DOCUMENT INFORMATION

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<tr>
<th>Title</th>
<th>Proposed storage of hazardous fuel substances at the Saldanha Bay IDZ: Environmental Management Programme</th>
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<tbody>
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<td>Claire Alborough and Rizqah Baker</td>
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<td>Reviewer</td>
<td>Stuart Heather-Clark</td>
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DOCUMENT REVISION RECORD

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<tr>
<td>Original EMP</td>
<td>August 2015</td>
<td>Draft for authority decision</td>
<td>Eloise Costandius</td>
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<tr>
<td>1</td>
<td>May 2019</td>
<td>Draft for authority and public review and comment</td>
<td>Claire Alborough</td>
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BASIS OF REPORT

This document has been prepared by an SLR Group company with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Saldanha Bay IDZ Licensing Company SOC Ltd (herein referred to as the Client) part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.
The Saldanha Bay IDZ Licensing Company SOC Ltd (herein referred to as LiCo) was jointly established by the Department of Trade and Industry (DTI), the Western Cape Government and the Saldanha Bay Municipality for the implementation of the Saldanha Bay Industrial Development Zone (IDZ) Programme. To this end, Li-Co developed an oil and gas offshore service complex (OSC) within the Saldanha Bay IDZ (SBIDZ).

The development of an OSC on Port land within the declared SBIDZ area received an Environmental Authorisation (EA) from the Department of Environmental Affairs and Development Planning (DEA&DP) in November 2015. The EA was issued in terms of the National Environmental Management Act, 1998 (No. 108 of 1998; NEMA) EIA Regulations 2014. Under the EA, various operational activities and services were approved for development within the SBIDZ.

When the original Environmental Impact Assessment (EIA) was undertaken, it was not known what exact industries / projects would be developed in the SBIDZ, and as a result not all listed activities were covered. The new proposed project involves the establishment of fuel blending and bunkering facilities and other operations entailing the storage of fuels and other substances deemed to be hazardous or dangerous as defined by environmental legislation, within the SBIDZ.

As part of the required Scoping and EIA process, an Environmental Management Programme (EMP) must be prepared for the proposed project, which addresses all phases of the proposed development. The original EIA included an EMP and for the purposes of completeness, this report is an update of the original EMP. All requirements that are additional to the original requirements are indicated by the use of italics and are summarised in Table 0-1. The scope of the environmental management measures described in this EMP pertains to all development within the SBIDZ area (Figure 1) and has been divided into two volumes, namely:

- Volume 1: Construction Environmental Management Programme; and

The EMP has as its basis the recommendations listed in the Environmental Impact Report (EIR) (and associated specialist studies). As the proposed project would be developed on land owned by Transnet National Ports Authority (TNPA), EMP guidelines for developments on TNPA was also taken into consideration in the compilation of this EMP.

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1 Phase 1 of the SBIDZ area to the north of Main Road 559 held existing industrial development rights and therefore did not require environmental authorisation.
### TABLE 0-1: SECTIONS UPDATED/MITIGATION MEASURES ADDED

<table>
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<tr>
<th>Change No.</th>
<th>Section No.</th>
<th>Description</th>
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<tr>
<td><strong>Volume 1: Construction Environmental Management Programme (CEMP)</strong></td>
<td></td>
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</tr>
<tr>
<td>1</td>
<td>2.6</td>
<td>New section ‘Worker Induction’ added.</td>
</tr>
<tr>
<td>2</td>
<td>3.12</td>
<td>Updated to ‘Air Quality Control’ and mitigation measure added.</td>
</tr>
<tr>
<td>3</td>
<td>3.21</td>
<td>New section ‘Design Requirements’ added. These measures need to be complied with prior to construction (during design) of the new projects.</td>
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<tr>
<td>4</td>
<td>3.22</td>
<td>New section ‘Baseline Assessments’ added.</td>
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<td><strong>Volume 2: Operational Environmental Management Programme (OEMP)</strong></td>
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<tr>
<td>5</td>
<td>2.2</td>
<td>New section ‘Worker Induction’ added.</td>
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<tr>
<td>6</td>
<td>3.1.4</td>
<td>Additional mitigation measures added to Bulk/Fuel Storage section.</td>
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<tr>
<td>7</td>
<td>3.4</td>
<td>Mitigation measure added to Stormwater Management section.</td>
</tr>
<tr>
<td>8</td>
<td>3.5</td>
<td>New section ‘Groundwater Management’ added.</td>
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<tr>
<td>9</td>
<td>3.7.3</td>
<td>Updated to ‘Air Quality’ and mitigation measures added.</td>
</tr>
<tr>
<td>10</td>
<td>3.8.4</td>
<td>New section ‘Storage of Hazardous Substances’ added.</td>
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<tr>
<td>11</td>
<td>3.9</td>
<td>Mitigation measures added to Emergency Procedures</td>
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FIGURE 1: LOCATION OF THE DECLARED SBIDZ (RED OUTLINE) AT THE PORT OF SALDANHA.
VOLUME 1:

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME
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LIST OF ACRONYMS

ECO: Environmental Control Officer
S&EIA: Scoping & Environmental Impact Assessment
EMP: Environmental Management Programme
ECO: Environmental Control Officer
EO: Environmental Officer
HWC: Heritage Western Cape
IDZ: Industrial Development Zone
LDRP: Leak detection and repair program
LiCo: Saldanha Bay IDZ Licensing Company SOC Limited
MHI: Major Hazardous Installation
MSDS: Material Safety Data Sheets
NAAQS: National Ambient Air Quality Standards
OSRP: Oil Spill Response Plan
OPCSA: Oil Pollution Control of South Africa
RE: Resident Engineer
SAMOAC: South African Manual for Outdoor Advertising Control
VRU: Vapour Recovery Unit
GLOSSARY

The definitions given below are for explanatory purposes only and are applicable to this Construction Environmental Management Programme. In the event that any conflict arises between the definitions contained herein and those contained within the contract documentation, those within the contract documentation shall prevail.

ALIEN VEGETATION: All undesirable vegetation, defined as but not limited to, all declared category 1 and category 2 plants in terms of the Conservation of Agricultural Resources Act, 1983 (No. 43 of 1983), as amended.

CONSTRUCTION ACTIVITY: A construction activity is any action taken by the Contractor, his subcontractors, suppliers or personnel during the construction phase and operational phase of the project.

CONSTRUCTION AREA(S): All areas used by the Contractor in order to carry out the required construction activities. This includes, all offices, accommodation facilities, testing facilities / laboratories, batching areas, storage & stockpiling areas, workshops, spoiling areas, borrowpits, access roads, traffic accommodation (e.g. bypasses), etc.

CONSTRUCTION CAMP: Construction camp refers to all site offices, container sites, workshops and testing facilities.

ENVIRONMENT: The external circumstances, conditions, and objects that affect the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical, cultural and political aspects.

ENVIRONMENTAL MANAGEMENT: That part of the overall management process which seeks to ensure, as far as possible, that no avoidable impact is caused to the environment and that when this is unavoidable that the consequences are understood prior to the impact being caused and that the impact is then mitigated as far as possible.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP): That part of the overall management process which includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.

GROUNDWATER: The water that fills the natural openings present in the rock or unconsolidated sands.

HAZARDOUS: Contains an element of risk. Dangerous or toxic to life.

HAZARDOUS SUBSTANCES: This means any substance or mixture of substances, product or material declared to be a hazardous substance under section 2(1) of the Hazardous Substance Act (1973), as amended.

HERBICIDE: See ‘Pesticide’.

MAINTENANCE: The complete upkeep, support and protection of areas/regions/sites.

METHOD STATEMENTS: Written statements which contain details regarding construction procedures, materials (where applicable), timing, storage methods (where applicable) and sketches of proposed construction. Method Statements shall be submitted for work near environmentally sensitive regions of the site. This includes environmentally sensitive aspects of the work such as construction camp location and layout, site clearing, use of hazardous substances, solid waste management, wastewater management, erosion and sediment control, fire control, dust control and cement and concrete batching.

MITIGATION: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts.

NO-GO AREA: Areas where construction activities are prohibited are referred to as no-go areas.
PESTICIDE: Pesticides are chemicals used to kill organisms that threaten health and well-being, pets and livestock or cause damage to crops. This includes insecticides, herbicides, fungicides, acaricides, nematicides and rodenticides.

POLLUTION: Any change in the environment caused by substances, radioactive or other waves; or noise, odours, dust or heat, emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future;

REHABILITATION: To re-establish or restore to a healthy sustainable capacity or state.

SITE: The ‘site’ refers to the total area where the contract will take place, as awarded to the Contractor and any other area reasonably required by the Contractor to undertake the construction activities in order to fulfil the contract.
1 INTRODUCTION

1.1 AIMS OF THE CONSTRUCTION EMP

The purpose of this Environmental Management Programme (EMP) is to ensure that impacts associated with the construction phase are prevented and, where they cannot be prevented, are kept to a minimum and rehabilitated. In this regard, the EMP sets environmental targets for the Contractor (defined as the lead Contractor and any nominated or selected Sub-contractors). The EMP furthermore sets reasonable standards against which the Contractor’s performance can be measured during construction. This document will form the basis for the environmental specifications that the Contractor, in terms of the construction contract, will be obliged to adhere to during the construction operation. This document will thus form a binding agreement between the Contractor and Saldanha Bay IDZ Licensing Company SOC Limited (LiCo).

1.2 STATUS OF THIS DOCUMENT

This document has been distributed for public comment as part of the Scoping and Environmental Impact Assessment (EIA) process. Once approved by the Department of Environmental Affairs and Development Planning (DEA&DP), any significant revisions to the EMP document must be approved by DEA&DP before the EMP is revised.

2 ADMINISTRATION AND REGULATION OF ENVIRONMENTAL OBLIGATIONS

2.1 MANAGEMENT STRUCTURE

Details of the management structure are presented below. All official communication and reporting lines including instructions, directives and information shall be channelled according to the organisational structure presented below.

2.2 ROLES AND RESPONSIBILITIES

The implementation of this EMP requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during the construction phase.
2.2.1 DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING

DEA&DP is the designated authority responsible for authorising this EMP. DEA&DP has overall responsibility for ensuring that LiCo complies with the conditions of its Environmental Authorisation (EA) as well as this EMP.

DEA&DP shall also be responsible for approving any amendments that may be required to the EMP. DEA&DP may also perform random site inspections to check compliance with the EMP.

2.2.2 APPLICANT – SALDANHA BAY IDZ LICENSING COMPANY SOC LIMITED

LiCo is ultimately responsible for the implementation of the EMP and the financial cost of all environmental control measures. LiCo must ensure that any person acting on their behalf complies with the conditions / specifications contained in this EMP. LiCo is also responsible for the appointment of the Engineer, Contractor and Environmental Control Officer (ECO).

LiCo shall address any site problems pertaining to the environment at the request of the Engineer and / or the ECO.

All communications with the public shall be dealt with by LiCo as and when it may arise. Any comments or complaints received by other stakeholders described here shall be forwarded to LiCo. These comments or complaints will be kept in a register for inspection.

2.2.3 ENGINEER

The Engineer shall oversee the planning, design and construction phases of the project. The Engineer shall appoint a Resident Engineer or Engineer’s Representative (referred to as the RE) to act as the on-site implementing agent.

The Engineer shall address any site problems pertaining to the environment at the request of the RE and / or the ECO.

2.2.4 RESIDENT ENGINEER

The RE (or project manager) would act as LiCo’s on-site implementing agent and has the responsibility to ensure that their responsibilities are executed in compliance with the EMP. Any on-site decisions regarding environmental management are ultimately the responsibility of the RE. The RE shall assist the ECO where necessary and shall have the following responsibilities in terms of the implementation of this EMP:

- Reviewing and approving the Contractor’s Method Statements with input from the ECO (see Section 2.5) where necessary;
- The day-to-day monitoring and verifying that the EMP and Method Statements are adhered to at all times and taking action if specifications are not followed;
- Keeping a photographic record of construction activities on site;
- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary;
- Ordering the removal of person(s) and / or equipment not complying with the EMP specifications;
- Issuing fines for transgressions of site rules and penalties for contravention of the EMP;
- Delaying any construction activity if he / she believes the environment has been or is likely to be seriously harmed / impacted;
- Providing input into the ECO’s ongoing review of the EMP; and
- Communicating environmental issues to the Environmental Officer (EO).
2.2.5 CONTRACTOR

The Contractor shall have the following responsibilities:

- To implement all provisions of the EMP. If the Contractor encounters difficulties with specifications, he must discuss alternative approaches with the RE and/or the ECO prior to proceeding;
- To ensure that all staff are familiar with the EMP;
- To monitor and verify that the environmental impacts are kept to a minimum;
- To make personnel aware of environmental problems and ensure they show adequate consideration of the environmental aspects of the project;
- To prepare the required Method Statements (see Section 2.5);
- To report any incidents of non-compliance with the EMP to the RE and the ECO; and
- To rehabilitate any sensitive environments damaged due to the Contractor’s negligence. This shall be done in accordance with the RE’s and ECO’s specifications.

Failure to comply with the EMP may result in fines (see Section 2.11) and reported non-compliance may result in the suspension of work or termination of the contract by the RE.

The appointed Contractor will be required to appoint, at his/her own cost, a competent individual as the Contractor’s on-site EO or Site Agent. The EO must be appropriately trained in environmental management and must possess the skills necessary to impart environmental management to all personnel involved in the contract.

2.2.6 ENVIRONMENTAL CONTROL OFFICER

The ECO’s duties shall include, *inter alia*, the following:

- Reviewing Method Statements (see Section 2.5);
- Advising the Contractor and/or the RE on environmental issues within defined construction areas;
- Undertaking regular site visits to ensure compliance with the EMP and verifying that environmental impacts are kept to a minimum throughout the contract;
- Completing environmental checklists during site visits;
- Keeping a photographic record of progress on site from an environmental perspective;
- Assisting the Contractor and/or the RE in finding environmentally acceptable solutions to construction problems;
- Recommending additional environmental protection measures should this be necessary;
- Assisting the RE in ensuring that the necessary environmental permits have been obtained;
- Presenting the initial environmental awareness training course to the Contractor’s site management staff;
- Giving a report back on any environmental issues at site meetings;
- Ensuring that DEA&DP is informed of work progress on site;
- Reporting any incidents that may or have caused damage to the environment or breaches of the EMP to DEA&DP;
- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP (via the RE);
- Advising on the removal of person(s) and/or equipment not complying with the specifications (via the RE); and
- Compiling a final environmental audit report at the conclusion of the construction phase for submission to DEA&DP and LiCo.

The ECO shall communicate directly with the RE. Should problems arise on site that cannot be resolved between the ECO and the RE, the ECO shall take the matter up with Engineer and/or LiCo. If LiCo does not respond the ECO shall take the matter up with the Saldanha Bay Local Municipality and DEA&DP.
2.2.7 ENVIRONMENTAL OFFICER

The EO shall be responsible for monitoring, reviewing and verifying the Contractor’s compliance with the EMP. The EO’s duties in this regard shall include, *inter alia*, the following:

- Monitoring and verifying that the EMP and Method Statements are adhered to at all times and taking action if specifications are not followed;
- Monitoring and verifying that environmental impacts are kept to a minimum;
- Assisting the RE and ECO in finding environmentally responsible solutions to problems;
- Inspecting the site and surrounding areas on a regular basis with regard to compliance with the EMP;
- Keeping accurate and detailed records of these inspections;
- Reporting any incidents of non-compliance with the EMP to the RE and / or the ECO; and
- Keeping a register of complaints on site and recording community comments and issues as well as the actions taken in response to these complaints.

2.3 EMP ADMINISTRATION

Copies of this EMP shall be kept at the construction camp and shall be distributed to the EO and all other senior contract personnel. All senior personnel shall be required to familiarise themselves with the contents of this document.

The ECO shall be responsible for the implementation of any revisions to the EMP document. Records will be kept in the document indicating changes that have been made. The ECO will be responsible for the distribution of copies of the updated EMP document to all relevant personnel.

The RE may order the Contractor to suspend part or all of the works if the Contractor fails to comply with the specifications set out in the EMP and Method Statements supplied by the Contractor and any Sub-contractors. Such suspension will be enforced until compliance is achieved.

2.4 INFORMATION BOARD(S)

The Contractor shall be responsible for erecting general information boards on site. The general information board shall provide the name and contact number of the ECO, to ensure that the public has access to the ECO to request information and / or to lodge any complaints.

2.5 METHOD STATEMENTS

The Contractor shall submit written Method Statements to the RE and ECO for all environmentally sensitive aspects of the work. A Method Statement Control Sheet, signed by the Contractor, must accompany each Method Statement (a pro forma Control Sheet is provided in Appendix B). Method Statements shall cover applicable details with regard to:

- Construction procedures;
- Materials and equipment to be used;
- Getting equipment to and from site;
- How the equipment / material will be moved while on site;
- How and where material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Compliance / non-compliance with the Specifications; and
- Any other information deemed necessary by the Engineer, RE or ECO.
Method Statements shall be submitted to the RE and ECO at least five (5) days prior to the commencement of operations. It should be noted that Method Statements must contain sufficient information and detail to enable the RE and ECO to apply their minds to the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him / her in order to undertake the works.

Work shall not commence until Method Statements have been approved by the RE. Failure to submit Method Statements may cause the RE to order the Contractor to suspend part or all of the works concerned until a Method Statement has been submitted and approved. Failure to submit Method Statements at least five days prior to commencing the relevant activity may also result in a fine (see Section 2.11). Any damage caused to the surrounding environment by work done without prior approval shall be rehabilitated at the Contractor's cost.

Based on the specifications in this EMP, the following Method Statements are required as a minimum:

- **MS1**: Construction camp location and layout (Section 3.1.1);
- **MS2**: Site clearing (Section 3.3);
- **MS3**: Hazardous substances (Section 3.4.2);
- **MS4**: Accidental leaks and spills (Section 3.6);
- **MS5**: Solid waste management (Section 3.7.2);
- **MS6**: Wastewater (Section 3.7.3);
- **MS7**: Erosion and sediment control (Section 3.8);
- **MS8**: Protection of heritage and cultural features (Section 3.10);
- **MS9**: Fire control (Section 3.11);
- **MS10**: Dust control (Section 3.12); and
- **MS11**: Cement and concrete batching (Section 3.17).

The RE and / or the ECO shall specify any additional Method Statements that may be required. Where relevant the Method Statements indicated above can be combined on agreement with the RE or ECO.

### 2.6 WORKER INDUCTION

An induction programme, including a Code of Conduct, shall be developed for all workers directly related to the Project. A copy of the Code of Conduct is to be presented to all workers and signed by each person. The Code of Conduct must address the following aspects:

- Respect for local residents and customs;
- Zero tolerance of bribery or corruption;
- Zero tolerance of illegal activities by construction personnel including:
  - unlicensed prostitution; illegal sale or purchase of alcohol; sale, purchase or consumption of drugs; illegal gambling or fighting;
- No alcohol and drugs policy during working time or at times that will affect ability to work; and
- Description of disciplinary measures for infringement of the Code and company rules. If workers are found to be in contravention of the Code of Conduct, which they signed at the commencement of their contract, they will face disciplinary procedures that could result in dismissal.

An HIV/AIDS policy and information document for all workers directly related to the project shall be developed and implemented. The information document will address factual health issues as well as behavioural change issues around the transmission and infection of HIV/AIDS.
2.7 ENVIRONMENTAL AWARENESS TRAINING

Before the commencement of any work on site, the Contractor’s site management staff shall attend an environmental awareness training course presented by the ECO and / or RE. The Contractor shall liaise with the ECO prior to the commencement of construction to fix a date and venue for the course. The Contractor shall provide a suitable venue with facilities, and ensure that the specified employees attend the course.

The information presented at the course shall be communicated by the Contractor to the rest of his employees on the site, to any new employees coming onto site after the initial training course and to his / her suppliers. The presentation shall be conducted, as far as is possible, in the employees’ language of choice. As a minimum, training shall include:

- Explanation of the importance of complying with the EMP;
- Discussion of the potential environmental impacts of construction activities;
- Explanation of the management structure of individuals responsible for matters pertaining to the EMP;
- Employees’ roles and responsibilities, including emergency preparedness;
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of the EMP and its specification; and
- Explanation of the Environmental Do’s and Don’ts (see Appendix C).

It is recommended that awareness posters be developed and placed on site in highly visible areas to provide the required information when it needs to be referred to as well as reminding employees of their obligations with regard to environmental protection. Throughout the presentations (posters, meetings, slideshows, etc.), it is recommended that visual aids be used to explain the potential risks and management thereof as thoroughly as possible.

The awareness training for this project should aim to prevent, and where prevention is not possible, mitigate detrimental environmental impacts. In particular, it should promote awareness of environmental risks and management thereof.

The Contractor shall keep records of all environmental training sessions, including names of attendees, dates of their attendance and the information presented to them. Records of environmental training sessions shall be submitted to the ECO.

2.8 MEETINGS

The ECO shall attend scheduled construction site meetings (Contractor / Engineer / RE / EO) on a monthly basis, or as agreed, throughout the contract period.

2.9 INSPECTION PROCEDURES

The day-to-day monitoring and verification that the EMP is being adhered to shall be undertaken by the RE and the EO.

The ECO shall visit and inspect the site monthly to ensure that correct operational procedures are being implemented and that the Contractor is complying with the environmental specifications in the EMP. Additional site inspections by the ECO may be needed during the initial stages of the project. The ECO shall address any queries to the RE. If the queries cannot be resolved at this level, they will be referred to the Engineer, and, if necessary, to LiCo.

The landlord at the Port of Saldanha, TNPA, also reserves the right to inspect any activities taking place on land owned by them to ensure that all activities comply with the EMP as well as the Port of Saldanha’s ISO 14001 compliant Environmental Management System requirements.
2.10 RECORD OF ACTIVITIES

The RE, ECO and EO shall keep a record of activities on site, including but not limited to meetings attended, Method Statements received and approved, issues arising on site, cases of non-compliance with the EMP, penalties issued and corrective action taken to solve problems that arise. In addition, the Contractor shall keep a record of complaints from interested and affected parties.

The Engineer shall undertake photographic monitoring of the contract. This shall include a photographic record of all areas that will be impacted by the construction activities prior to, during and after the undertaking of construction activities. The ECO shall monitor all sensitive work environments, which may also include photographic monitoring.

2.11 FINES

A system of fines shall be implemented to ensure compliance with the EMP (refer to Appendix D for a list of prescribed fines). Where the Contractor inflicts irreparable damage upon the environment or fails to comply with any of the environmental specifications of the EMP, this would constitute a breach of Contract for which the Contractor may be liable to pay a fine. The Contractor is deemed not to have complied with the EMP if:

- There is evidence of contravention of the EMP specifications, including any non-compliance with an approved Method Statement;
- Construction activities take place outside the defined boundaries of the site;
- Environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the RE within a specific time period; and
- The Contractor fails to respond adequately to complaints from the public.

If excessive infringement with regard to any of the above (as determined by the Engineer) is registered, then LiCo reserves the right to terminate the Contractor’s contract.

The system of fines shall be implemented in the following way:

- Fines shall be issued per incident and individual at the discretion of the RE;
- Fines shall be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications;
- The RE shall not collect the fines from individuals, but shall inform the Contractor of the contravention, the individual’s identity and the amount of the fine, and will deduct the total amount from the Contractor at the end of the contract; and
- Fines, including but not limited to those activities presented in Appendix D, shall be imposed by the RE on the Contractor, his staff and / or the Subcontractors’ staff for contravention of the environmental specifications. Where there are ranges, the amount shall depend on the severity and extent of the damage done to the environment.

Failure by any employee of the Contractor or their Sub-contractors to show adequate consideration to the environmental aspects of the contract shall be considered sufficient cause for the ECO to recommend to the RE to have that employee removed from the site. The ECO may, through the RE, also order the removal of equipment that is causing continual environmental damage.

2.12 INTERNAL REVIEW AND AUDITING

The Contractor and EO shall establish an internal review procedure to monitor the progress and implementation of the EMP.
Where necessary, and upon the recommendation of the RE and/or the ECO, procedures that require significant modification will be changed to improve the efficiency of the EMP. Any changes or adjustments to the EMP shall be registered in the daily records of the RE. Adjustment and update of the original EMP document is not required when minor changes are made.

At the conclusion of the project an environmental audit report shall be compiled and submitted to LiCo and the relevant authorities (Saldanha Bay Municipality, if requested). This report will be compiled by the ECO, in collaboration with the RE, EO and the Contractor. It shall, as a minimum, outline the implementation of the EMP and highlight any problems and issues that arose during the construction period to report, on a formal basis, the lessons learned on this project.

3 ENVIRONMENTAL SPECIFICATIONS

3.1 CONSTRUCTION CAMP(S)

3.1.1 LOCATION OF CONSTRUCTION CAMP

"Construction Camp" refers to all storage stockpile sites, site offices, container sites, other areas required to undertake construction and rest areas for employees.

a) The construction camp(s) shall be located at an easily accessible point(s) and within an area of low environmental sensitivity;

b) No camp establishment shall be allowed within 32 m of any watercourse or drainage channel or within 100 m of the high water mark of the sea. Construction material stockpiles shall be established in disturbed areas;

c) The Contractor, RE and ECO shall agree on mutually acceptable location(s) for the establishment of the camp(s);

d) The RE and ECO shall approve the final location of all camp(s) prior to its establishment;

e) The construction camp(s) shall be demarcated by a fence, the position of which will be agreed by the RE, ECO and the Contractor. Suitable signs must be erected to clearly demarcate these areas; and

f) The area outside the construction camp(s) fence is considered to be a ‘No-go’ area. Undertaking construction camp related activities in these areas without the RE’s or ECO’s permission will result in a fine (Appendix D).

MS1: The Contractor shall submit a Method Statement indicating the location, preparation and layout of the construction camp(s). The plan shall include the location and layout of waste storage and treatment facilities, ablution facilities, stockpiling and spoil areas and hazardous material storage areas. The demolition and removal of these facilities on completion of construction works shall also be detailed.

3.1.2 TOILET FACILITIES

a) The Contractor shall provide suitable sanitary arrangements (e.g. chemical toilets) as per building guidelines (SABS 0400). There should be one toilet for every 15 workers on site (Operational Health and Safety Act No. 85 of 1993);

b) Toilets must be easily accessible and shall be secured in order to prevent them from blowing over;

c) Toilet/s shall be located within the construction camp and in construction areas where there will be a concentration of labour. The siting of toilets shall be done in consultation with the RE or ECO to ensure that they are easily accessible for employees;

d) Toilets shall not be more than 50 m away from where construction activities are being undertaken;

e) Toilets shall not be sited within 32 m of drainage channels or areas of sensitive natural vegetation;

f) The Contractor shall be responsible for ensuring that all ablution facilities are maintained in a clean and sanitary condition to the satisfaction of the RE or ECO;
g) The Contractor shall provide toilet paper;

h) The Contractor shall appoint a suitable Sub-contractor to empty toilets on a regular basis;

i) The Sub-contractor shall ensure that there is no spillage when the chemical toilets are cleaned and that the contents are properly removed from site;

j) The Contractor shall be responsible for enforcing the use of these facilities; and

k) Performing ablutions outside of established toilet facilities is strictly prohibited (refer to List of Fines, Appendix D).

3.1.3 EATING AREAS

a) The Contractor shall establish eating areas, as agreed with the RE. These areas shall provide adequate temporary shade to ensure that employees do not move off-site to eat;

b) The Contractor shall provide adequate refuse bins with lids at all eating areas to the satisfaction of the RE and shall ensure that all eating areas are cleaned up on a daily basis;

c) Collected waste shall be stored in a central waste area within the construction camp that has been approved by the RE and ECO;

d) Any cooking of food on site shall be done using gas cookers; and

e) No surface water sources shall be used for washing of pots, plates, clothing, etc.

3.1.4 PROVISION OF WATER

a) The Contractor shall be responsible for ensuring that there is access to clean drinking water for all employees on site; and

b) If water is stored on site, drinking water and multi-purpose water storage facilities shall be clearly distinguished and demarcated.

3.1.5 GENERAL AESTHETICS

a) All construction areas shall be kept neat and tidy at all times. Different materials and equipment shall be kept in designated areas and storing / stockpiling shall be kept orderly; and

b) The Contractor shall take reasonable measures (e.g. visual screening using shade cloth in combination with fencing to screen the construction site, equipment and materials) to ensure that the construction camp does not have an unreasonable impact on the aesthetics of the area or cause a reasonably avoidable disturbance to the surrounding users.

3.1.6 ACCOMMODATION

a) No living accommodation shall be available on site for any of the Contractor’s employees and no employees will be allowed to sleep overnight on site; and

b) A night watchman shall be allowed within the construction camp with written permission from the RE.

3.2 SITE DEMARCATION AND NO-GO AREAS

The ‘site’ refers to the total area where the contract will take place awarded to the Contractor and any other area reasonably required by the Contractor to undertake the construction activities in order to fulfil the contract.

a) In order to limit the impact of construction activities, the Contractor shall limit activities to work spaces as defined at the site inspection during the tender process and subsequently as agreed with the RE and ECO. Construction works shall be confined to the proposed development footprint, where possible, and no materials shall be
distributed into naturally vegetated areas adjacent to the development footprint. The site shall be fenced prior to site clearing activities;

b) Areas where construction activities are prohibited are referred to as No-go areas and shall be demarcated to ensure that environmentally sensitive areas are not impacted by the construction activities. Any work required to take place outside of these areas shall only be undertaken once the RE and ECO has approved such work;

c) No-go areas shall include all areas outside of the defined work spaces as determined during the tender process;

d) The RE may declare No-go areas at any time during the construction phase as deemed necessary and/or at the request of the ECO;

e) Areas required for construction purposes shall also be demarcated, in consultation with the ECO and/or RE, prior to the commencement of site clearing activities;

f) No-go areas shall be demarcated by fencing of at least three strands of wire, the position of which will be agreed by the RE and ECO, and appropriate signage;

g) Entry into these areas without the ECO’s permission will result in a penalty (Appendix D); and

h) The Contractor shall be responsible for any clean-up and/or rehabilitation of all areas impacted outside the site.

### 3.3 SITE CLEARING

#### 3.3.1 VEGETATION CLEARING

a) No vegetation clearing shall take place without written approval of the Method Statement by the RE;

b) The ECO and EO must ensure that the natural areas to be cleared are kept to the absolute minimum required for the development and attempt to incorporate green belts within the development, where possible;

c) The development footprint shall be clearly demarcated (with fencing or coloured rope) prior to any development, so that the Contractors are aware of the physical constraints (see Section 3.2). Demarcation of the site would ensure that impacts on adjacent areas of natural vegetation are avoided;

d) No cut vegetation shall be burnt on site, unless the necessary approvals have been obtained from the local authority;

e) Appoint a suitably experienced horticulturist to compile a search and rescue plan and to undertake search and rescue activities for protected species within Sub-zone 5 (to the east of FMA);

f) Before clearing of vegetation, the Contractor shall ensure that all litter and non-organic material is removed from the area to be cleared;

h) All remaining indigenous plant material removed from cleared areas shall be stockpiled for mulching. All remaining vegetation shall be removed and disposed of at an approved landfill site. Stockpiling of cut vegetation shall only be permitted in areas indicated by the RE and/or the ECO; and

g) Vegetation clearing shall take place in a phased manner in order to retain vegetation cover for as long as possible in order to reduce the size of areas where dust can be generated by wind;

i) Invasive alien eradication is presented in Section 3.19.

#### 3.3.2 TOPSOIL AND EXCAVATIONS

Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. Depth of topsoil stripped may vary.

a) The Contractor shall remove topsoil (an approximately 150 mm layer) from all areas to be disturbed during construction activities, including temporary activities such as storage and stockpiling, and stockpiled for rehabilitation purposes;

b) Topsoil shall only be stripped after the initial invasive alien vegetation clearing (if applicable) has been undertaken to ensure that fewer alien seeds are present in the topsoil that is used for landscaping and vegetation rehabilitation after completion of construction;
c) Topsoil stockpiles shall be convex and no more than 2 m high;
d) Stockpiles shall be located in areas agreed to by the RE and ECO;
e) Ensure that no topsoil enters any watercourse;
f) Topsoil stockpiles shall not be subject to compaction greater than 1500 kg/m² and shall not be pushed by a bulldozer for more than 50 m;
g) Topsoil stockpiles shall be monitored regularly to identify any alien plants, which shall be removed when they germinate to prevent contamination of the seed bank;
h) Appropriate measures, as agreed with the RE, shall be taken where necessary to protect topsoil stockpiles from erosion by wind or water by providing suitable stormwater cut-off drains, containment using hessian or similar material and / or by establishing suitable temporary vegetation;
i) Stockpiles shall not be covered with materials such as plastic that may cause it to compost or would kill the seed bank;
j) Any topsoil contaminated by hazardous substances shall not be used but shall be disposed of at a licensed landfill site;
k) The Contractor shall be held responsible for the replacement, at his / her own cost, for any unnecessary loss of topsoil due to his failure to work according to the requirements of this EMP; and
l) All topsoil stockpiles and windrows shall be maintained throughout the contract period in a weed-free condition. Weeds appearing on the stockpiled or windrowed topsoil shall be removed by hand.

3.3.3 SUBSOIL

a) The subsoil is the layer of soil immediately beneath the topsoil. It shall be removed, to a depth instructed by the RE, and if not used for construction purposes it shall be stored and maintained separately from the topsoil so that neither stockpile is contaminated by the other;
b) This soil shall be used for rehabilitation purposes by first spreading it over the excavated slopes without interfering with or contaminating the stockpiled topsoil; and
c) Whilst in stockpile it shall be maintained free from erosion and weed infestation in the same way as for topsoil stockpile maintenance.

MS2: The Contractor shall submit a site clearing Method Statement for all areas where the Contractor is required to, or intends to, clear vegetation and remove topsoil. This method statement shall clearly detail the demarcation of the site and clearing and how this will be done, where and how cleared material will be stored or disposed of, etc.

3.4 MATERIALS HANDLING AND STORAGE

3.4.1 HANDLING

a) The Contractor shall ensure that all suppliers and their delivery drivers are aware of procedures and restrictions in terms of this EMP;
b) The Contractor (and suppliers) shall ensure that all materials are appropriately secured to ensure safe passage between destinations;
c) Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials; and
d) The Contractor shall ensure the supervision of the delivery drivers during offloading.
3.4.2 STORAGE OF CONSTRUCTION MATERIALS AND HAZARDOUS SUBSTANCES

a) All fuel, oil and other hazardous substances (i.e., bitumen, paint, etc.) shall be confined to demarcated, adequately bunded areas within the construction camp and stored in suitable containers. If more than 80 m$^3$ is to be stored on site, EA is required from DEA&DP;

b) The storage of any materials (e.g. cement, oil, fuel, etc.) shall not take place within 32 m of any surface water sources or the sea;

c) Hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure;

d) Suitable fire-fighting equipment, to the approval of the RE, shall be supplied and installed by the Contractor in the hazardous substances storage area;

e) The relevant Material Safety Data Sheets (MSDS) for all hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) shall be submitted to the RE;

f) The Contractor shall have a copy of the MSDS readily available and ensure that he / she or his / her employees who are required to use such substances are fully conversant with the safe handling precautions, protective equipment to be used and storage precautions to be taken;

g) The following conditions related to the temporary storage of fuel must be implemented:
   - Fuel shall be stored in steel tank(s) supplied and maintained by the fuel suppliers;
   - The fuel tank(s) shall be designed and installed in accordance with relevant Oil Industry standards and SANS codes where applicable for aboveground storage tanks;
   - Tank(s) shall be adequately bunded (110% of volume) and shall have some form of oil-water separation. The floor and wall of the bund area shall be impervious to prevent infiltration of any spilled / leaked fuel, oil or hazardous substance into the soil;
   - During fuel tanker delivery, the tanker driver shall be present at all times during product offloading. Should an incident occur, an emergency cut-off switch must be used to immediately stop fuel delivery - flexible hoses with dry-break couplings and emergency isolation must be used;
   - The requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), must be adhered to;
   - Crash barriers shall be installed around the fuel tank(s);
   - An on-site emergency plan must be implemented. The emergency plan shall be drafted in consultation with the West Coast District and Saldanha Bay Municipalities’ Emergency Services;
   - The applicant shall ensure that effective stock inventory monitoring, recording and regular auditing take place for the early identification of possible leaks and keep a leak history for the site; and
   - Within six months of the tank(s) ceasing to be functional for the purpose for which has been authorised, the tank(s) must be removed at the expense of the applicant and the site, including all associated infrastructure, shall be rehabilitated to the satisfaction of the relevant municipality;

h) The Contractor shall ensure that run-off from any stockpile, fuel, oil or hazardous substance storage area is contained and does not enter stormwater drains or pollute any water resources; and

i) Areas for the temporary stockpiling of excavated material and other construction material shall be as agreed with the RE and ECO.

MS3: The Contractor shall submit a Method Statement detailing the location of storage, methods intended for storage of oil, fuel, herbicides, pesticides and other hazardous / poisonous substances, if applicable. This Method Statement should also detail precautions that shall be implemented to limit spills and leakages of these substances.
3.4.3 STORAGE OF EQUIPMENT

a) All plant, construction equipment, vehicles or other items shall be stored within the construction camp, unless prior arrangements have been made with the RE or ECO; and
b) Drip trays shall be provided for stationary plant (such as compressors, pumps, generators, etc.) and for "parked" plant (e.g. mechanised equipment).

3.5 REFUELLING AND MAINTENANCE

3.5.1 REFUELLING

a) Where reasonably practical, vehicles shall only be refuelled in a demarcated refuelling / servicing area (as agreed to with the RE and ECO). No re-fuelling shall be within 32 m of any surface water source or area of natural vegetation; and
b) The surface under the refuelling / servicing area shall be protected against pollution (e.g. the use of drip trays) to the reasonable satisfaction of the RE and ECO prior to any refuelling activities.

3.5.2 MAINTENANCE

a) All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or removed from the site;
b) Where reasonably practical, maintenance activities shall only be undertaken in a demarcated maintenance area (as agreed to with the RE and ECO). No maintenance activities shall be allowed within 32 m of any surface water source or area of natural vegetation;
c) When servicing equipment, drip trays shall be used to collect the waste oil and other lubricants. All hazardous waste from maintenance activities shall be disposed of as specified in Section 3.7.1; and
d) The washing of equipment shall be restricted to urgent maintenance requirements only. All washing shall be undertaken in the maintenance area, and these areas must be equipped with suitable wastewater collection measures (see Section 3.7.3). The use of detergents for washing shall be restricted to low phosphate and nitrate containing, low sudsing-type detergents.

3.6 ACCIDENTAL LEAKS AND SPILLS

a) The Contractor shall ensure that his / her employees are aware of the procedure to be followed for dealing with spills and leaks;
b) Any accidental leak and spill of fuel, oil or other hazardous substances is to be reported to the RE or ECO immediately so that the best remediation method can be quickly implemented;
c) Drip trays shall be used for all pumps, generators, etc. in order to prevent water contamination as a result of fuel spills or leaks;
d) In the event of a hydrocarbon spill, the source of the spillage shall be isolated and the spillage contained. The area shall be cordoned off and secured;
e) The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb / breakdown spills. The quantity of such materials shall be able to handle the total volume of the hydrocarbon / hazardous substance stored on site. This material must be accepted by the RE prior to any refuelling activities;
f) Hydrocarbon contaminated material and/or soil shall be collected and stored in a bunded area until future disposal at a hazardous waste site (Section 3.7.1);
g) The relevant MSDS for all hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) shall be kept on site. Procedures detailed in the MSDS shall be followed in the event of a spill or emergency situation; and
h) The Contractor shall be liable to arrange for professional service providers to clear the area affected by the spill, if required.

| MS4: The Contractor shall submit a Method Statement detailing the precautions that shall be implemented to limit spills and leakages of these hydrocarbons and other hazardous substances. |

3.7 WASTE MANAGEMENT

3.7.1 HYDROCARBON AND HAZARDOUS WASTE

a) All hydrocarbon (e.g. fuel, oils and contaminated soil / materials) and other hazardous waste (e.g. herbicides, pesticides, bitumen, tar, etc.) resulting from spills, refuelling and maintenance activities shall be disposed of at a licensed hazardous waste site or, where possible, sold to an approved used-oil recycling company;

b) Waste generated must be classified and the volume of hazardous waste produced recorded on a weekly basis. Waste disposal tracking records shall also be kept to trace the transport of waste from site to a registered landfill or hazardous waste site;

c) The Waste Contractor shall maintain records of all materials removed from site and shall provide certificates of safe disposal to the RE;

d) No hazardous waste shall be allowed to accumulate or to be stored on site for longer than 30 days;

e) Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery may be collected in holding tanks prior to disposal;

f) No hazardous waste shall be allowed to enter stormwater drains; and

g) No hydrocarbon and hazardous waste shall be burnt or buried on site. Under no circumstances shall the spoiling or burial of tar or bituminous products be allowed on site. Unused or rejected tar or bituminous products shall be returned to the supplier’s production plant.

3.7.2 SOLID WASTE

Solid waste includes all construction waste (rubble, cement bags, old cement, tags, wrapping materials, timber, cans, wire, nails, etc.) and surplus food, food packaging, organic waste, etc.

a) An integrated waste management approach shall be used, based on the principles of waste minimisation, reduction, reuse and recycling of materials. Containers for glass, paper, metals and plastics shall be provided;

b) The Contractor shall remove all construction waste from site at his / her own expense;

c) The Contractor shall provide vermin and weatherproof bins (with lids) of sufficient number and capacity to store solid waste produced on a daily basis. The lids shall be kept firmly shut on the bins at all times in order to prevent litter blowing off-site and into the marine environment;

d) Bins shall be located within the construction camp, eating areas and construction areas where there will be a concentration of labour;

e) Bins shall be emptied on a weekly basis or more frequently as required;

f) The Contractor shall ensure that all work areas are cleaned on a daily basis. The general cleanliness of the site shall form part of the EO’s, RE’s and ECO’s inspections;

g) All solid waste may be temporarily stored on site in a demarcated area, which meets the satisfaction of the RE;

h) All solid waste shall be disposed of offsite at a licensed landfill site;
i) The stockpiling of construction rubble or other material shall only be permitted in areas approved by the RE;

j) No waste material or litter shall be burnt or buried on site; and
k) Should the Contractor require the services of a professional waste contractor, the selected contractor must be approved by TNPA. The following information shall be provided to TNPA before a waste contractor is licensed to operate in the Port of Saldanha:
   • Name of the contractor;
   • A copy of the valid license of proof or registration;
   • Nature of the waste that the contractor would be handling;
   • Procedures for disposal of kinds of waste that the contractor would be handling; and
   • Location of waste disposal facility that the contractor would use.

**MSS:** The Contractor shall submit a Method Statement detailing a solid waste control and removal system (storage, provision of bins, site clean-up schedule, bin clean-out schedule, etc.) that is acceptable to the RE and ECO.

### 3.7.3 WASTEWATER

a) Contaminated water (including contamination with chemicals, oils, fuels, cement, sewage, construction water, water carrying products, etc.) from the construction site(s) should be prevented from entering groundwater, surface water or the sea. Appropriate measures, as agreed with the RE, shall be taken to limit the volume of water entering the site and to improve the water quality before it leaves site (e.g. stormwater cut-off drains, straw bales or geofabric siltation barriers constructed across the site at specific points);

b) The Contractor shall be responsible for the construction and operation of the necessary collection facilities (e.g. conservancy tanks, settlement ponds, etc.) in order to prevent pollution and/or settlement of suspended matter, and shall dispose of the collected waste as approved by the RE;

c) Water from any kitchen, showers, sinks, etc. shall be discharged into a conservancy tank (or similar) for removal from the site;

d) The Contractor shall ensure that water run-off from fuel depots, workshops, truck washing areas and concrete swills passes through an oil separation / settlement system before being released or alternatively is directed into a conservancy tank (or similar) for disposal at a site approved by the ECO and local authorities;

e) Temporary stormwater drainage from the works shall be designed in collaboration with the RE and ECO;

f) No stormwater outlets shall be allowed to flow directly into the sea;

g) No wastewater or contaminated water shall be disposed of into the sea or stormwater drains.

**MS6:** The Contractor shall submit a Method Statement detailing how wastewater is to be collected from all wastewater generating areas (e.g. maintenance areas, batching plants, bunds, etc.), as well as storage and disposal methods. The Method Statement shall also detail the temporary stormwater drainage on site. If the Contractor intends to carry out any on-site wastewater treatment, this shall also be included.

### 3.8 EROSION AND SEDIMENTATION CONTROL

a) Drainage measures (such as culverts and structures beneath the road crossings) must promote the dissipation of storm water run-off and allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows;

b) The Contractor shall, as an ongoing exercise, provide sedimentation and erosion control to the satisfaction of the RE;

c) During construction the Contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking measures necessary to prevent surface water from being concentrated in streams and from scouring slopes, banks or other areas;
d) Any runnels or erosion channels developed during the construction period shall be backfilled and compacted, and the areas restored to an acceptable condition (as determined by the RE);

e) Stabilisation of cleared areas to prevent and control erosion and/or sedimentation shall be actively managed. The method of stabilisation shall be determined in consultation with the RE and ECO. Consideration and provision shall be made for the following methods (or combination thereof):

- Brush-cut packing (although no alien plant material may be used for this purpose);
- Mulch or chip cover (although no alien plant material may be used for this purpose);
- Straw stabilising (at a rate of one bale/m² rotated into the top 100 mm of the completed earthworks – only straw bales held with string (not wire) may be used);
- Watering;
- Planting / sodding;
- Application of soil binders and anti-erosion compounds; and / or
- Mechanical cover / packing structures (including the use of Geofabric, hessian cover, log / pole fencing;

f) The EO shall demarcate stabilised areas with highly visible indicators, e.g. painted stakes or hazard tape;

g) Traffic and movement over stabilised areas shall be restricted and controlled by the EO, and damage to stabilised areas shall be repaired and maintained by the Contractor to the satisfaction of the RE and ECO; and

h) During construction the Contractor shall implement measures to prevent the migration of material (fines) from the works into any surface water source or the sea. Appropriate measures, as agreed with the RE, shall be taken to limit the volume of water entering the site and to improve the water quality before it leaves site (e.g. stormwater cut-off drains, straw bales or geofabric siltation barriers constructed across the site at specific points).

**MS7:** A Method Statement shall be developed and submitted to the RE and ECO that indicates how the Contractor shall deal with erosion and sedimentation issues.

### 3.9 PROTECTION OF NATURAL FEATURES, FLORA AND FAUNA

The Contractor shall be familiar with any Ordinances, Acts, By-laws and regulations pertaining to the protection of natural features, flora and fauna on site.

#### 3.9.1 PROTECTION OF NATURAL FEATURES

a) The Contractor shall not permit his employees to make use of any natural water sources for the purposes of swimming, personal washing and the washing of machinery or clothes;

b) The Contractor shall not deface, paint, damage or mark any natural features situated on or around the site for survey or other purposes unless agreed beforehand with the RE. Any features affected by the Contractor in contravention of this clause shall be restored / rehabilitated to the satisfaction of the RE and ECO;

c) No surface, sea or ground water may be polluted due to any activity on the property / site; and

d) The area of disturbance should be limited to as small an area as will facilitate the execution of the works.

#### 3.9.2 PROTECTION OF FLORA AND FAUNA

a) The removal, damage or disturbance of flora, fauna or avifauna is forbidden outside the immediate construction area without the written approval of the RE;

b) Any amphibian, reptile, bird or mammal encountered during site preparation that cannot flee of its own accord shall be relocated to a suitable area immediately outside of the proposed development footprint;

c) The Contractor shall ensure that no hunting, trapping, shooting, poisoning or other activity causing disturbance of any fauna takes place;

d) The feeding of any wild animals is prohibited; and
e) No domestic pets or livestock are permitted on site.

3.10 PROTECTION OF HERITAGE AND CULTURAL FEATURES

3.10.1 PROTECTION OF ARCHAEOLOGICAL RESOURCES

Archaeological finds can take the form of buried walls, old bottles, porcelain fragments, earthenware fragments, accumulations of bone and ash dumps.

a) The RE and ECO are to be kept informed of all developments in the event where modifications are made to the clearing or earthworks schedule;

b) If an archaeological site / archaeological finds are discovered during any construction activity, the work is to be halted and the RE or ECO notified immediately who will in turn contact Heritage Western Cape (HWC);

c) Any human burials unearthed should be immediately reported to an archaeologist or HWC and all excavation work should cease;

d) The Contractor will be required to abide by the specifications as set out by HWC or the heritage specialist appointed to investigate the find;

e) Only after the site has been inspected will the Contractor be allowed to continue; and

f) The Contractor may not, without a permit issued by HWC, destroy, damage, excavate, alter, deface or otherwise disturb archaeological material.

3.10.2 PROTECTION OF PALEONTOLOGICAL RESOURCES

a) The Contractor shall undertake on-site monitoring for fossil material during excavation activities in accordance with fossil monitoring procedures (see Appendix E). It is suggested that the West Coast Fossil Park be approached to play a role in the monitoring exercise, given their proximity to the proposed works area;

b) If potential fossil finds are encountered during construction activities, the work is to be halted and the RE or ECO notified immediately who will in turn inform a palaeontologist;

c) The Contractor will be required to follow the relevant fossil find procedures (see Appendix E), as determined by the nature of the find (e.g. isolated bone, bone cluster etc.) and any additional specifications prescribed by the palaeontologist; and

d) The palaeontologist shall obtain a permit from HWC for the excavation of any fossils and compile a detailed report for submission to HWC and the IZIKO South African Museum.

MS8: The Contractor shall prepare a Method Statement detailing the protocols for dealing with archaeological and palaeontological resources including, but not limited to, appointment of a heritage consultant and palaeontologist, permit application, sampling and collection, site protection, etc.

3.11 FIRE CONTROL

a) No open fires shall be allowed on site for the purpose of cooking or warmth. Bona fide braai fires (such braai fires shall be limited to the traditional “month end” braais and not individual daily cooking fires) may be lit within the construction camp;

b) The Contractor shall take all reasonable steps to prevent the accidental occurrence or spread of fire;

c) The Contractor shall appoint a fire officer who shall be responsible for ensuring immediate and appropriate action in the event of a fire as well as maintenance of the fire-fighting equipment;

d) The Contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire;

e) The Contractor shall make use of the Port of Saldanha’s fire management system;
f) The appointed fire officer shall notify the West Coast District and Saldanha Bay Municipalities’ Fire and Emergency Services in the event of a fire and shall not delay doing so until such time as the fire is beyond his / her control;

g) The Contractor shall ensure that there is basic fire-fighting equipment on site at all times. This equipment shall include fire extinguishers and beaters;

h) The Contractor shall pay the costs incurred by organisations called to put out fires started by himself / herself, his / her staff or any sub-contractor. The Contractor shall also pay the costs incurred to reinstate burnt areas as deemed necessary by the RE;

i) Any work that requires the use of fire may only take place at that designated area and as approved by the RE. Fire-fighting equipment shall be available in these areas;

j) The Contractor shall ensure that the telephone number of the local Fire and Emergency Service is displayed at the site offices;

k) Smoking is not allowed on site, other than at designated smoking points. Cigarette butts shall not be discarded on the ground; and

l) The Contractor shall join the Cape West Coast Fire Protection Association to ensure compliance with the requirements of the Veld & Forest Fires Act, 1998 (No. 101 of 1998).

**MS9:** Prior to the commencement of construction activities, the Contractor is to ascertain the fire requirements of the local authorities and must submit a fire contingency plan Method Statement to the RE.

### 3.12 AIR QUALITY CONTROL

a) The Contractor shall ensure that the generation of dust is minimised and shall implement a dust control programme to maintain a safe working environment and minimise nuisance for the surrounding landowners;

b) The Contractor shall ensure that exposed soil and material stockpiles are adequately protected against the wind (e.g. water spray vehicles, covering of material stockpiles, etc.);

c) The location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors;

d) Construction vehicles shall comply with speed limits (speed limit for light vehicles is 40 km / hr and for heavy vehicles 20 km / hr) and haul distances shall be minimised. Material loads shall be suitably covered and secured during transportation; and

e) *If any future facility requires an Atmospheric Emissions Licence (AEL), a separate AEL application process shall be undertaken. It is likely that a separate air quality impact study will be required for the generation of an Atmospheric Impact Report.*

**MS10:** The Contractor shall submit a Method Statement detailing the control of dust on site.

### 3.13 NOISE AND HOURS OF OPERATION

a) The Contractor shall be familiar with and adhere to, any local by-laws and regulations regarding the generation of noise and hours of operation. In addition, the provisions of SABS 1200A Sub clause 4.1 regarding “built-up areas” shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas;

b) The Contractor shall avoid construction activities outside of “normal working hours”. This should be determined together with the local authorities;

c) The Contractor shall negotiate for any permits requiring deviation from local by-laws and/or regulations with the Saldanha Bay Municipality. However, the Contractor shall advise the RE and ECO in writing of such intention prior to negotiating for these permits;

d) The Contractor shall inform TNPA of any complaints received from the public or any other parties; and
e) The Contractor shall be held responsible for any complaints received from the authority and/or public with respect to any contravention of the agreed conditions.

3.14 LIGHTS

a) The Contractor shall avoid construction activities outside of “normal working hours”. This should be determined together with the local authorities; and
b) The Contractor shall ensure that any lighting installed on the site for his/her activities does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding users, specifically the residents of Bluewater Bay.

3.15 AESTHETICS

a) The Contractor shall take reasonable measures (e.g. visual screening using shade cloth in combination with fencing to screen the construction site, equipment and materials) to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area;
b) All disturbed areas shall be re-vegetated, using local species, to minimise any visual scarring and reduce the aesthetic impact of the development; and
c) All outdoor advertising associated with this activity must comply with the applicable Local Authority By-law for the control of Outdoor Advertising or in the absence of local legislative controls, must comply with the South African Manual for Outdoor Advertising Control (SAMOAC).

3.16 ACCESS, TRAFFIC AND SAFETY

a) Only access routes / positions approved by the RE shall be used;
b) The Contractor shall ensure that access through the site is maintained at all times for other occupiers of the site (e.g. TNPA employees and operators at the FMA site), occupiers of adjacent properties and road users on Main Road 559;
c) The Contractor shall ensure that existing roads within and surrounding the site are maintained in a suitable condition;
d) The Contractor shall ensure that all regulations relating to traffic management are observed;
e) The Contractor shall also ensure that adequate traffic accommodation, signage and safety measures (as appropriate) are put in place on site; and
d) Ensure that any tourism signage remains clear throughout the construction period and that it is replaced or relocated as appropriate at the end of the construction period to ensure minimal impact on tourism facilities. Placement of any relocated tourism signage must comply with the SAMOAC.

3.17 CEMENT AND CONCRETE ON-SITE MIXING

a) Concrete batching activities shall be located in an area of low environmental sensitivity to be identified and approved by the RE;
b) Cement and concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces to the satisfaction of the RE;
c) Concrete mixing shall not take place within 32 m of any surface water sources, the sea or areas of natural vegetation;
d) The Contractor shall be responsible for the implementation of the necessary collection facilities in order to prevent cement-contaminated water run-off and / or settlement of suspended matter. Once settled, the clean water may be decanted off for re-use;
e) At the end of the contract, any ponds used for contaminated water collection shall be dried out and the solids disposed of via the solid waste management system (see Section 3.7.2);
f) Unused cement bags shall be stored out of the rain where runoff won’t affect them. Used (empty) cement bags shall be collected and stored in weatherproof containers to prevent wind-blown cement dust and water contamination;
g) Used cement bags shall not be used for any other purpose and shall be disposed of on a regular basis via the solid waste management system (Section 3.7.2);
h) All excess concrete shall be removed from site on completion of concrete works and disposed of at a licensed landfill site; and
i) Washing of the excess concrete into the ground shall be prohibited.

**MS11: The Contractor shall submit a Method Statement detailing cement storage, concrete batching areas and methods, method of transport of cement and concrete, storage and disposal of used cement bags, etc. for each concrete batching operation.**

### 3.18 SITE REHABILITATION

- **a)** On completion of the project, the Contractor shall ensure that all structures, equipment, materials, waste, rubble, notice boards and temporary fences used during the construction operation are removed with minimum damage to the surrounding area;
- **b)** The Contractor shall clean and clear the site to the satisfaction of the RE;
- **c)** The Contractor shall take all appropriate measures to prevent erosion, especially wind and water erosion, during the rehabilitation phase. Any erosion caused on site during the construction phase as a result of runoff shall be rehabilitated;
- **d)** Temporary erosion protection measures shall be kept in place until permanent preventative measures (such as establishment of vegetation) is concluded; and
- **e)** Any areas where natural vegetation on or around the site was disturbed shall be rehabilitated using plant material harvested during vegetation clearing (see Section 3.3.1), supplemented with material from adjacent natural areas, where necessary.

### 3.19 ALIEN ERADICATION

- **a)** Alien vegetation management shall be undertaken on the site for the operational lifespan of the project;
- **b)** Any alien vegetation removal shall be undertaken by a suitably qualified sub-contractor; and
- **c)** No on-site burying, dumping, stockpiling or burning of any weeds and alien plant species may occur. Such material shall be removed from the site and disposed of at a suitable municipal collection point or landfill site from where seed cannot escape.

### 3.20 EMPLOYMENT AND THE SOCIAL ENVIRONMENT

- **a)** To ensure that previously disadvantaged individuals benefit from the proposed project during the construction phase, local Black Enterprise (BE) service providers and local labour from the surrounding community should be employed as far as possible;
- **b)** Those successful in obtaining employment should be provided with the appropriate training;
- **c)** Compensation for loss of land, structures and infrastructure associated with the development shall occur in a timeous manner; and
- **d)** The RE or Contractor shall take appropriate measures to ensure that the impacts on nearby business activities (e.g. dust, traffic, theft, etc) as a result of the construction activities, are minimised.
3.21 DESIGN REQUIREMENTS

The following shall be applied as relevant to the development of each facility where bulk fuel storage is undertaken on site.

a) Tank design for bulk storage facilities of petrol shall comprise of one of the following:
   - External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20 m; or
   - Fixed-roof tank with internal floating deck / roof fitted with primary seal; or
   - Fixed-roof tank with vapour recovery system.

b) All designs shall be in full compliance with the occupational Health and Safety Act, 193 (No. 85 of 1993) and its regulations, the National Buildings Regulations and the Buildings Standards Act, 1977 (No. 107 of 1977), as well as local bylaws;

c) Pipelines containing hazardous materials e.g. fuel pipelines from the harbour to the facility, shall be properly marked and shall be contained in a servitude;

d) Designs shall be in compliance with applicable SANS codes, i.e. SANS 10087, SANS 10089, SANS 10108, etc.;

e) Applicable guidelines or equivalent international recognised codes of good design and practice shall be incorporated into designs;

f) A recognised process of hazard analysis (such as a HAZOP study, FMEA, etc.) on the proposed facility prior to construction to ensure design and operational hazards have been identified and adequate mitigation put in place shall be completed;

g) Designs shall be in compliance with IEC 61508 and IEC 61511 (Safety Instrument Systems) standards or equivalent to ensure that adequate protective instrumentation is included in the design and would remain valid for the full life cycle of the project:
   - Including demonstration from the designer that sufficient and reliable instrumentation would be specified and installed at the facility;

h) It shall be demonstrated by owners or their contractors that the final designs would reduce the risks posed by the installation to internationally acceptable guidelines;

i) A professional engineer registered in South Africa in accordance with the Professional Engineers Act or Built Environment Act, who takes responsibility for suitable designs, shall be provided on all terminal designs;

j) Design and install an appropriate stormwater catchment system to prevent hydrocarbon-contaminated water from leaving site;

k) All future facilities with a high volatile organic compound (VOC) and benzene emission potential (e.g. petrol) shall be located 250 m or more away from the boundary of the SBIDZ; and

l) Geo-technical investigations to be undertaken and completed prior to design of tank foundations.

3.22 BASELINE ASSESSMENTS

a) Undertake a baseline soil assessment prior to construction. This will entail the sampling of soils (based on historical activities) and compiling a report for soil baseline concentrations. It will allow the SBIDZ and the tenants to refer back to this information for future clarification should site conditions be questioned regarding contaminant levels; and

b) Undertake a baseline groundwater quality assessment prior to operation of hydrocarbon storage facilities.
VOLUME 2:

OPERATION ENVIRONMENTAL MANAGEMENT PROGRAMME
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LIST OF ACRONYMS

ECO: Environmental Control Officer
S&EIA: Scoping & Environmental Impact Assessment
EMP: Environmental Management Programme
ECO: Environmental Control Officer
EO: Environmental Officer
HWC: Heritage Western Cape
IDZ: Industrial Development Zone
LDRP: Leak detection and repair program
LiCo: Saldanha Bay IDZ Licensing Company SOC Limited
MHI: Major Hazardous Installation
MSDS: Material Safety Data Sheets
NAAQS: National Ambient Air Quality Standards
OSRP: Oil Spill Response Plan
OPCSA: Oil Pollution Control of South Africa
RE: Resident Engineer
SAMOAC: South African Manual for Outdoor Advertising Control
VRU: Vapour Recovery Unit
GLOSSARY

The definitions given below are for explanatory purposes only and are applicable to this Operation Environmental Management Programme. In the event that any conflict arises between the definitions contained herein and those contained within the contract documentation, those within the contract documentation shall prevail.

ENVIRONMENT: The external circumstances, conditions, and objects that affects the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical, cultural and political aspects.

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP): That part of the overall management process which includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (DRAFT ISO 14 000, 1995).

ENVIRONMENTAL POLICY: Statement by the operator of its intentions and principles in relation to its overall environmental performance, which provides a framework for action and for the setting of its environmental objectives and targets. (DRAFT ISO 14 000, 1995)

GROUNDWATER: The water that fills the natural openings present in the rock or unconsolidated sands.

HAZARDOUS: Contains an element of risk. Dangerous or toxic to life.

HAZARDOUS SUBSTANCES: This means any substance or mixture of substances, product or material declared to be a hazardous substance under section 2(1) of the Hazardous Substance Act (1973).

HERBICIDE: See ‘Pesticide’.

MAINTENANCE: The complete upkeep, support and protection of areas/regions/sites.

TNPA: Transnet National Ports Authority, a division of Transnet Limited, and the landlord at the Port of Saldanha.

OPERATOR: The companies entering into agreement with LiCo to operate facilities at the OSC within the Saldanha Bay IDZ and Port of Saldanha.

PESTICIDE: Pesticides are chemicals used by humans to kill organisms that threaten their health and well-being, pets and livestock or cause damage to crops. This includes insecticides, herbicides, fungicides, acaricides, nematicides and rodencides (after Fuggle et al, 1992).

POLLUTION: The residue of human activity that adversely affects the next user of some environmental resource.
1 INTRODUCTION

1.1 BACKGROUND

This Operational Environmental Management Programme (OEMP) includes management measures for the operational activities that may have an impact of the environment of all currently known activities in the Saldanha Bay IDZ, including those originally envisaged for the oil and gas services complex and those required for the operation of the hazardous substances storage facilities. All management measures added to the OEMP since the original EIA are shown in italics.

As a number of Operators will be functioning within the SBIDZ, the terms ‘Operator’ and ‘Operators’ are used interchangeably throughout this report.

1.2 REGULATORY CONTEXT

Legislation applicable to the proposed project operation includes but is not limited to:

- Environment Conservation Act, Act 73 of 1989;
- National Environmental Management Act, Act 107 of 1998;
- National Environmental Management: Air Quality Act, Act 39 of 2004;
- National Environmental Management: Biodiversity Act, Act 10 of 2004
- Integrated Coastal Management Act, Act 24 of 2008;
- National Ports Act, Act 12 of 2005;
- Health Act, Act 63 of 1997 and any amendments;
- National Water Act, Act 36 of 1998;
- National Heritage Resources Act, Act 25 of 1999;
- Nature Conservation Ordinance, 15 of 1974;
- Guidelines for the control and management of ships’ ballast water to minimize the transfer of harmful aquatic organisms and pathogens, International Maritime Organization Resolution A.868 (20) of 1997;
- Draft Ballast Water Management Bill, 2013;
- Noise Control Regulations: Environmental Conservation Act, Act 73 of 1989; and

1.3 ENVIRONMENTAL POLICY

The Operators, their staff, the Sub-contractors and their staff shall commit themselves to protect the condition of the affected environment during the operation of the facilities. The Saldanha Bay Licencing Company (LiCo) shall commit itself to ensuring that the Operators adhere to the environmental specifications contained in the OEMP.

1.4 PURPOSE OF THE EMP

The purpose of this OEMP is to ensure sound environmental management practices will be undertaken to minimise adverse impacts on the environment throughout the operations of the proposed storage of hazardous substances. The OEMP will further identify what measures are to be put in place to manage any incidents and emergencies that may occur during operation of the facility and ensure that these measures are strictly adhered to.
2 IMPLEMENTATION

2.1 ROLES AND RESPONSIBILITIES

The Operator is responsible for the implementation of the OEMP. The Operator will appoint the following:

- An Operations Manager (OM) shall be responsible for enforcing the OEMP and ensuring that appropriate mitigation measures are implemented at all work sites.
- A project Health, Safety and Environmental Manager (HSEM) shall be the custodian of the Operator’s EMS documentation and shall liaise with the OM and be responsible for the distribution and revision of the OEMP. The HSEM shall continuously monitor the implementation of this OEMP by performing regular inspections and audits. The HSEM shall conduct periodic environmental audits and advise the OM whenever this OEMP fails to achieve its goals and objectives.

LiCo shall oversee the Operator and ensure that all parties are aware of the requirements of the OEMP and monitor its implementation. Other key personnel, including the Field Engineers, Supervisors/Foremen and Sub-Contractor’s Representatives, shall ensure that all personnel are aware of their responsibilities in terms of the OEMP.

2.2 WORKER INDUCTION

An induction programme, including a Code of Conduct, shall be developed for all workers directly related to the Project. A copy of the Code of Conduct is to be presented to all workers and signed by each person. The Code of Conduct must address the following aspects:

- respect for local residents and customs;
- zero tolerance of bribery or corruption;
- zero tolerance of illegal activities by construction personnel including:
  - unlicensed prostitution; illegal sale or purchase of alcohol; sale, purchase or consumption of drugs; illegal gambling or fighting;
- no alcohol and drugs policy during working time or at times that will affect ability to work;
- description of disciplinary measures for infringement of the Code and company rules. If workers are found to be in contravention of the Code of Conduct, which they signed at the commencement of their contract, they will face disciplinary procedures that could result in dismissal.

The Project will develop and implement an HIV/AIDS policy and information document for all workers directly related to the Project. The information document will address factual health issues as well as behaviour change issues around the transmission and infection of HIV/AIDS.

2.3 ENVIRONMENTAL AWARENESS TRAINING

All personnel employed on the site or entering the site must attend an environmental awareness briefing. The extent of the briefing should be based on the length of time for which the person will be on site, the activities that they will be undertaking and the risks to which they will be exposed. All employees shall be made aware of the environmental risks relating to operational activities and specific site emergency plans.

2.4 DOCUMENTATION AND RECORD KEEPING

The Operator shall manage a complaints register (grievance mechanism) to record any environmental complaints relating to the operation of the facility. Details that should be recorded include the time, details of the complainant, the complaint specifics and follow-up action to be taken. Any complaints regarding environmental aspects of the operation should be
investigated and documented. The landlord, Transnet National Ports Authority (TNPA) shall be informed of any complaints received from the public, community or any other parties.

The HSEM shall record the results of any environmental/ ecological monitoring undertaken and note any occurrences of environmental incidents to enable analysis of long-term trends and to modify the OEMP specifications where necessary. These records shall provide evidence of progress made, identify areas of concern where further improvements are necessary and provide important information to management on business performance and exposure to risk. Environmental reports and records to be maintained shall include, but not limited to, the following:
- Bi-annual HSE Audit / Inspections Reports;
- Environmental Incident Reports as they occur; and
- Waste Disposal Tracking Records.

2.5 AUDITING

An internal review procedure shall be established by the Operator to monitor the implementation and compliance with the OEMP. The HSEM shall undertake the internal review. The HSEM shall advise the OM if this OEMP fails to achieve its goals and objectives. Corrective actions to rectify all non-conformances with the OEMP shall be included in the audit report.

Procedures that require modification shall be changed to improve the efficiency of the OEMP, where and when necessary. Any changes or adjustments to the OEMP shall be registered and included in an updated OEMP document. The updated OEMP shall be submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) and TNPA for approval.

Environmental inspections and monitoring will focus on activities that have a significant impact on the environment. The environmental monitoring and audit system shall be used as an important tool to measure the effectiveness of recommended mitigation measures. All environmental aspects and impacts resulting from the operation of the facility should be identified, managed, monitored and reported on regularly, e.g. stormwater and dust generation.

TNPA, as the landlord at the Port of Saldanha, reserves the right to inspect any activities taking place on their land to ensure that all activities comply with the OEMP as well as the Port of Saldanha’s ISO 14001 Environmental Management System requirements.

2.6 NON-COMPLIANCE

Any non-compliance with the specifications of the OEMP shall be identified and recorded by the HSEM and referred to the Operator. Follow up actions shall be identified as appropriate. LiCo, TNPA or DEA&DP may request that part or all of the operations be suspended if the Operator fails to comply with the specification set out in the OEMP or TNPA requirements.

2.7 PUBLIC RELATIONS / STAKEHOLDER ENGAGEMENT

Public information boards shall be erected with contact details of the Operator and HSEM. The Operator shall keep a register of any complaints by members of the public. The register shall include all contact details of the person who made the complaint and information regarding the complaint itself. TNPA shall be informed of any complaints received from the public, community or any other parties.
3 ENVIRONMENTAL MANAGEMENT

3.1 MANAGEMENT OF FACILITIES

3.1.1 BUILDING AND GROUNDS MAINTENANCE

a) The discharge of pollutants to surface water, groundwater, the sea and air from building and grounds maintenance shall be prevented. Pollutants would include detergents and paints used in maintenance operations;

b) To prevent the discharge of hazardous waste into the stormwater system, signs should be erected in this regard at the drains. Any catch basins that receive runoff from maintenance areas should be cleaned regularly. These wastes should not be flushed into the stormwater drain, but removed in a proper manner;

c) Effective precautions shall be taken not to use paint and detergents (and any similar materials) near water bodies and stormwater conveyance systems;

d) Paved surfaces that are exposed to industrial activity should be regularly cleaned by using dry cleaning techniques, such as sweeping;

e) Adequate supplies of spill response equipment and materials should be stored near areas where spills may occur.

f) Any significant structural maintenance should require compliance with the CEMP; and

g) The maintenance contractor is to be made aware of the conditions under which maintenance is to be done.

3.1.2 USE OF HERBICIDES, INSECTICIDES AND OTHER PESTICIDES

a) Herbicides or other poisonous substances shall only be used on site with the prior knowledge and written consent of the OM, HSEM and the TNPA Environmental Manager; and

b) Use of poisonous substances should be minimized and used according to directions.

3.1.3 NO-GO AREAS

a) No-go areas include any areas outside of the fenced boundaries of the site; and

b) The Operator shall ensure that operating activities do not impact on natural vegetation outside of the boundaries of the site.

3.1.4 BULK/FUEL STORAGE TANKS

a) Used oil shall be collected and stored in a holding tank until removed from site by a specialist oil recycling company;

b) Fuel shall be stored in a steel tank in a secure bunded area. Weekly monitoring of the bund wall and storage tanks should be undertaken to monitor for any leaks. Overfill protection and alarms should be installed to warn against possible overfilling which could lead to spills;

c) The Operator shall provide adequate separating mechanisms, such as oil/water separators, to stop any spills and leaks from fuel storage areas entering the stormwater system. A dead-end sump shall be provided to capture spills and leaks;

d) The Operator shall ensure that adequate fire-fighting equipment is made available at the fuel storage area;

e) All fuel storage equipment (e.g. tanks) shall meet appropriate internationally recognised standards for structural design and integrity (e.g. American Petroleum Institute (API) standards 650, 652, 653 and 2610);

f) Shutdown valves are to be installed (e.g. automatic pressure-activated values) to shut down or isolate ruptured tanks and pipes; and

g) All staff to be adequately trained in spill prevention, containment and response.
3.1.5 TRAFFIC AND PARKING

a) Traffic on site shall be kept to a minimum. Only vehicles with permits issued by the Operator shall be allowed on site. Parking bays shall be provided for permit holders; and

b) Pre-process and issue employees and business operators with tags to allow them to enter the controlled access point(s) with minimum delay.

3.2 MATERIALS HANDLING, USE AND STORAGE

3.2.1 TRANSPORT

a) The Operator shall ensure that delivery drivers are informed of all procedures and restrictions in order to comply with the environmental requirements;

b) Materials shall be appropriately secured to ensure safe passage between destinations. The Operator shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials;

c) The Operator shall ensure that delivery drivers are supervised during offloading;

d) To reduce air emissions, the Operator shall encourage the reduction in engine idling during on- and offloading activities;

e) Vehicles at storage areas shall frequently be inspected for leaks of oils, hydraulic fluids, antifreeze and other lubricants;

f) Paved areas shall be inspected regularly and cracks and joints sealed to stop the release of any contaminants to the underlying soils, groundwater or seawater; and

g) The Operator shall as far as possible ensure that transport of abnormal loads does not disrupt normal traffic flow and shall notify other road users in advance of any disruption due to the transport of such loads.

3.2.2 STORAGE / STOCKPILING

a) All fuel, oil and other hazardous substances shall be confined to demarcated, adequately bunded areas and stored in suitable containers;

b) All storage areas for chemicals and paints shall be bermed and raised above the surrounding ground surface to minimise run-on of stormwater and to contain any leaks and spills;

c) Chemical storage areas shall be covered and designed to allow easy collection of spills and leaks. Where required, flame resistant storage containers shall be provided;

d) Temporary storage areas shall be kept away from high traffic areas and shall be clearly marked noting the materials stored, emergency contact details, and spill clean-up procedures;

e) The Operator shall ensure that incompatible materials (paints & chemicals) are not stored together;

f) Spill response materials shall be stored in strategic locations for use in any location on site and shall be clearly marked;

h) Drip trays shall be used under fuel hoses and dispensing equipment at all times;

i) The Operator shall ensure that run-off from any fuel or hazardous material storage area does not contaminate seawater; and

j) The HSEM shall conduct frequent inspections of storage and handling areas. Consistent and accurate records of inspection efforts, spills and leaks, and clean-up efforts shall be kept.
3.2.3 HAZARDOUS SUBSTANCES

a) The Operator shall ensure that all toxic/hazardous products (i.e., fuel, poisons, bitumen etc.) are stored and handled in a manner that minimises the potential for spillage;
b) The Operator must ensure that all hazardous substances are stored in a bunded area and that containers are properly labelled;
c) The relevant Material Safety Data Sheets (MSDSs) for all hazardous chemical substances (as defined in the Occupational Health & Safety Act 85 of 1993, Regulations for Hazardous Chemical Substances) shall be on site. Procedures detailed in the MSDSs shall be followed in the event of an emergency situation;
d) Any accidental spill of oils or chemicals is to be reported to the HSEM immediately so that the best remediation method can be quickly implemented;
e) Spills of hazardous substances into the soil or any water body is also to be reported to all relevant authorities, including DEA&DPs Pollution Management department (D:PM), within 14 days. This requirement is in terms of Section 30 (10) of NEMA and Section 20 (3) of the National Water Act, No. 36 of 1998 (NWA) that pertains to the control of emergency incidents;
f) Copies of all MSDSs shall be sent to the clinic that will be used by the Operator in case of any emergency situation;
g) The Operator shall familiarise themselves with all relevant local by-laws and regulations concerning the storage of hazardous substances, and shall adhere to these by-laws and regulations;
h) Preventative procedures for minor hydrocarbon spills of oil and other hazardous substances shall include the following:
   - Using drip trays for collection of waste lubricants during equipment maintenance;
   - Immediate cleaning with appropriate absorbent granules and powders;
   - Using environmental contingency response drums;
   - Using bunded storage areas;
   - Identifying potential leak points on storage containers;
   - Excavation of spoiled soil and replacement with new earth;
   - Providing covered containers for chemicals used on a routine basis;
   - Returning of contaminated chemicals such as paints or thinners to the manufacturers;
   - Orientation of personnel on the safe handling of chemicals; and
   - Routine inspection of chemical storage facilities and areas by the HSEM; and
i) Should any naturally-occurring radioactive materials (NORM) be encountered during pipe cleaning operations, these materials shall be handled by a specialist waste contractor and transported in approved containers in vehicles displaying appropriate warning signs.

3.3 WASTE MANAGEMENT

3.3.1 SOLID WASTE

a) Solid waste includes all waste from production (steel plates and pipes) and surplus food, food packaging, organic waste, etc. The Operator shall be responsible for the establishment of a solid waste control and removal system to prevent the spread of waste in, and beyond, the operation site;
b) An integrated waste management approach shall be used, based on the principles of waste minimisation, reduction, reuse and recycling of materials. This policy shall be included in the Environmental Awareness Training sessions. Containers for glass, paper, metals and plastics shall be provided. Office areas are particularly suited for this purpose;
b) All waste bins must have lids and be suitably wind-proof, being made of a durable, appropriate material. Bins are to be located at all areas of the site used by the Operator, with waste to be removed from the waste bins on a regular basis;

c) The Operator shall ensure that the site is kept clean at all times. The general cleanliness of the site shall form part of the HSEM’s inspections;

d) All waste shall be stored in a demarcated area, which meets the satisfaction of the OM and HSEM;

e) No waste material or litter shall be burnt or buried on site; and

f) No waste shall be allowed to accumulate or be stored on site for longer than 30 days.

3.3.2 HAZARDOUS WASTE

a) The volume of hazardous waste produced must be monitored on a weekly basis in accordance with TNPA requirements;

b) Hazardous waste must be stored in suitable containers and containers must be clearly labelled;

c) The Operator shall ensure that all hazardous waste is collected by an approved waste contractor and disposed of at a licensed hazardous waste site;

d) No hazardous waste shall be allowed to enter into stormwater drains;

e) No hazardous waste shall be allowed to accumulate or be stored for longer than 30 days.

3.3.3 RECORD KEEPING

a) Waste generated must be classified and the volume of hazardous waste produced recorded;

b) Waste disposal tracking records shall also be kept to trace the transport of waste from site to a registered landfill or hazardous waste site.

3.3.4 APPOINTMENT OF WASTE CONTRACTOR

The waste contractor appointed by the Operator must be approved by TNPA. The Operator shall provide TNPA with the following information before a waste contractor is licensed to operate in the Port of Saldanha:

- name of the contractor;
- a copy of the valid license or proof of registration;
- nature of waste that the contractor will be handling;
- procedures for disposal of kinds of waste that the contractor will be handling; and
- location of waste disposal facility that the contractor will use.

3.4 STORMWATER MANAGEMENT

a) The Operator shall be responsible for the operation of necessary collection and sediment settling facilities for stormwater to prevent any pollution of ground- or seawater;

b) Stormwater detention ponds are to be managed in accordance with TNPA’s stormwater management plan for the Port of Saldanha and shall have capacity to manage a 1:50 year rain event;

c) No stormwater from onshore activities shall be discharged directly to the sea;

d) Suspended solids and contaminants including oils shall be removed from collection facilities and disposed of by the Operator at frequent intervals;

e) All hard surfaces shall be swept on a regular basis to prevent any waste from operational activities entering the stormwater system; and
f) A site wide stormwater management plan, with specific requirements per facility, shall be developed and implemented.

3.5 GROUNDWATER MANAGEMENT

a) A groundwater monitoring plan shall be developed and implemented (see Appendix G); and

b) A network of simple groundwater monitoring wells should be installed across the site, including the tank farm and dispensing areas. The wells should be located where they can be used to determine the potential for contaminates for migrate onto or off the site.

3.6 WASTE- OR CONTAMINATED WATER

a) The Operator shall prevent pollution of ground- and seawater that could result from operational activities. Such pollution could result from the release, accidental or otherwise of chemicals, oils, fuels, cement, sewage, water carrying product, etc. as a result of operations;

b) The Operator shall ensure that no contaminated surface water shall flow off-site as a result of operations;

c) Silt/oil traps shall be maintained to ensure retention of silt/oil on site and cut-off ditches shall be managed to ensure no run-off from the site except at points where silt/oil traps are provided;

d) The Operator shall be responsible for the operation of necessary collection facilities in order to prevent pollution and to allow for settlement of suspended matter;

e) Solids from the settlement pond shall be disposed of at a licensed landfill site on a regular basis in a manner approved by the OM and HSEM;

f) Runoff from fuel depots, workshops and truck washing areas shall be directed into a conservancy tank and disposed of at a location approved by the HSEM and local authority; and

g) No waste- or contaminated water shall be disposed of into the sea or stormwater drains.

3.7 CONTROL OF OPERATIONAL IMPACTS

3.7.1 GENERAL AESTHETICS

a) The Operator shall take reasonable measures to ensure that operational activities do not have an unreasonable impact on the aesthetics of the area.

3.7.2 NOISE CONTROL

a) The Operator shall be familiar with all relevant local by-laws and regulations concerning noise and working hours, and shall adhere to these by-laws and regulations;

b) Once working hours have been confirmed, the Operator shall negotiate for any permits requiring deviation from local by-laws and/or regulations with the Saldanha Municipality;

c) The Operator shall advise the HSEM in writing of such intention prior to negotiating for these permit;

d) The Operator shall be held responsible for any complaints received from the authority and/or public with respect to any contravention of the agreed conditions;

e) TNPA shall be informed of any complaints received from the public, community or any other parties;

f) The HSEM shall be responsible for the monitoring of noise levels within the fabrication site by taking readings of the noise generated at regular intervals. Monitoring shall extend to individual items of plant to ensure that they are effectively silenced and operate in accordance with the legislative noise limits;

g) Employees shall be provided with the necessary personal protection equipment where required;

h) High volume/high speed compressor testing must be scheduled during the day-time; and

i) Noise levels of audible warning devices are to be kept to the minimum necessary for the health and safety of employees.

3.7.3 AIR QUALITY

a) The Operator shall take appropriate measures to minimise dust generation on site;

b) As far as economically and technically possible, consider limiting sandblasting and coating activities to indoor or enclosed facilities and/or utilise automated equipment for surface preparation and surface coating;

c) Dust from abrasive blasting activities undertaken in the open air shall be contained by using shrouding in the form of canvas enclosures;

d) Incorporate a 300 m buffer between industrial components where surface preparation and coating is to take place and sensitive residential receptors;

e) The Operator shall monitor dust levels on site and cleared areas and unsurfaced roads shall be sufficiently dampened when necessary;

f) Establish a baseline air quality monitoring programme for the main pollutants expected to be emitted during operations. Monitoring equipment should be located at the current Bluewater Bay monitoring site operated by TNPA;

g) All facilities emitting VOCs shall keep an odour register on site;

h) It is recommended that the community be encouraged to report all air quality related problems, such as nuisance dust, fugitive emissions from roads and odour complaints and that the complaints be recorded in a complaints register. The type of odour (diesel, sulphurous), as well as the intensity of the smell experienced (irritating, nauseating) shall be recorded; and

i) An air quality management plan shall be developed and implemented. All facilities storing hazardous substances shall undertake ambient air quality monitoring. It is recommended, that as a minimum continuous VOC sampling be conducted as part of the project air quality management plan. It is further recommended that a short sampling campaign after the commencement of additional operations for SO2 be conducted to determine the operations are compliant with the NAAQS. See Appendix F for further details.

3.7.4 LIGHTING MANAGEMENT

a) The Operator shall ensure that no unnecessary lights are left on after working hours;

b) Spill off lighting must be used to limit light pollution; and

c) The Operator shall ensure that any lighting installed on the site does not interfere with road traffic or cause a reasonably avoidable disturbance to other users of the surrounding area, specifically the residents of Bluewater Bay.

3.7.5 FIRE MANAGEMENT

a) The Operator shall take all reasonable steps to avoid fire risks through their activities on site;

b) The Operator shall ensure that there is basic fire-fighting equipment on site at all times. This equipment shall include fire extinguishers and beaters;

c) The Operator shall ensure that the fire-fighting equipment is to the satisfaction of TNPA and/or Local Fire Services;

d) The Operator shall make use of the Port of Saldanha’s fire management system; and
The Operator shall pay the costs incurred by an organisation called to put out fires started by himself or any sub-contractor.

**3.7.6 PROTECTION OF FLORA AND FAUNA**

a) No activities shall take place outside the demarcated operational areas;

b) The removal, damage or disturbance of natural vegetation, fauna or avifauna is forbidden outside of the demarcated site boundaries;

c) The Operator shall be familiar with any Ordinances, Acts, by-laws and regulations pertaining to the protection of natural features, flora and fauna on site; and

d) Where applicable, the Operator shall apply for the necessary permits prior to removing any animals or plants listed in the relevant schedules promulgated in terms of any relevant legislation.

**3.8 CONTROL OF OPERATION ACTIVITIES**

**3.8.1 SURFACE PREPARATION**

a) The Operator shall ensure that waste materials generated by surface preparation activities such as abrasive blasting are properly managed. Some of the waste materials generated will include paint chips, used abrasives and particulate emissions which are all a potential source of air and water pollution;

b) The volume of waste generated shall be reduced by using blast media that is relatively easy to reuse for the same purpose or recycle for another use. Abrasives shall be protected from water and the cleaning system effectively maintained to improve their reuse capability;

c) Where blasting and coating is to be undertaken indoors, the Operator shall ensure that the abrasive recovery system is properly managed to effectively separate reusable abrasives from dust particles. Filters shall be inspected on a regular basis to ensure that all waste material is confined to the building and properly managed;

d) All waste material from blasting activities shall be disposed of at a licensed landfill or hazardous waste site;

e) Where blasting cannot be confined to a building and is undertaken in the open air, the release of dust and abrasives into the surrounding environment shall be limited by undertaking proper shrouding measures;

f) The Operator shall ensure that all hard surfaces are swept regularly to prevent waste materials from blasting activities entering the stormwater system and seawater; and

g) All employees involved in blasting operations shall be provided with the required personal protection equipment to prevent inhalation of dust particles from blasting operations.

**3.8.2 COATING OPERATIONS (PAINTING, ETC.)**

a) Where painting is to be undertaken within the confines of a dedicated building, filters shall be regularly inspected to ensure that all emissions from paint particles are contained within the building;

b) Carton-based and fibreglass filters shall be discarded at a licensed hazardous waste site after use;

c) All employees involved in painting operations shall be provided with the necessary personal protection equipment to prevent inhalation of paint particles;

d) The Operator shall ensure that painting of large structures in the open shall not be undertaken during excessive wind conditions which could lead to paint particles being blown offsite;

f) Shrouding shall be used around painting areas to intercept windblown overspray and to keep sprays contained. Any damage to properties and vehicles offsite shall be for the responsibility of the Operator;
g) Wastes produced by painting operations will include leftover paint, overspray, paint that is no longer usable, still bottoms from recycled cleaning solvents, rags, and other materials contaminated with paint. These should be managed as hazardous waste;

h) The amount of paint should be reduced through the use of improved equipment, alternative coatings, and good operating practices;

i) Paint spray guns, brushes, and equipment shall be cleaned after use to render them reusable; and

j) Water, detergents and solvents used to clean painting equipment shall be managed as a hazardous waste.

3.8.3 PLANT / EQUIPMENT REPAIR AND MAINTENANCE

a) The Operator shall ensure that all equipment is on a planned maintenance programme and is maintained in an operational condition at all times;

b) An equipment inventory, per type of equipment or machinery, shall be kept to ensure that all inspections and tests are undertaken;

c) All repair and maintenance of plant and equipment shall take place in designated workshop areas;

d) The Operator shall ensure that workshop areas are kept neat and clean at all times;

e) When servicing vehicles and equipment, drip trays shall be used to collect waste oil and other lubricants; and

f) All washing of vehicles and equipment shall be undertaken in suitable maintenance areas equipped with an impermeable floor and sump/oil trap to prevent the run-off of fuel, oil and lubricants.

3.8.4 STORAGE OF HAZARDOUS SUBSTANCES

a) All bulk fuel storage tanks are to be fitted with leak detection technology and bulk storage facilities to implement a leak detection and repair program, in line with the guidelines included in Appendix F;

b) As far as possible, natural gas shall be used as fuel for the boilers, rather than diesel, at used lubricant oil recycling facilities. If this is not possible, alternative mitigation measures (such as the use of scrubbers or cyclones on the boiler stacks) shall be implemented to reduce SO2 so as to ensure no exceedance of the National Ambient Air Quality Standards (NAAQS) offsite;

c) Vapour Recovery Units (VRU) shall be installed and operated at materials handling (loading and offloading facilities) of hazardous substances; and

d) All facilities storing hazardous substances shall comply with the requirements of the National Environmental Management: Air Quality Act (NEM:AQA) Listed Activities and Minimum Emission Standards (MES) requirements.

3.9 EMERGENCY PROCEDURES

a) The Operator shall ensure that staff and the staff of Subcontractors are aware of the procedure to be followed for dealing with spills and leaks;

b) In the event of a major spill (more than 220 litres) the OM, HSEM, TNPA and D:PM shall be notified;

c) The Operator shall ensure that the necessary materials and equipment for dealing with spills and leaks are present on site at all times;

d) The clean-up of spills and any damage caused by the spill or leak shall be for the Operator’s account. The ‘polluter pays’ principal shall be employed for any accidental spills and leaks;

e) Treatment and remediation of spill areas shall be undertaken to the satisfaction of the OM, HSEM and TNPA Environmental Manager;

f) Spill cleaning materials shall be provided at each fuel and other liquid hazardous substance storage areas;

g) Appropriate fire-fighting equipment shall also be provided at each storage area;
h) Emergency drills shall be conducted regularly in order to familiarise personnel with their roles and responsibilities in emergency response;

i) **In order to reduce the possibility of an accidental spill into the marine environment, the Port of Saldanha’s operational regulations and procedures shall be complied with;**

j) **An Oil Spill Response Plan (OSRP) in line with the current Oil Spill Response Plan for the Port of Saldanha (TNPA-IMS-SLD-PLN016.05) and in collaboration with Oil Pollution Control of South Africa (OPCSA) shall be developed and implemented; and**

k) **Membership of the Saldanha Bay Water Quality Forum Trust (SBWQFT) is advised.**
APPENDIX A

ENVIRONMENTAL AGREEMENT
PROPOSED STORAGE OF HAZARDOUS SUBSTANCES AT THE SALDANHA BAY IDZ

Contract No.: ________________

- ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP)

MADE AND ENTERED BETWEEN:

The Saldanha Bay IDZ Licensing Company (Pty) Ltd

Herein represented by: ________________________________________________

In his / her capacity as: ________________________________________________

Duly authorised hereto

Hereafter referred to as “THE DEVELOPER”

AND

____________________________________________________________________

Herein Represented by: ________________________________________________

Duly authorised hereto

Hereafter referred to as the “THE CONTRACTOR”

The parties record that the Contractor shall bear the following obligations in terms of this Agreement:

1. Comply with all provisions of the EMP;
2. Comply with the requirements of the Occupational Health and Safety Act (No. 85 of 1993);
3. Bind any Sub-Contractors to comply with the EMP to which this agreement is appended;
4. Enforce compliance with the EMP by:
   • Appointing an Environmental Officer; and
   • Ensuring that all staff are familiar with the EMP.
5. Protect the environment of the site against environmental damage;
6. To make good any environmental damage; and
7. Failure to comply with the EMP may result in fines and reported non-compliance may result in the suspension of work or termination of the contract.
SIGNATORIES

Date at ____________________________ on this ________ day of _____________________ 201__

For DEVELOPER

(signed) ____________________________________

Print name: __________________________________
(duly authorised)

As Witnesses:

1. __________________________________________

2. __________________________________________

______________________________________________

Date at ____________________________ on this ________ day of _____________________ 201__

For CONTRACTOR

(signed) ____________________________________

Print name: __________________________________
(duly authorised)

As Witnesses:

1. __________________________________________

2. __________________________________________
APPENDIX B

METHOD STATEMENT CONTROL SHEET
**PROPOSED STORAGE OF HAZARDOUS SUBSTANCES AT THE SALDANHA BAY IDZ**

Contract No.: ______________

- **METHOD STATEMENT CONTROL SHEET**
  [THIS CONTROL SHEET IS TO BE ATTACHED TO ALL METHOD STATEMENTS]

  MS Number: ______________

  **THIS SECTION TO BE COMPLETED BY CONTRACTOR/METHOD STATEMENT AUTHOR ONLY**

  **TITLE:**
  
  **DESCRIPTION:**
  
  **SUBMITTED BY:**
  
  **DATE REQUESTED BY RE:**
  
  **DATE SUBMITTED:**
  
  **DATE RESPONSE REQUIRED BY:**
  
  **DATE WORK START:**

  **REVIEW SCHEDULE**

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  **Name**

  **Signature**

  **Date**
CONTRACTOR NOTE: METHOD STATEMENTS SHOULD ADDRESS THE FOLLOWING:

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<th>Brief description of the work to be undertaken</th>
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<td>Detailed description of the process of work, methods and materials</td>
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<td>WHERE</td>
<td>Description/sketch/map of locality of work (where applicable)</td>
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<td>WHEN</td>
<td>Due commencement date and completion date estimate (day/night work)</td>
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DO'S AND DON'T'S

Workers & equipment must stay inside the site boundaries at all times
Do not swim in or drink from streams
Do not throw oil, petrol, diesel, concrete or rubbish in the stream
Do not work in the stream without direct instruction
Do not damage the banks or vegetation of the stream
Protect animals on the site
Ask your supervisor or Contract's Manager to remove animals found on site
Do not damage or cut down any trees or plants without permission
Do not pick flowers
Put cigarette butts in a rubbish bin
Do not smoke near gas, paints or petrol
Do not light any fires without permission
Know the positions of fire fighting equipment
Report all fires
Do not burn rubbish/vegetation without permission
Work with petrol, oil & diesel in marked areas
Report any petrol, oil & diesel leaks or spills
Use a drip tray under vehicles & machinery
Empty drip trays after rain & throw away where instructed
Try to avoid producing dust - wet dry ground & soil
Do not make loud noises around the site, especially near schools and homes
Report or repair noisy vehicles

Use the toilets provided
Report full or leaking toilets

Only eat in demarcated eating areas
Never eat near a river or stream
Put packaging & leftover food into rubbish bins
Do not litter - put all rubbish (especially cement bags) into the bins provided
Report full bins to your supervisor
The responsible person should empty bins regularly
Always keep to the speed limit
Drivers - check & report leaks
Ensure loads are secure & do not spill

Know all the emergency phone numbers

Spot fines of between R20 and R2000
Removal from site
Construction may be stopped

Report any breaks, floods, fires, leaks and injuries to your supervisor
Ask questions!
MOETS EN MOENIES

Werkers en gereedskap moet ten alle tye binne die terreingrense bly.

Moenie van strome drink of daarin swem nie.
Moenie olie, petrol, diesel, seament of rommel in strome gooi nie.
Moenie in strome werk sonder direkte instruksie nie.
Moenie strooimoevers en plantegroei beskadig nie.

Beskerm diere op die konstruksie-terrein.
Vra u toesighouer of Kontrakbestuurder om diere van die terrein te verwyder.

Moenie enige plante of bome beskadig of afsny sonder toestemming nie.
Moenie bloemme pluk nie.

Gooi sigaretstoppies in 'n asblik.
Moenie rook naby gas, voef of petrol nie.
Moenie sonder toestemming enige vure maak nie.
Wees waar brandbestredingstoestel gestoor word.
Meld alle vure onmiddellik aan.
Moenie rommel verbrand sonder toestemming nie.

Werk sleks in gemarkeerde areas met petrol, olie & diesel.
Meld alle petrol, olie en diesel lekkasies aan.
Gebruik 'n drupbak onder voertuie en masjienery.
Maak drupbakke leg na reën, maar nie in riviere nie.

Probeer om nie stof te maak nie.
Maak droë grond nat met water.

Moenie harde geluid maak op die terrein nie, veral naby skole en huise.
Meld raserige voertuie aan of herstel dit.

Gebruik die toilette wat voorsien is.
Meld vol of lekkende toilette aan.

Eet sleks in gemarkeerde gebiede.
Moenie naby riviere of strome eet nie.
Gooi verpakking en orige kos in vuilnisblikke.

Moenie vullis rondstrooi nie - gooi alle vuil (veral sementsakke) in vuilnishuifers.
Miel vol vuilishuifers aan by u toesighouer.
Vuilishuifers moet gereeld leeggemak word.

Maak seker dat alle vragte stewig is en nie mors nie.

Maak seker dat u alle nood telefoonnamers ken.

Boetes tussen R20 en R2000
Verwydering vanaf die konstruksie-terrein.
Konstruksie mag gestop word.

Meld alle brekkasies, vure, vloede, lekkasies en beseerings aan by u toesighouer.
Vra vrool
EMAZENZWE NE MAZINGENZIWA

Abasebenzi nezikho abazebenzayo mabangaphumi  
nazo ngaphaya kwezuyi
Sukuguba okanye usele amanzi omilandu
Sukugalela iisil, petrol, diesel, concrete okanye inkukuma  
emlanjeni
Sukonakala iindonga (zomilandu) okanye izintyalo

Khussela izilwanyana azilapho osayitini
Xelela usupervisor ukuba zimkswe ezozilwanyana

Ungonakalisi okanye uguwule imithi ngaphandle kwemvume
Sukwamba izityalo

Xo uqiblelakhele ukuthaya galela engqomeni (izitompi zecuba)
Sukuthaya kufuphi negesi, iphezulu ne petrol
Sukubase umkolo ngaphandle kwemvume
Zazi izicima milo aphi zikhayo
Sukukhiza inkunkuma ngaphandle kwemvume

Sebenzisa ipetrol, oil ne diesel endaweni yaye
Faka isiyi saKukhongozela phansi kwemashini
Ungegaleli oil emlanjeni

Zama ungenzi usuthi fefa ngakho emhlabeni

Sukwenza ingxalo eshayitini ngakumbi kufuphi nesikolo nezi
nulu
Yaziisa ulungisa isithuthi asonakalayo

Sebenzisa itoilet (izindlu zangesa)
Xeke xa zizelelo

Tyela kwindawo eyenzelwe oko
Sukurulela kufuphi nomlambo
Lahla engqomeni yonke inkukuma

Sulahla inkukuma phantsi
Galela engqomeni yonke inkukuma xela xa izele
imiggomo
Xela xa umgqomo uzele

Gcina isinty
Umphuni makayilungise ingwalo xa yonakela
Qononondiso umthwalo ubothiwe
enqweneni

Zazi inombolo zengezi

Intlawulo ngokwaphula umthetho yi R20 - R2000
Okanye uguwulwe amasebenzini
Contract leyo imisiwe

Ripota wonke umanakalo ofana nokuqhekeza
isiphange umkilo, ukuvuza kwemashini nengezi kwi
supervisor
Buza xa unombezo
APPENDIX D

LIST OF FINES
# LIST OF FINES

## SCHEDULE OF FINES FOR ENVIRONMENTAL DAMAGE OR CONSTRUCTION EMP TRANSGRESSIONS

*(Based on City of Cape Town: Standard Environmental Specifications – Ver 5 (03/2002))*

Note: The maximum fine for any environmental damage will never be less than the cost of applicable environmental rehabilitation.

<table>
<thead>
<tr>
<th>CEMP TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE</th>
<th>MIN. FINE</th>
<th>MAX. FINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to report environmental damage or CEMP transgressions to the ECO or RE.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to carry out instructions of the ECO or RE regarding the environment or the CEMP.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for supervision for loading and off-loading of delivery vehicles.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for securing of loads to ensure safe passage of delivery vehicles.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for the storage of imported materials within a designated contractor’s yard.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescribed administration, storage or handling of hazardous substances.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with fuel storage, refuelling, or clean-up prescriptions.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for the use of ablution facilities.</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for the use of designated eating areas, heating source for cooking or presence of fire extinguishers</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding water provision</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding fire control</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for solid waste management (incl. paint chips, cement and concrete)</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions to prevent water pollution</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding workshop equipment maintenance and storage</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding noise levels of construction activities</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding working hours</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding lighting and aesthetics</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding silt, debris and other obstruction removal</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding water diversion and drainage</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding erosion and scour protection</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding traffic accommodation</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding tree and vegetation removal / damage</td>
<td>R 5 000</td>
<td>R 20 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding method statements</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding environmental awareness training</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding appointment of an Environmental Officer and monitoring of CEMP compliance</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding site demarcation and erection of fences</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding demarcation and enforcement of ‘no go’ areas</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding control of vehicles and plant on access routes</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding information posters</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding procedures for emergencies</td>
<td>R 1 000</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions posting of emergency numbers and contacting of the emergency call centre</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding information boards or a complaints register</td>
<td>R 500</td>
<td>R 1 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding protection of natural features</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding erosion and sedimentation control</td>
<td>R 500</td>
<td>R 5 000</td>
</tr>
</tbody>
</table>

For each subsequent similar offence committed by the same individual, the fine shall be doubled in value to a maximum value of R50 000.
APPENDIX E

FOSSIL MONITORING PROCEDURES
**APPENDIX 1 – MONITORING FOR FOSSILS**

A regular monitoring presence over the period during which excavations are made, by either an archaeologist or palaeontologist, is generally not practical.

The field supervisor/foreman and workers involved in digging excavations must be encouraged and informed of the need to watch for potential fossil and buried archaeological material. Workers seeing potential objects are to report to the field supervisor who, in turn, will report to the Environmental Site Officer (ESO). The ESO will inform the archaeologist and/or palaeontologist contracted to be on standby in the case of fossil finds.

To this end, responsible persons must be designated. This will include hierarchically:

- The field supervisor/foreman, who is going to be most often in the field.
- The Environmental Site Officer (ESO) for the project.
- The Project Manager.

Should the monitoring of the excavations be a stipulation in the Archaeological Report, the contracted Monitoring Archaeologist (MA) can also monitor for the presence of fossils and make a field assessment of any material brought to attention. The MA is usually sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist. In shallow coastal excavations, the fossils encountered are usually in an archaeological context.

The MA then becomes the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the developer and the Environmental Site Officer (ESO). If fossils are exposed in non-archaeological contexts, the palaeontologist should be summoned to document and sample/collection them.

Other alternatives could be considered, such as the employment of a dedicated monitor for the construction period. For instance, a local person could be detached from or trained by personnel at the West Coast Fossil Park.

**CONTACTS FOR REPORTING OF FOSSIL FINDS.**

- West Coast Fossil Park
  Pippa Haarhoff: 083 289 6902, 022 766 1606, pjh@fossilpark.org.za
- Iziko Museums of Cape Town: SA Museum, 021 481 3800.
  Dr Romala Govender. 021 481 3894, 083 756 5532, rgovender@iziko.org.za.
- Heritage Western Cape
  Andrew September. 021 483 9543
- Saldanha Bay Municipality
  Naazema Duarte. 022 701 7000

**APPENDIX 2 - FOSSIL FIND PROCEDURES**

In the context under consideration, it is improbable that fossil finds will require declarations of permanent “no go” zones. At most a temporary pause in activity at a limited locale may be required. The strategy is to rescue the material as quickly as possible.

The procedures suggested below are in general terms, to be adapted as befits a context. They are couched in terms of finds of fossil bones that usually occur sparsely, such as in the Langebaan Formation. However, they may also serve as a guideline for other sparse fossil material that may occur.

In contrast, fossil shell layers are usually fairly extensive and can be easily documented and sampled (See section 14.5). Bone finds can be classified as two types: isolated bone finds and bone cluster finds.
**ISOLATED BONE FINDS**

In the process of digging the excavations, isolated bones may be spotted in the hole sides or bottom, or as they appear on the spoil heap. By this is meant bones that occur singly, in different parts of the excavation. If the number of distinct bones exceeds 6 pieces, the finds must be treated as a bone cluster (below).

**Response by personnel in the event of isolated bone finds**

- **Action 1:** An isolated bone exposed in an excavation or spoil heap must be retrieved before it is covered by further spoil from the excavation and set aside.
- **Action 2:** The site foreman and ECO must be informed.
- **Action 3:** The responsible field person (site foreman or ECO) must take custody of the fossil. The following information to be recorded:
  - Position (excavation position).
  - Depth of find in hole.
  - Digital image of hole showing vertical section (side).
  - Digital image of fossil.
- **Action 4:** The fossil should be placed in a bag (e.g. a Ziplock bag), along with any detached fragments. A label must be included with the date of the find, position info., depth.
- **Action 5:** ECO to inform the developer, the developer contacts the standby archaeologist and/or palaeontologist. ECO to describe the occurrence and provide images asap. by email.

**Response by Palaeontologist in the event of isolated bone finds**

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established.

**BONE CLUSTER FINDS**

A bone cluster is a major find of bones, *i.e.* several bones in close proximity or bones resembling part of a skeleton. These bones will likely be seen in broken sections of the sides of the hole and as bones appearing in the bottom of the hole and on the spoil heap.

**Response by personnel in the event of a bone cluster find**

- **Action 1:** Immediately stop excavation in the vicinity of the potential material. Mark (flag) the position and also spoil that may contain fossils.
- **Action 2:** Inform the site foreman and the ECO.
- **Action 3:** ECO to inform the developer, the developer contacts the standby archaeologist and/or palaeontologist. ECO to describe the occurrence and provide images asap. by email.

**Response by Palaeontologist in the event of a bone cluster find**

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established. It is likely that a Field Assessment by the palaeontologist will be carried out asap.

It will probably be feasible to “leapfrog” the find and continue the excavation farther along, or proceed to the next excavation, so that the work schedule is minimally disrupted. The response time/scheduling of the Field Assessment is to be decided in consultation with developer/owner and the environmental consultant.

The field assessment could have the following outcomes:

- If a human burial, the appropriate authority is to be contacted (see AIA). The find must be evaluated by a human burial specialist to decide if Rescue Excavation is feasible, or if it is a Major Find.
- If the fossils are in an archaeological context, an archaeologist must be contacted to evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.
If the fossils are in an palaeontological context, the palaeontologist must evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.

**Rescue Excavation**

Rescue Excavation refers to the removal of the material from the just the “design” excavation. This would apply if the amount or significance of the exposed material appears to be relatively circumscribed and it is feasible to remove it without compromising contextual data. The time span for Rescue Excavation should be reasonably rapid to avoid any or undue delays, *e.g.* 1-3 days and definitely less than 1 week.

In principle, the strategy during mitigation is to “rescue” the fossil material as quickly as possible. The strategy to be adopted depends on the nature of the occurrence, particularly the density of the fossils. The methods of collection would depend on the preservation or fragility of the fossils and whether in loose or in lithified sediment. These could include:

- On-site selection and sieving in the case of robust material in sand.
- Fragile material in loose/crumbly sediment would be encased in blocks using Plaster-of Paris or reinforced mortar.

If the fossil occurrence is dense and is assessed to be a “Major Find”, then carefully controlled excavation is required.

**Major Finds**

A Major Find is the occurrence of material that, by virtue of quantity, importance and time constraints, cannot be feasibly rescued without compromise of detailed material recovery and contextual observations. A Major Find is not expected.

**Management Options for Major Finds**

In consultation with developer/owner and the environmental consultant, the following options should be considered when deciding on how to proceed in the event of a Major Find.

**Option 1: Avoidance**

Avoidance of the major find through project redesign or relocation. This ensures minimal impact to the site and is the preferred option from a heritage resource management perspective. When feasible, it can also be the least expensive option from a construction perspective.

The find site will require site protection measures, such as erecting fencing or barricades. Alternatively, the exposed finds can be stabilized and the site refilled or capped. The latter is preferred if excavation of the find will be delayed substantially or indefinitely. Appropriate protection measures should be identified on a site-specific basis and in wider consultation with the heritage and scientific communities.

This option is preferred as it will allow the later excavation of the finds with due scientific care and diligence.

**Option 2: Emergency Excavation**

Emergency excavation refers to the “no option” situation wherein avoidance is not feasible due to design, financial and time constraints. It can delay construction and emergency excavation itself will take place under tight time constraints, with the potential for irrevocable compromise of scientific quality. It could involve the removal of a large, disturbed sample by excavator and conveying this by truck from the immediate site to a suitable place for “stockpiling”. This material could then be processed later.
Consequently, emergency excavation is not a preferred option for a Major Find.

**EXPOSURE OF FOSSIL SHELL BEDS**

*Response by personnel in the event of intersection of fossil shell beds*

- **Action 1:** The site foreman and ECO must be informed.
- **Action 2:** The responsible field person (site foreman or ECO) must record the following information to be recorded:
  - Position (excavation position).
  - Depth of find in hole.
  - Digital image of hole showing vertical section (side).
  - Digital images of the fossiliferous material.
- **Action 3:** A generous quantity of the material containing the fossils should be stockpiled near the site, for later examination and sampling.
- **Action 4:** ECO to inform the developer, the developer contacts the standby archaeologist and/or palaeontologist. ECO to describe the occurrence and provide images asap. by email.

Response by Palaeontologist in the event of fossil shell bed finds. The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established.
APPENDIX F

AIR QUALITY MONITORING
1 AIR QUALITY MANAGEMENT MEASURES

Based on the findings of the baseline and impact assessment, the following mitigation, management and monitoring recommendations are made.

1.1 AIR QUALITY MANAGEMENT OBJECTIVES

The main objective of the proposed air quality management measures for the project is to ensure that operations at the project result in ambient air concentrations that are within the relevant ambient air quality criteria off-site. A plan for a minimal impact on air quality is presented in this section. The source specific management plans include target control efficiency, indicators for assessing performance and implementable procedures for emissions management.

1.1.1 MITIGATION AND MANAGEMENT MEASURES FOR STORAGE TANKS AND LOADING/UNLOADING FACILITIES

Simulated concentrations are above the criteria off-site beyond the SBIDZ area for VOC and benzene due to the Phase 1 IDZ Area operations. This indicates that the additional measures to mitigate VOC emissions should be introduced, these could include:

1. Vapour recovery units (VRU) at materials handling (loading and unloading facilities).
2. Reductions of emissions through leak detection and repair program; tank inspection and maintenance program.
3. Petrol tank design to be modified to one of the following:
   - External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20 m, or
   - Fixed-roof tank with internal floating deck / roof fitted with primary seal, or
   - Fixed-roof tank with vapour recovery system.

Management measures that can be applied to all of the facilities are provided in Table 1. It is also recommended that any additional facilities to be included in the project area, especially those storing petrol be located away from the project and SBIDZ boundaries. VOC monitoring should be undertaken at the property throughout operations. A leak detection and repair (LDAR) program will be instituted. All spillages should be reported to the environmental officer and recorded. These records can then be compared to sampled VOC concentrations and complaints registers to identify significant sources of VOC emissions.

It is recommended that in addition to a complaints register, an odour register (Table 4) be kept on-site. A recommended location for the register is with the security guards at the entrance. Similar registers can be distributed to the neighbouring industry to the north-west and to residents at the closest houses. The guards, neighbours and community members should be encouraged to note down not only all odour complaints, but also observations about the odours (whether from the facility or not) experienced, preferably 2 or 3 times per day, at predetermined times. The type of odour (tar, diesel, sulphurous, smoke) should be recorded, as well as the intensity of the smell experienced (detectable, irritating, nauseating). When no odour is present at the recording interval this should also be noted. This can then be compared to sampled VOC concentrations.
TABLE 1: AIR QUALITY MANAGEMENT MEASURES FOR VOC EMISSION SOURCES

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC Emissions</td>
<td>• Tank-filling and product load-out</td>
</tr>
<tr>
<td></td>
<td>• Storage of petroleum products in tanks</td>
</tr>
<tr>
<td>Emission hours</td>
<td>All hours</td>
</tr>
<tr>
<td>Accountable person(s)</td>
<td>Environmental Officer</td>
</tr>
<tr>
<td>Target control</td>
<td>Proposed mitigation measures deemed adequate.</td>
</tr>
<tr>
<td>Performance indicators</td>
<td>• Benzene concentrations below NAAQS at the plant boundary.</td>
</tr>
<tr>
<td></td>
<td>• No odour complaints from neighbouring businesses and surrounding</td>
</tr>
<tr>
<td></td>
<td>communities.</td>
</tr>
<tr>
<td>Operating procedures</td>
<td>• Clean up of all spillages, reporting and recording of spillages.</td>
</tr>
<tr>
<td></td>
<td>• Odour register distributed to all neighbours and surrounding</td>
</tr>
<tr>
<td></td>
<td>communities.</td>
</tr>
<tr>
<td></td>
<td>• Odour register to be kept with the security guards at the gate.</td>
</tr>
<tr>
<td>Inspections</td>
<td>Monthly visual inspections of tanks for leakages or failures.</td>
</tr>
</tbody>
</table>

1.1.2 MITIGATION FOR LOR BOILER OPERATIONS

The use of liquefied petroleum gas (LPG) or natural gas rather than diesel for the boilers; or the use of scrubbers and/or cyclones for boiler stacks.

1.1.3 SOURCE MONITORING

The authorities should inform SBIDZ-LC if measuring and reporting annually on stack emissions is required. It should be noted that the data provider will be expected to report annual emissions on the NAEIS system. Dustfall monitoring near sources can be an effective mechanism in determining the main emission sources. It is recommended that exhaust emissions testing be done on all mobile diesel combustion sources as part of equipment maintenance schedules.

1.1.4 AMBIENT AIR QUALITY MONITORING

Ambient air quality monitoring can serve to meet various objectives, such as:

- Compliance monitoring;
- Validate dispersion model results;
- Use as input for health risk assessment;
- Assist in source apportionment;
- Temporal trend analysis;
- Spatial trend analysis;
- Source quantification; and,
- Tracking progress made by control measures.
It is recommended that, as a minimum continuous VOC sampling be conducted as part of the project air quality management plan. It is also suggested that a short sampling campaign after commencement of additional operations for SO$_2$ be conducted to determine if the operations are compliant with the NAAQS. Recommended sampling locations and the reasons for selection are given in Table 2. The following cost-effective sampling method can be employed for the site, RadielloTM passive diffusive sampling for VOCs.

### TABLE 2: SAMPLING LOCATIONS AND PARAMETERS

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Parameter to be Sampled</th>
<th>Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TNPA AQMS</td>
<td>BTEX (continue with SO$_2$)</td>
<td>In the maximum impact zone between areas of operation and most affected non-operational areas. For compliance assessment</td>
</tr>
<tr>
<td>2</td>
<td>North-western corner of phase 1 IDZ area operations</td>
<td>VOC</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>North-eastern corner of the main project area (near OSSB and LOR)</td>
<td>VOC and SO$_2$</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>North of the main project area (near OSSB and LOR)</td>
<td>VOC and SO$_2$</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>North-western corner of the main project area (near OSSB and LOR)</td>
<td>VOC</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>South of the phase 1 IDZ area operations</td>
<td>VOC</td>
<td>For compliance assessment</td>
</tr>
<tr>
<td>8</td>
<td>South of the main project area (near OSSB and LOR)</td>
<td>VOC and SO$_2$</td>
<td></td>
</tr>
</tbody>
</table>

Radiello® passive diffusive tubes can be employed for the sampling of VOC and SO$_2$ concentrations. Passive diffusive sampling relies on the diffusion of analytes through a diffusive surface onto an adsorbent. After sampling, the analytes are chemically desorbed by solvent extraction or thermally desorbed and analysed. Passive sampling does not involve the use of pumping systems and does not require electricity.

Passive diffusive samplers should be placed at eye level in representative outdoor areas. The manufacturer approved rain shelter attached to a post in a central position to insure protection against adverse weather conditions, while insuring adequate ventilation. Supporting plates should be assembled and operated according to manufacturer instructions. Exposure time can vary from 7 to 14 days, as per the manufacture’s recommendations. The analytical methods and calculations depend on the pollutant according to the manufacturer specification sheets. The passive diffusive samplers’ setup is shown in Figure 1. 

**Reference source not found.**
1.2 RECORD-KEEPING, ENVIRONMENTAL REPORTING AND COMMUNITY LIAISON

1.2.1 LEAK DETECTION AND REPAIR PROGRAM

A leak detection and repair (LDAR) program is to be instituted as an arrangement applicable for the ‘storage and handling of petroleum products’.

It is understood that the operational procedures will include:

- Tanks will be fitted with leak detection monitoring pipes in the tank foundation for checking the tank floors.
- Tanks and piping will be pressure tested and tested using non-destructive testing methods before being put into service.
- An ongoing maintenance and inspection programme will be developed to identify possible leaks before they occur.”

Although a LDAR program should be developed by for each facility, it is suggested that it be based on the generic program discussed below. The US EPA’s best practice guide for leak detection and repair (US EPA, 2007) was used to compile a generic program. The five elements of an LDAR program are:

1. Identifying Components
2. Leak Definition
3. Monitoring Components
4. Repairing Components
5. Record keeping

A generic program for the facilities is given in Table 3. This program should be used as a basis for creating the LDAR program specific to this facility.
# TABLE 3: GENERIC LDAR PROGRAM

<table>
<thead>
<tr>
<th>Element</th>
<th>Recommended requirements</th>
<th>Best practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identifying components</strong></td>
<td>Assign a unique identification number (ID) to each component.</td>
<td>Physically tag each equipment component with a unique ID number.</td>
</tr>
<tr>
<td></td>
<td>Record each component and its unique ID in a log.</td>
<td>Write the component ID number on piping and instrumentation diagrams.</td>
</tr>
<tr>
<td></td>
<td>Physically locate each component in the facility, verify location on the process flow diagram, and update if necessary.</td>
<td>Institute an electronic data management system for LDAR data and records, possibly including the use of bar coding equipment.</td>
</tr>
<tr>
<td></td>
<td>Identify each component on a site plot plan.</td>
<td>Periodically perform a field audit to ensure lists and diagrams accurately represent equipment installed in the plant.</td>
</tr>
<tr>
<td></td>
<td>Note in log when new and replacement pieces of equipment are added and equipment is taken out of service.</td>
<td></td>
</tr>
<tr>
<td><strong>Leak definition</strong></td>
<td>VOC emissions from regulated components to be measured in parts per million (ppm). A leak is detected whenever the measured concentration exceeds the threshold standard (i.e., leak definition) for the applicable regulation.</td>
<td>Utilise a leak definition lower than what the regulation requires.</td>
</tr>
<tr>
<td></td>
<td>Leak definitions vary by regulation, component type, service (e.g., light liquid, heavy liquid, gas/vapor), and monitoring interval.</td>
<td>Simplify the program by using the lowest leak definition when multiple leak definitions exist.</td>
</tr>
<tr>
<td></td>
<td>Most have a leak definition of 10,000 ppm. Many use a 500-ppm or 1,000-ppm leak definition.</td>
<td>Make the lowest leak definition conservative to provide a margin of safety when monitoring components.</td>
</tr>
<tr>
<td></td>
<td>Many equipment leak regulations also define a leak based on visual inspections and observations (such as fluids dripping, spraying, misting or clouding from or around components), sound (such as hissing), and smell.</td>
<td>Keep the lowest leak definition consistent among all similar component types. For example, all valves in a facility might have a leak definition of 500 ppm.</td>
</tr>
<tr>
<td><strong>Monitoring components</strong></td>
<td>For many regulations with leak detection provisions, the primary method for monitoring to detect leaking components is EPA Reference Method 21.</td>
<td>Although not required by Method 21, use an automatic (electronic) data logger to save time, improve accuracy, and provide an audit record.</td>
</tr>
<tr>
<td></td>
<td>Method 21 is a procedure used to detect VOC leaks from process equipment using a portable detecting instrument.</td>
<td>Audit the LDAR program to help ensure that the correct equipment is being monitored, Method 21 procedures are being followed properly, and the required records are being kept.</td>
</tr>
<tr>
<td></td>
<td>Monitoring intervals vary but are typically weekly, monthly, quarterly, and yearly. For connectors, the monitoring interval can be every 2, 4, or 8 years. The monitoring interval depends on the component type and periodic leak rate for the component type.</td>
<td>Monitor components more frequently than required by the regulations. Perform QA/QC of LDAR data to ensure accuracy, completeness, and to check for inconsistencies.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eliminate any obstructions (e.g., grease on the component interface)</td>
</tr>
<tr>
<td>Element</td>
<td>Recommended requirements</td>
<td>Best practice</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tbody>
</table>
| **Repairing components** | Repair leaking components as soon as practicable, but not later than a specified number of calendar days (usually 5 days for a first attempt at repair and 15 days for final attempt at repair) after the leak is detected.  
First attempts at repair include, but are not limited to, the following practices where practicable and appropriate:  
- Tightening bonnet bolts  
- Replacing bonnet bolts  
- Tightening packing gland nuts  
- Injecting lubricant into lubricated packing  
If the repair of any component is technically infeasible without a process unit shutdown, the component may be placed on the Delay of Repair list, the ID number is recorded, and an explanation of why the component cannot be repaired immediately is provided. An estimated date for repairing the component must be included in the facility records.  
The component is considered to be repaired only after it has been monitored and shown not to be leaking above the applicable leak definition. | Develop a plan and timetable for repairing components.  
Make a first attempt at repair as soon as possible after a leak is detected.  
Monitor components daily and over several days to ensure a leak has been successfully repaired.  
Replace problem components with “leakless” or other technologies. |
| **Record keeping**    | Maintain a list of all ID numbers for all equipment subject to an equipment leak regulation.  
For valves designated as “unsafe to monitor,” maintain a list of ID numbers and an explanation/review of conditions for the designation.  
Maintain detailed schematics, equipment design specifications (including dates and descriptions of any changes), and piping and instrumentation diagrams.  
Maintain the results of performance testing and leak detection monitoring, including leak monitoring results per the leak frequency, | Perform internal and third-party audits of LDAR records on a regular basis to ensure compliance.  
Electronically monitor and store LDAR data including regular QA/QC audits.  
Perform regular records maintenance.  
Continually search for and update regulatory requirements.  
Properly record and report first attempts at repair.  
Keep the proper records for components on Delay of Repair lists. |
<table>
<thead>
<tr>
<th>Element</th>
<th>Recommended requirements</th>
<th>Best practice</th>
</tr>
</thead>
</table>
|         | monitoring leakless equipment, and non-periodic event monitoring.  
For leaking equipment:  
Attach ID tags to the equipment.  
Maintain records of the equipment ID number, the instrument and operator ID numbers, and the date the leak was detected.  
Maintain a list of the dates of each repair attempt and an explanation of the attempted repair method.  
Note the dates of successful repairs.  
Include the results of monitoring tests to determine if the repair was successful. |               |
1.2.2 EMERGENCY INCIDENTS

Emergency incidents on the site should be handled through standard operating procedures governing the actions that need to take place, as well as defining the responsibilities of the parties involved in managing the incident. Part of any environmental incident/emergency response, the environmental respondent will evaluate the incident and then classify it according to an internal ranking as well as against relevant legislative requirements which will then trigger the necessary reporting requirements.

Table 4 provides an example of an odour register that can be used as part of the pollution management. This tool, together with monitoring results can be invaluable in tracking performance of implemented mitigation measures.

TABLE 4: EXAMPLE OF ODOUR REGISTER

<table>
<thead>
<tr>
<th>Date</th>
<th>Inspector’s name:</th>
<th>Location</th>
<th>Odour Type</th>
<th>Odour Intensity (tick one)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tar, diesel, smoke, etc.</td>
<td>Detectable</td>
</tr>
<tr>
<td>Morning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afternoon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evening</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.2.3 LIAISON STRATEGY FOR COMMUNICATION WITH I&APS

It is recommended that a complaints register be put in place upon the start of operations and the community be encouraged to report not only odour complaints but all air quality related problems, such as nuisance dust, and fugitive emissions from roads. Staff should also be encouraged to report any air quality related problems observed on-site.

The community should be encouraged to phone or email the plant office, as well as to report any problems physically at a designated location, such as the plant office or a nearby school.

The date and time noted on the complaints register should be the date and time that the reported problem is observed, not the date and time that the complaint is logged. If used correctly, the complaints register can be compared to monitoring data as well as recorded meteorological data to identify problem areas and to iteratively adjust the air quality management plan to ensure efficient and effective mitigation of pollutant sources.

It is recommended that quarterly liaison meetings be held with the nearby communities to identify any air quality related problems. The community should be educated on the effects of the pollutants emitted on human health, especially the effects and symptoms of VOC exposure, and to report any such symptoms. These complaints can then be compared with ambient monitoring data to identify periods of high concentrations and can help in the investigation of problem areas that result in especially high VOC emissions.
APPENDIX G

GROUNDWATER MONITORING
1. INTRODUCTION

A 2006 groundwater study by GEOSS identified the Saldanha Peninsula as an area where groundwater plays a role in maintaining ecological functioning and biodiversity. The IDZ area was, however, identified as an area where the probability of an aquifer dependent ecosystem occurring is low. It is thus unlikely that the remaining natural systems within the IDZ footprint are dependent on groundwater.

There are no regional aquifers that overlap with the IDZ area. The important regional Langebaan Road and Elandsfontein aquifers are located to the east of the IDZ. Regional groundwater flow is in a south-westerly direction towards the coast and away from the regional aquifers and also the closest expected groundwater users to the east.

There are two groundwater monitoring boreholes immediately to the north of the proposed fuel bunkering facility on port land south of MR559 which can be regarded as indicative of ambient groundwater quality due to their upstream location from the proposed fuel storage area. Groundwater levels in these boreholes range between 4.5 and 6.6 meters below ground level (mbgl). Monitoring boreholes on the Afrisam land immediately to the east of the Phase 1 IDZ area show groundwater levels of between 8.09 and 10.77 mbgl (Aurecon, 2012). The groundwater depth determines the depth of material through which any contaminants must migrate before reaching an aquifer. Attenuation of contaminants is more likely to occur with increased groundwater depths. There are also monitoring boreholes immediately to the north of the Phase 1 IDZ area at Duferco.

Parsons and Conrad (1998) classified the local aquifer systems underlying the IDZ area as poor aquifer systems which are not suitable for exploitation. Monitoring results from boreholes in the area have also showed that the electrical conductivity ranges between 1 150 and 1 200 mS/m (millisiemens per meter), representing saline conditions. This is a common occurrence for groundwater along the coast which is affected by its proximity to the ocean.

An analysis of groundwater for petroleum hydrocarbons undertaken as part of the Phase 2 expansion of the iron ore terminal (SRK, 2007) showed no significant hydrocarbon contamination, with concentrations generally below the laboratory’s detection limit. Parsons and Conrad (1998) developed a national scale aquifer vulnerability map which indicates the likelihood for contaminants to reach a specified position in the groundwater system after introduction at a level above the uppermost aquifer. In line with this map, the local aquifer systems underlying the port and a 5 km radius surrounding the port and IDZ area are considered to be least vulnerable to contamination (Aurecon, 2012).

2. DATA REVIEW

The following information was procured and reviewed to describe the proposed monitoring program:

- Worley Parsons, 2012. Specialist Hydrogeological Study, Crude Oil Storage Tank Farm, Saldanha Bay. Final report; and

3. CURRENT MONITORING NETWORK

Saldanha Bay IDZ does not currently have a monitoring network.
4. PROPOSED MONITORING PLAN

The objective of the programme is to characterise groundwater and surface water quality and groundwater levels in and outside the IDZ lease area on a regular basis. The IDZ groundwater monitoring programme will include boreholes drilled as part of the groundwater study for use as monitoring boreholes and selected third party boreholes in order to monitor potential groundwater impacts. As a general approach, IDZ must ensure that the groundwater monitoring programme comprises the following:

- Appropriately calibrated equipment;
- Where samples require analysis they will be preserved according to laboratory specifications;
- If necessary, following the initial monitoring results, certain parameters may be removed or added from the monitoring programme in consultation with a specialist and/or the relevant authority;
- Should any boreholes become damaged or unusable, a suitable replacement will be identified; and
- Data will be interpreted and reports on trends in the data will be compiled by an appropriately qualified person.

4.1. SAMPLING POINTS

As preliminary guidance, SLR suggests that a network of six to eight boreholes be identified at various distances around the proposed project footprint. The borehole locations should be decided in consultation with an experienced groundwater professional. IDZ should choose monitoring locations according to the following guidelines:

- At least two boreholes should be upstream of the proposed project to sample background groundwater quality;
- At least three boreholes should be within the project site near potential sources of groundwater contamination; and
- At least two boreholes should be downstream of the proposed project site.

4.2. FREQUENCY OF MONITORING

Water levels in the identified boreholes will be monitored on a quarterly basis to ensure seasonal variation is understood. Should tidal influence be seen through the initial monitoring to be an influence or groundwater migration, it would be recommended to understand tidal variation through continuous groundwater level logging. Water quality monitoring will be limited to bi-annual monitoring.

4.3. PARAMETERS TO BE ANALYSED

The selected parameters to be analysed is based on the the potential sources on site which include: Marine bunkering fuels Fuel oil; Helicopter fuel; Lubricants; Diesel; Petrol; Paraffin; Related additives; Used lubricant oil raw material; Base, heavy and light oils; Related distillate (as part of the recycling process). The following parameters are recommended for analysis:

- pH, electrical conductivity (EC), total dissolved solids (TDS), anions including chloride (Cl), fluoride (F), sulphate (SO\textsubscript{4}), nitrate (NO\textsubscript{3}), major cations including potassium (K), calcium (Ca), magnesium (Mg), sodium (Na), ammonia (NH 3);
- ICP-scan for trace metals (inclusive of lead, nickel, cadmium, vanadium and zinc);
- Volatile Organic Compounds;
- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN);
- Methyl Tertiary Butyl Ether (MTBE);
- tert-Amyl methyl ether (TAME); and
- Total Petroleum Hydrocarbons (TPH) fractions (C\textsubscript{6} - C\textsubscript{9}, C\textsubscript{10} - C\textsubscript{16}, C\textsubscript{17} - C\textsubscript{21}, C\textsubscript{22} - C\textsubscript{35} and C\textsubscript{35} - C\textsubscript{40}).
4.4. WATER QUALITY GUIDELINES

Water quality results should be compared against reputable standards associated to the contaminants of concern, such as:

- Dutch Intervention Levels;
- IFC Effluent standards presents in the EHS Guidelines for mining (IFC, 2007);
- The World Health Organisation (WHO) drinking water standards (WHO, 2011);
- Department of Water and Sanitation Target Water Quality Range for Livestock Watering (DWS, 1996).

In addition the water quality results should be compared with available groundwater baseline monitoring data.
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