone: _____ By E-mail _____				
Preferred Language for communication	English Arabic Other (specify)				
Description of Incident or Grievance:	<table border="0"> <tr> <td>What happened?</td> <td>Who did it happen to?</td> </tr> <tr> <td>Where did it happen?</td> <td>What is the result of the problem?</td> </tr> </table>	What happened?	Who did it happen to?	Where did it happen?	What is the result of the problem?
What happened?	Who did it happen to?				
Where did it happen?	What is the result of the problem?				
Date of Incident/Grievance					
	One time incident/grievance (date _____) Happened more than once (how many times? _____) On-going (currently experiencing problem)				
What would you like to see happen to resolve the problem?					

4. Glossary

BAT	Best Available Technique
BREF	Best Available Techniques Reference Document
CAPEX	Capital Expenditure
EBRD	European Bank for Reconstruction and Development
EEAA	Egyptian Environmental Affairs Agency
EHS	Environmental Health and Safety
EHSS	Environmental, Health and Safety and Social
EIA	Environmental Impact Assessment
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
EU	European Union
ha	Hectares
km	Kilometre
NTS	Non-Technical Summary
SOPC	Suez Oil Processing Company
T	Tonnes