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| DOC NUM: | SA-JER-AAAAA-ENGT - 490002   | DATE: | 08 JAN 2010 |

## JUBAIL EXPORT REFINERY PROJECT

### Directorate Engineering Team

| Rev. | Date        | Description | Prepared by  | Checked by   | Approved by  |
|------|-------------|-------------|--|--|--|
| 00   | 08 Jan 2010 | First Draft | F. Menci<br> | F. Silva<br> | D. Grunemwald<br>M. HAMmad<br> |
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## 1 Environmental and Social Management plan

### 1.1 Introduction

This document provides a summary of the Environmental and Social Management/Mitigation Plan (ESMP) that will be used to support the detailed design, construction, commissioning, operations and decommissioning of the SATORP Refinery. This ESMP, in broad terms, specifies the mitigating measures, management plans, and monitoring to be undertaken throughout the SATORP Refinery life cycle and list a non technical summary of the recommendations/actions resulting from the Environmental and Social Impact Assessment (ESIA) and from Lenders that shall be applied and implemented by SATORP and by EPCC contractors developing the detailed Management Plans.

To be noted that this summary does not attempt to replace the need to refer to PME, RCER 2004, relevant IFC Guidelines, and the SATORP CEMP.

### 1.2 ESMP

This section describes the ESMP for the project which essentially compiles the various commitments for the future development of plans / reports / assessments, mitigation measures and monitoring programmes that have emerged from the ESIA process.

This ESMP includes details about:

- How certain measures will be carried out (i.e. specific details or a plan describing the execution of measures);
- Details of auditing performance against legal, ESIA and Framework ESMP requirements;
- Timing of the implementation of the measures; and
- Responsibilities for ensuring implementation of each commitment.

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Implementation of the ESMP will provide SATORP with the assurance that all necessary mitigating measures are applied and that SATORP's commitments, as recorded or implied in the ESIA Report, are delivered.

The monitoring and evaluation that will be carried out as part of the ESMP will enable JER management and staff to demonstrate compliance with appropriate legislation, regulations, guidelines and commitments and to ascertain the effectiveness of mitigation measures proposed in the ESIA Report.

The ESMP is a dynamic document which can be updated and modified as necessary so it remains practicable and applicable throughout the project and also during operation phase.

Those measures and commitments concerning operational phase of the SATORP Refinery will be managed through a company-wide Environmental Management system such as the ISO 14001 standard.

### 1.3 ESMP Overview

The Environmental and Social Management/Mitigation Plan for the SATORP is expected to comprise five main sections and will be backed up by annexes as outlined below:

|           |                  |   |
|-----------|------------------|---|
| Section 1 | Introduction     | Scope, Application, Legislation             |
| Section 2 | General Approach | ESMP Approach                               |
| Section 3 | Steering         | Policy Statement, Goals, Responsibilities   |
| Section 4 | Implementation   | Mitigation Plans / Tables and Time Schedule |



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### 1.3.2.3 Responsibilities

The responsibilities will be defined as a matrix specifying the various actors (top management, environmental manager, department managers, external auditor) and the tasks (e.g. defining policy, defining mitigation plans, monitoring, auditing, etc). It will also define the organisational structure for environmental and social management.

### 1.3.3 Implementation

A description of the approach, where applicable, to each mitigation measure is provided including time schedules for future activities and responsible for the implementation of the action/recommendation.

### 1.3.4 Controlling

#### 1.3.4.1 Monitoring

The implementation of the EMSP will be periodically monitored during construction, commissioning and operations of SATORP Refinery by key management representatives within SATORP.

#### 1.3.4.2 Reporting

Key performance indicators, including implementation achievements as well as various environmental monitoring data, will be reported internally.

#### 1.3.4.3 Auditing and Corrective Actions

The internal auditing scheme will be developed to assure that the implementation of the ESMP is successful.

Depending on the findings of the audit, the ESMP implementation manager will propose measures to take the necessary corrective actions by defining measures, responsibilities and deadlines where the schedule of the ESMP is not met.

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#### 1.4 Environmental and Social Requirements for the ESMP

The ESIA has demonstrated a significant number of design features which have been integrated into the JER Project FEED basis specifically for reduction or removal of operational environmental and social impacts.

Table 1 summarized the commitments of SATORP regarding the implementation of a number of plans or additional assessments for the project.

Table 2 provide a summary of future mitigation, management and monitoring requirements (commitments) for the different phases of the Project: FEED, Construction, detailed Engineering, Operational.

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**Table 1 Summary of Plans to be Developed by SATORP Prior to Operations**

| Item nr. | Reference to the Master of ESMP   | Plan or Assessment   | Remarks   | Deadline   |
|----------|---|--|---|--|
| 1        | 1   | SATORP HSE Policy  |   | 31/01/2010   |
| 2        | 2   | SATORP Recruitment Policy  |   | To be defined  |
| 3        | 3   | Community Outreach Programme   | SATORP plan to initiate high level contacts and socialization meetings with the Government Agencies concerned in order to boost relationship between them and the Company.<br>- An educational safety and environmental awareness program targeting Jubail's high school students<br>- A suitable orphan motivation program will be implemented<br>- SATORP intend to implement a suitable recreational program for the Area's handicapped. | 31/05/2010 educational safety and environ. Program<br>30/08/2010: orphan motivation program<br>30/11/2010: recreational program for the Area's handicapped |
| 4        | 4 (a, b, c, d)  | Soil and Groundwater Assessment Report   | Conduct a soil and groundwater baseline study for Lot 9, Temporary Camp Facilities (TCF) and Port Area  | 31/12/2009 (for Refinery Site)<br>31/01/2010 (for TCF Site)<br>30/01/2010 (for Port Area)  |
| 5        | 5 (a, b), 24, 36b, 41b, 43 ( b, c, d), 45, 46, 47, 48a, 48b, 48c, 49a, 49b, 49c, 49d, 50b, 51, 52 | Development of Construction Environmental Management Plan Construction Phase and implementation of it in detailed CEMP of each EPCC contractor | The Plan will include:<br>- Grievance mechanism and a Public Compliant procedure<br>- procedure and protocols for any future land occupation<br>- Traffic Plan for EPCC contractor<br>- management of workforce at the end of construction phase<br>- Archaeological procedure in case of findings<br>- procedure for water disposal before dewatering<br>- waste management plan   | 31/12/2009   |
| 6        | 6, 7, 8, 9, 44  | Development of specific Plans  | At least the following Plans will be prepared before start up of  | 1 and 2 -> 31/12/2011  |

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| Item nr. | Reference to the Master of ESMP  | Plan or Assessment  | Remarks   | Deadline                            |
|----------|--|---|---|-------------------------------------|
|          |  | for Operational phase for Operations  | the Refinery:<br>1. Emergency Response Plan (ERP)<br>2. Oil Spill response Plan<br>3. H&S Plan for Operation<br>4. Waste Management Plan  | 3 -> 30/03/2012<br>4. -> 31/03/2012 |
| 7        | 10, 53, 54, 55, 56, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 68, 69, 71 | Operational EMS   | Base on the principle of ISO 14001.<br>The system will include also:<br>- Grievance mechanism<br>- Public Compliant procedure<br>- waste management Plan<br>- annual reporting of GHG emissions<br>exposure monitoring plan for workers<br>- noise monitoring procedure<br>- groundwater monitoring<br>- waste water monitoring plan<br>- vetting procedure | 30/06/2012                          |
| 8        | 38, 39, 40, 41a  | Development of an Ecology Plan for assuring implementation of mitigation measures identified in the ESIA Report during construction |   | 30/12/2009                          |
| 9        | 43e  | Development of a Camp Management Plan for temporary camp facilities   | To prevent incidents caused by misconduct of the personnel and to prevent potential tensions between workers of different socio-cultural background as well as between workers and local  | 31/03/2010                          |

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|----------|---------------------------------|---|--|--------------------------------|
|          |                                 |   | community.   |                                |
| 10       | 50a                             | Development of an hydrotest water disposal plan will be prepared by each EPC contractor | The Plan will include measures to re-use the water as much as possible | Before construction activities |

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**Table 2 Summary of Mitigation Measures and Monitoring for the JER Project**

**2.a: Requirements already included in the Project Design: FEED Phase**

| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility | Remarks   | Deadline                       |
|------|---------------------------------|-------|--|----------------|---|--------------------------------|
| 8    | 11                              | Air   | Design combustion systems that comply with RCER 2004 and IFC PS3 emission limits. Apply BAT principles to large emission sources, and appropriately design stack heights / widths to minimise impact to air quality. | TPIT           | BAT Assessment and Atmospheric Dispersion Modelling Study demonstrate these requirements have been met. An appropriate number and specification of amine strippers minimise sulphur content of fuel gas and consequently SO <sub>2</sub> exhaust gas concentrations. The proposed SRU recovery performance minimises impacts of SO <sub>2</sub> from the tail gas incinerators. | Already included in the design |
| 9    | 12                              |       | VOC collection systems for vessel (ship tanker) loading in KFIP (98% for HAPs).  | TPIT           | Included in the FEED basis.   | Already included in the design |

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| Item | Reference to the Master of ESMP | Media | Requirement   | Responsibility              | Remarks  | Deadline  |
|------|---------------------------------|-------|---|-----------------------------|--|---|
| 10   | 13, 32                          |       | VOC collection systems for refinery operations where tank contents has a TVP of 76.6kPa (95% for VOCs).   | Package 6                   | Final technology selection at EPC stage, which may include the 'no control device' alternative as discussed in Chapter 5 Alternatives and associated BAT Assessment (the selected approach would be approved by the RC prior to implementing). | 31/01/2010 to complete the detail BAT analysis                |
| 11   | 14                              |       | Storage tank roof specifications based on TVP of material.  | TPIT                        | Included in the FEED basis.  |   |
| 12   | 15, 30,31                       |       | The facility will install continuous emissions monitoring (CEMS) in accordance with Table 2D of RCER 2004 and all stacks have sampling ports (for USEPA method testing) | Package 1, 2A, 2B, 3, 4, 5B | The facility meets this requirement for fired heaters. As target NOx emission limits for fired heaters are less than 70% of the standard, NOx monitoring can be excluded (based on the results of  | Between November 2009 and June 2010 (depending from packages) |

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| Item | Reference to the Master of ESMP | Media | Requirement                                   | Responsibility | Remarks   | Deadline  |
|------|---------------------------------|-------|---|----------------|---|---|
|      |                                 |       | and access platforms                          |                | emissions testing). Opacity shall be measured. Generally, H <sub>2</sub> S in the fuel gas system will be monitored, rather than SO <sub>2</sub> in the stack exhausts. SRU tail gas incinerators will also include SO <sub>2</sub> monitoring.<br><br>PEMS may be a suitable alternative to CEMS. Should SATORP elect to applied PEMS, SATORP will seek necessary approvals from the RC prior to implementation. |   |
| 13   | 16                              | Noise | Design a FEED plot plan that can meet 70dBA L | TPIT           | The FEED plot plan has been demonstrated to meet this requirement using the acoustic model SoundPLAN (provided fan assisted plant is limited to   | Noise modelling to be re-performed during EPCC phase to confirm compliance with RCER and IFC limits |

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**2.a: Requirements already included in the Project Design: FEED Phase**

| Item | Reference to the Master of ESMP | Media               | Requirement  | Responsibility  | Remarks  | Deadline                       |
|------|---------------------------------|---------------------|--|-----------------|--|--------------------------------|
|      |                                 |                     |  |                 | 109 dBA maximum and all other plant is rated at 95 dBA maximum).   |                                |
| 14   | 17, 18, 19, 20                  | Soil / Groun dwater | The facility should include separate rain water collection systems – clean and oily. These streams should be separate from each other at all stages of collection and holding. Storage capacity of industrial waste water shall be able to retain three days (72 hours) of industrial wastewater production as per RCER. | TPIT            | Included in the FEED basis. The 2 systems are completely separate for the first flush (equivalent to first 30 mm of rain). After first flush all the water are collected in a common basin able to retain all the rain water, for test before discharge. | Already included in the design |
| 15   | 21                              | Soil / Groun dwater | Tanks should be bunded to either 10 % of the working volume of hazardous material storage within the containment area plus   | Package 6 and 9 | Base on project specification, diking capacity correspond to 100% of the nominal capacity of the largest tank  | Already included in the design |

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| Item | Reference to the Master of ESMP | Media               | Requirement  | Responsibility  | Remarks  | Deadline                       |
|------|---------------------------------|---------------------|--|-----------------|--|--------------------------------|
|      |                                 |                     | water accumulation from a 100mm storm event or 110 % of the volume of the largest tank within the containment area plus the water accumulation from a 100mm storm event. |                 | + a volume corresponding to 200 mm. Nominal capacity corresponds to the volume of the tank up to its HH liquid level alarm height. Such dike capacity correspond to more than 110% + 100 mm if considering the working capacity of tank as defined by the API 650 para 5.2.6.3..     |                                |
| 16   | 22                              | Soil / Groun dwater | Tank overspill protection and tank leak detection systems will be installed.   | Package 6 and 9 | Tanks in services other than water will be provided with an under tank leak detection system and subgrade protection according to API STD 650.<br><br>In addition to this, tank overspill protection will also be provided alarm to Main Control room with automatic or manual close | Already included in the design |

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**2.a: Requirements already included in the Project Design: FEED Phase**

| Item | Reference to the Master of ESMP | Media | Requirement | Responsibility | Remarks                              | Deadline |
|------|---------------------------------|-------|-------------|----------------|--------------------------------------|----------|
|      |                                 |       |             |                | of valves, depending from products). |          |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media   | Requirement  | Responsibility        | Remarks   | Deadline   |
|------|---------------------------------|---------|--|-----------------------|---|--|
| 17   | 38                              | Ecology | <p>Attention will be given to timing of clearance, grading and construction works in the area of the TCF where nesting birds have been identified. The period of restricted site activity will be established based on observations of actual nesting birds. Staff will be notified that this area of the TCF site is 'off limits'.</p> <p>An exclusion zone will be established to prevent disturbance at the nest sites for the estimated 12 weeks needed for the chicks present to fledge and not be reliant on the nest location.</p> <p>Machinery activity within</p> | Construction Services | The mitigation measures will be included in ecology monitoring plan (refer to item nr. 8) | Monitoring plan defined in April 2009 and implemented until October 2009 |

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| Item | Reference to the Master of ESMP | Media   | Requirement  | Responsibility        | Remarks   | Deadline  |
|------|---------------------------------|---------|--|-----------------------|---|---|
|      |                                 |         | these areas will continue to be prevented and other access to the nest locations for non essential visits will be stopped  |                       |   |   |
| 18   | 39                              | Ecology | Development of monitoring program during construction works and post construction monitoring. An experienced ecologist will be engaged for this purpose.                                     | Construction Services | The mitigation measures will be included in ecology monitoring plan (refer to item nr. 8) | Monitoring plan defined in April 2009 and implemented until October 2009<br>Arenesco has provided proposal to Company for ecology service related to Construction phase and for the development of the Guidelines in case Spiny-Lizard is encountered. To be validated by Company |
| 19   | 40                              | Ecology | Definition of measures that encourage re-colonisation by native species of the area cleared for the TCF (creating bird nesting habitat, fencing, occasional ecological monitoring etc.) once | Construction Services | The mitigation measures will be included in ecology monitoring plan (refer to item nr. 8) | 31/01/2010  |

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| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility   | Remarks  | Deadline   |
|------|---------------------------------|-------|--|------------------|--|------------|
|      |                                 |       | construction will be finished  |                  |  |            |
| 20   | 49a                             | Air   | <ul style="list-style-type: none"> <li>- Visually inspect worksite daily for significant dust generation and apply wet suppression as needed</li> <li>- Face masks will be provided for construction staff where necessary</li> <li>- Provision of wet suppression during loading of trucks in instances of potential high dust environments;</li> <li>- Watering and compacting of unpaved haul roads and installing steel gabions at access gates;</li> <li>- Provision of wheel cleaning facilities at exit points from site to public roads</li> <li>- Regular inspection and</li> </ul> | EPCC contractors | The mitigation measures will be included in the CEMP | 30/12/2009 |

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|------|---------------------------------|-------|--|----------------|---------|----------|
|      |                                 |       | wet suppression of stockpiles (including wind shielding);<br>- Reuse of unsuitable/non-potable water where possible to reduce consumption of fresh water for dust suppression;<br>- Covering vehicles carrying dry earth material and other wastes, especially on public highways;<br>- Setting selection criteria for equipment to be utilised on-site that include emission rating/performance<br>- Performing vehicle and plant performance tests to ascertain these meet with vendor specifications prior to commencement of |                |         |          |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility | Remarks | Deadline |
|------|---------------------------------|-------|--|----------------|---------|----------|
|      |                                 |       | <p>construction activities.</p> <ul style="list-style-type: none"> <li>- all construction vehicles and stationary construction equipment shall be regularly maintained according the manufacturers suggested service schedule and be free from significant black smoke emissions</li> <li>- Restricting vehicle speeds on haulage routes and other unsurfaced areas of the work site;</li> <li>- Watering of unpaved roads daily; and</li> <li>- Where possible, use will be made of uncontaminated 'grey water' from the TCF WWTP for dust suppression</li> </ul> |                |         |          |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media | Requirement   | Responsibility        | Remarks  | Deadline  |
|------|---------------------------------|-------|---|-----------------------|--|---|
| 21   | 49b                             | Air   | Installation of Air monitoring station at TCF site  | Construction Services | The mitigation measures will be included in the CEMP | 30/04/2010 for the installation of the Monitoring station |
| 22   | 49c                             | Air   | Periodic NO2 emissions monitoring of "key NO2 emissions sources"<br>Selection of Diesel generators (for construction phase) with low NOx emissions. At minimum those engines with a net rated thermal input of 3MW and over should meet the IFC emission limits | EPCC contractors      | The mitigation measures will be included in the CEMP | 31/12/2009  |
| 23   | 49d                             | Noise | - The level of noise arising from equipment and machinery used in the construction activities shall not exceed the limit of 75 dBA at the boundary of the   | EPCC contractors      | The mitigation measures will be included in the CEMP | 31/12/2009  |

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|------|---------------------------------|-------|--|----------------|---------|----------|
|      |                                 |       | <p>JER/TCF site &gt;10% of measured time. This shall be confirmed by regular (at least monthly) measurement.</p> <ul style="list-style-type: none"> <li>- Machinery and equipment should always be used in accordance with the manufacturers' instructions;</li> <li>- Power generators will be housed in a noise reducing shelter at the TCF accommodation area to promote good sleeping conditions for workers;</li> <li>- Acoustic covers to the engines (where applicable) should be kept closed when the engines are in use</li> <li>- Plant and equipment used on an intermittent</li> </ul> |                |         |          |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media | Requirement   | Responsibility        | Remarks  | Deadline   |
|------|---------------------------------|-------|---|-----------------------|--|------------|
|      |                                 |       | <p>basis should be shut down between work periods or throttled down to a minimum. No plant should be left running unnecessarily;</p> <ul style="list-style-type: none"> <li>- All machine engines that generate excessive noise levels shall be fitted with acoustic hoods and these are to remain closed at all times;</li> <li>- SATORP will endeavour to restrict 'noisy' night time activities to minimise impacts during this period.</li> </ul> |                       |  |            |
| 24   | 49d                             | Noise | Undertake noise monitoring survey at sensitive receptors to demonstrate compliance with IFC standards   | Construction Services | The mitigation measures will be included in the CEMP | 31/12/2009 |

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| Item | Reference to the Master of ESMP | Media                | Requirement  | Responsibility   | Remarks  | Deadline   |
|------|---------------------------------|----------------------|--|------------------|--|------------|
| 25   | 50b                             | Soil and Groundwater | <p>Site contamination will be prevented through the use of appropriately designed storage tanks and adoption of strict fuelling and spill control procedures, as well as appropriate spill response measures. All fuel storage areas will be bunded to 110% of the total tank volume</p> <p>Vehicles and mobile equipment shall be regularly inspected and maintained to confirm that they are not leaking or dripping.</p> <p>For bulk storage of fuels, double-walled tanks meeting international standards shall be used. Alternatively single wall</p> | EPCC contractors | The mitigation measures will be included in the CEMP | 31/12/2009 |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media | Requirement   | Responsibility | Remarks | Deadline |
|------|---------------------------------|-------|---|----------------|---------|----------|
|      |                                 |       | <p>tanks may be used provided they are mounted on a concrete base and bunded to contain 110% of the total volume of stored fuel. An impervious surface coating shall be applied to the base and walls.</p> <p>Drains within bund walls (if applicable) shall be checked periodically to ascertain that they are closed.</p> <p>Bulk storage vessels shall be pressure tested to ensure competency before use.</p> <p>Refuelling shall only be carried out in designated areas following specified procedures to reduce potential spillages.</p> |                |         |          |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility | Remarks | Deadline |
|------|---------------------------------|-------|--|----------------|---------|----------|
|      |                                 |       | <p>Refuelling areas shall be communicated to all site personnel by signs and notice boards. Refuelling areas shall be constructed in such a way as to prevent spillages.</p> <p>Spillages or leakage resulting in soil contamination shall be cleared according to CONTRACTOR'S spill management plan, removed and disposed of using approved waste disposal providers.</p> <p>Vehicles and mobile equipment to be regularly inspected and maintained to confirm they are not leaking or dripping. Operators shall also be instructed to notify their supervisors if there are</p> |                |         |          |

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22.b: Requirements for the EPC Phase during Construction phase

| Item | Reference to the Master of ESMP | Media | Requirement   | Responsibility | Remarks | Deadline |
|------|---------------------------------|-------|---|----------------|---------|----------|
|      |                                 |       | <p>any problems with their vehicles.</p> <p>Hazardous materials shall only to be handled by operators who have been trained in spill response procedures.</p> <p>All stationary diesel and petrol operated construction equipment shall have impervious drip trays placed beneath them during operation. Any spillages into the drip trays to be collected for safe disposal by a licensed waste carrier.</p> <p>Waste water from the wash basins, kitchens, and shower units (if applicable) shall be directed to a dedicated 'grey water' storage tank.</p> |                |         |          |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media | Requirement   | Responsibility | Remarks | Deadline |
|------|---------------------------------|-------|---|----------------|---------|----------|
|      |                                 |       | <p>Consideration shall be given to the appropriate reuse of grey water wherever possible.</p> <p>All sewage waste from septic tanks must be transported by an RC approved carrier and the appropriate Waste Manifest completed.</p> <p>Onsite sanitary wastewater facilities required during construction of the projects should be handled by RC approved contractors who will have the responsibility to meet RC water quality standards at point of discharge to treatment facilities.</p> <p>Waste fuel/oil to be removed and transferred to approved recycling</p> |                |         |          |

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**22.b: Requirements for the EPC Phase during Construction phase**

| Item | Reference to the Master of ESMP | Media | Requirement   | Responsibility  | Remarks  | Deadline   |
|------|---------------------------------|-------|---|---|--|------------|
|      |                                 |       | facilities, where possible.   |   |  |            |
| 26   | 43                              | Waste | Development of waste management plan applying the principles of the 'waste hierarchy'. These principles are underpinned by the so-called '3Rs' of <a href="#">reduce</a> , <a href="#">reuse</a> and <a href="#">recycle</a> , which classify <a href="#">waste management</a> strategies according to their desirability. The overall aim of this waste hierarchy is to extract the maximum practical benefits from raw materials, to generate the minimum amount of waste and to seek a beneficial end-use of waste materials wherever practicable. | Construction Services (for developing the Waste management Plans)<br><br>EPCC contractors to commit to and execute the requirements of the WMP, as part of their CEMP, for their specific elements of construction. | The WMP will be included in the CEMP and implemented in the specific CEMP of each EPCC contractor. | 31/01/2010 |

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**22.c: Requirements for the EPC Phase during Detailed Engineering**

| Item | Reference to the Master of ESMP | Media   | Requirement   | Responsibility           | Remarks  | Deadline   |
|------|---------------------------------|---------|---|--------------------------|--|--|
| 27   | 23b                             | General | Submission of the ESIA Report to MinPet for approval  | Government Affairs dept. |  | 30/07/2009   |
|      | 23a                             |         | Prior to construction works, the project will have an approved Environmental Consent to Construct (ECC) issued by the RC. Prior to operation an Environmental Permit to Operate (EPO) will be sought from the RC. | PMT HSE                  | ECC and Land lease Agreement already obtained.<br>Permitting planning to be defined  | 30/09/09 request of clarification to RC about Permitting process in order to define a consistent planning.<br>Base on reply of RC dated 18/11/09, Company is preparing a planning in order to revise EPAP for 30/01/2010 |
| 28   | 23c, 23d,                       |         | Disclosure of the ESIA to the Public  | Government Affairs dept. | English version of the full ESIA, English and Arabic version of the NTS and of the ESMP will be available on the SATORP website.<br>Hard copies of the NTS will be distributed to the affected | 28/02/2010   |

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22.c: Requirements for the EPC Phase during Detailed Engineering**

| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility | Remarks  | Deadline   |
|------|---------------------------------|-------|--|----------------|--|------------|
|      |                                 |       |  |                | communities via approval of RC   |            |
| 29   | 25                              | Air   | Determine appropriate stack design for API VOC recovery system incinerator or other suitable control device / method).                       | Package 5C     | If criteria pollutants are over 100 tonnes per annum, a BAT analysis will need to be provided to the RC.   | 30/04/2010 |
| 30   | 26                              | Air   | NOx and PM control technology requirements will be established for the steam boilers.  | Package 5B     | The final selection process should follow the BAT principles provided within RCER 2004.  | 30/04/2010 |
| 31   | 27                              | Air   | The need for, and extent of, SO <sub>2</sub> and NOx controls for the FCC catalyst regeneration system will be determined using vendor data. | Package 2A     | Emissions from the FCC catalyst regeneration system have been assessed at FEED stage using emission factors. These estimates have been included in the dispersion modelling study and the proposed stack height has been found to be appropriate. At EPC stage, emissions from this system | 30/01/2010 |

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**22.c: Requirements for the EPC Phase during Detailed Engineering**

| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility | Remarks   | Deadline         |
|------|---------------------------------|-------|--|----------------|---|------------------|
|      |                                 |       |  |                | <p>should be more accurately determined (using vendor data) and the need for a BAT assessment established. The RC requires a BAT assessment where 10 tonnes of HAP (Table 2C of RCER2004) or 100 tonnes of criteria pollutants (Table 2A of RCER2004) have the potential to be released.</p> <p>Emissions after the application of control technology should be assessed with a dispersion model to confirm appropriateness of the exhaust stack.</p> |                  |
| 32   | 28                              | Air   | The need for, and extent of NOx controls for the SRU tail gas incinerators will be determined using vendor data. | Package 2B     | A BAT analysis should be performed where emissions are expected to exceed 100 tonnes / year.  | 28/02/2010       |
| 33   | 29                              | Air   | Dispersion modelling of the  | PMT HSE        | Only required where there is a  | In case of major |

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**22.c: Requirements for the EPC Phase during Detailed Engineering**

| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility | Remarks   | Deadline   |
|------|---------------------------------|-------|--|----------------|---|--|
|      |                                 |       | refinery as a whole should be repeated using detailed design data (should there be a material change in emissions data, stack characteristics or source location).               |                | significant change in exhaust gas flows, plot plan layout or building dimensions.   | changes comparing to FEED data   |
| 34   | 33a, 33b                        | Air   | Facility components should be tagged, and distinction make between HAP and VOC service.  | All Packages   | The tagging of components will reduce LDAR programme duration. This commitment also includes the estimation of HAP emissions (rather than total VOC).   | Fugitive (VOC and HAP) emission inventory -> 31/10/2009-22/06/2011 depending from Package<br>Tagging -> before commissioning phase |
| 35   | 34                              | Air   | Although no legal requirement exists, it is recommended that cooling towers are procured with an agreed limit on salt drift. This should be discussed by the EPC contractor with | EPC Contractor | As per Attachment 3 to Schedule B and as per 2271-501-JSD-0001-01, Cooling Tower drift eliminator will be designed to limit drift load to a maximum of 0.005% of the design cooling water flow rate to limit impact on surrounding equipment. | To be communicated by Package<br>(recommendation already communicated to EPCC contractor)  |

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22.c: Requirements for the EPC Phase during Detailed Engineering**

| Item | Reference to the Master of ESMP | Media   | Requirement  | Responsibility | Remarks   | Deadline   |
|------|---------------------------------|---------|--|----------------|---|--|
|      |                                 |         | the RC.  |                | Base on Letter of RC dated 18/11/2009 nr. AG.695.430, RC request a drift loss of 0,0005%  |  |
| 36   | 35                              | Noise   | Noise modelling should be re-performed with detailed design data (preferably prior to equipment procurement) to confirm the RCER 2004 boundary noise limit can be met.   | PMT HSE        | The assessment should include noisy piping if necessary and vendor data for equipment   | When vendor data will be available (during 2010 depending from Packages) |
| 37   | 36                              | Noise   | Conduct 'as build' noise survey to confirm compliance with the RCER 2004 noise limits.   | All Packages   | The assessment should target those measurement positions chosen for the baseline assessment.  | During 2012-2013 depending from Packages (during 2013)                   |
| 38   | 42                              | Ecology | Where practicable, off-ROW access will be minimised in the 'high sensitivity' section of the southern pipeline corridor to avoid disturbance to plant communities to the | Package 8      | Reducing ROW width along sensitive route sections of the south corridor is not possible due to safety and security constraints. Refer to Chapter 6 for the location of the sensitive area of the route. | Action closed  |

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22.c: Requirements for the EPC Phase during Detailed Engineering**

| Item | Reference to the Master of ESMP | Media | Requirement  | Responsibility | Remarks   | Deadline  |
|------|---------------------------------|-------|--|----------------|---|---|
|      |                                 |       | extent possible.   |                |   |   |
| 39   | 43                              | Waste | Dedicate an area of the JER, and/or the port area for interim waste storage. | Package 7      | This area should be designed with kerbs to contain liquid hazardous waste and according to RCER and PME requirements. | 31/12/2009 will be included in the scope of work of relevant EPCC contractor. |

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**22.d: Operational Phase Monitoring**

| Item | Reference to the Master of ESMP | Media               | Requirement   | Responsibility   | Remarks  | Deadline   |
|------|---------------------------------|---------------------|---|------------------|--|------------|
| 40   | 62                              | Air                 | Design, install and operate a minimum of two ambient air quality monitoring stations for criteria pollutants generated by the JER facility.   | SATORP Corporate | One monitoring station to be located upwind and one downwind the site. | 31/01/2012 |
| 41   | 37                              | Soil / Groun dwater | Develop groundwater monitoring well locations and seek RC approval (prior to finalisation of the plot plan). Following approval, include wells in design. Refer 3.10.2 and 3.10.3 of RCER 2004. | SATORP Corporate | The plan should include recommended monitoring requirements.           | 30/06/2012 |