

TRANSNET



delivering freight reliably

Proposed Provision of a Third Tippler and Associated Infrastructure at the Port of Saldanha:

Basic Assessment Report

Appendix G: Draft Environmental Management Programme

September 2013
J31459

We change lives

www.gibb.co.za



GIBB (Pty) Ltd Reg. 1992/007139/07

Head Office: Johannesburg, South Africa
14 Eglon Road, Sunninghill, 2191
Tel: +27 11 519 4600 Fax: +27 11 807 5670

Proposed Provision of a Third Tippler and Associated Infrastructure at the Port of Saldanha: Basic Assessment Report

Draft Environmental Management Programme

CONTENTS

Chapter	Description	Page
	GLOSSARY OF TERMS, DEFINITIONS AND ABBREVIATIONS	4
1	INTRODUCTION	6
	1.1 The Environmental Management Programme	6
	1.2 Legal Framework and Environmental Authorisation	7
	1.3 Details of the Principal Parties	8
	1.4 Summary of the Proposed Activities	9
	1.5 The Receiving Environment	12
	1.6 Summary of Identified Impacts	13
2	MANAGEMENT AND ORGANISATIONAL STRUCTURE	15
	2.1 Contractual Obligation	15
	2.2 The Developer	15
	2.3 Project Manager (PM)	16
	2.4 Environmental Control Officer (ECO)	17
	2.5 Contractor	18
	2.6 Subcontractors	19
	2.7 Site Documentation and Record Keeping	20
3	ENVIRONMENTAL SPECIFICATIONS DURING CONSTRUCTION	22
	3.1 Principles, Compliance and Method Statements	22
	3.2 Environmental Awareness	25
	3.3 Site Establishment	26
	3.4 Traffic Management	28
	3.5 Biodiversity Management	29

3.6	Soil Impacts	31
3.7	Construction Plant, Material and Site Management	33
3.8	Waste Management	35
3.9	Storm Water Management and Erosion	39
3.10	Air Quality	40
3.11	Noise Control	41
3.12	Community and Labour Relations	41
3.13	Security and Crime	43
3.14	Health and Safety	44
3.15	Monitoring	45
3.16	Construction Site Decommissioning	48
3.17	Completion of Contract	48
4	ENVIRONMENTAL SPECIFICATIONS DURING THE OPERATION	49
4.1	Noise Management	49
4.2	Dust Management	49
4.3	Biodiversity Management	50
5	APPENDIX	51

GLOSSARY OF TERMS, DEFINITIONS AND ABBREVIATIONS

CBA	Critical Biodiversity Area
Construction Activity	A construction activity is any action taken by the Contractor, his subcontractors, suppliers or personnel during the construction process.
Contractor	That main organisation appointed by the Developer, through the Project Manager, to undertake construction activities on the site.
DEA	Department of Environmental Affairs
Demolition	The tearing down of buildings and other structures: the opposite of construction.
Developer	Transnet SOC Ltd.
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer: The ECO monitors compliance with the EMPr during the construction phase and advises the Project Manager on environmental matters relating to construction.
EMPr	Environmental Management Programme: The EMPr for the project sets out general instructions that will be included in a contract document for the construction phase of the project. The EMPr will ensure the construction activities are conducted and managed in an environmentally sound and responsible manner.
Environment	Means the surroundings within which humans exist and that are made up of: a. The land, water and atmosphere of the earth. b. Micro-organisms, plant and animal life. c. Any part or combination of a) and b) and the interrelationships among and between them. d. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental Specifications	Instructions and guidelines for specific construction activities designed to help prevent, reduce and/or control the potential environmental implications of these construction activities.
I&AP(s)	Interested and Affected Party(s)

Method Statement	A written submission by the Contractor to the Project Manager in response to the Specification setting out the plant, materials, labour, timing and method the Contractor proposes using to carry out an activity. The Method Statement shall cover applicable details with regard to: • Construction procedures. • Materials and equipment to be used. • Getting the 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 solid material that may occur. • Timing and location of activities. • Compliance/ non-compliance with the Specifications. • Any other information deemed necessary by the PM.
Project	This refers to all construction activities associated with the proposed activities.
PM	Project Manager: Appointed firm responsible for overall management of the construction phase of the project including the management of all contractors.
PPE	Personal Protective Equipment
Rehabilitation	Rehabilitation is defined as the return of a disturbed area, feature or structure to a state that approximates to the state (where possible) that it was before disruption, or to an improved state.
SHE	Safety, Health and Environment
Solid Waste	Means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).
SSC	Species of Special Concern

1 INTRODUCTION

1.1 The Environmental Management Programme

1.1.1 Introduction

This Environmental Management Programme (EMPr) forms part of the documentation submitted to the Department of Environmental Affairs (DEA) as the competent authority for the authorisation of the proposed provision of a third tippler and associated infrastructure at the Port of Saldanha. The content of the EMPr has been developed in accordance with the requirements as set out in Regulation 33 of the EIA Regulations of 2010.

1.1.2 Purpose

The preparation of an EMPr is recognised as a tool in Integrated Environmental Management (IEM) to address negative impacts and to enhance positive impacts on site. Typically, an EMPr document is aligned with the four phases of the project life cycle: design, construction, operation and decommissioning. This EMPr informs all relevant role-players in the project as to their environmental rights and duties. Its focus is on the construction and operation phases of the proposed Tippler 3 project.

1.1.3 Alignment with Transnet Construction Environmental Management Plan and Standard Environmental Specifications

This project specific EMPr has been aligned with Transnet's standard construction Environmental Management Plans and Specifications. These two documents are listed below and attached as Appendices G2 and G3 respectively. If there is a conflict between this project specific EMPr and one of Transnet's standard EMPr, this EMPr will take preference.

Transnet Capital Projects Environmental Management. Construction Environmental Management Plan (CEMP) ENV-STD-001 Rev01

Transnet Capital Projects Environmental Management. Standard Environmental Specifications (SES) ENV-STD-002- Rev01 (approved March 2013)

During the implementation of this EMPr the Developer (the General Director of Transnet SOC Ltd) may elect to delegate certain functions to various persons. These may comprise:

- The TCP Project Manager, who will be responsible for the overall implementation of the project.
- The TCP Environmental Manager, who works together with the TCP Project Manager, to ensure that requirements of the Environmental Authorisation are met.
- The TCP Construction Manager, who works with the TCP Project Manager, to ensure that construction proceeds with relevant specifications and agreed schedule.

- The TCP Environmental Officer, who works with the TCP Environmental Manager, to ensure that specific requirements of the Environmental Authorisation are met.

In each instance these persons shall be regarded as representatives of the Developer. Any instructions given by such person shall not conflict with the duties of the person named as the Project Proponent in the Environmental Authorisation.

1.1.4 Objectives

The objectives of an EMPr are to:

- Ensure compliance with all relevant Regulations with bearing on the project.
- Verify environmental performance through information on impacts as they occur.
- Provide required management actions in order to respond to unforeseen events.
- Provide feedback for continual improvement in environmental performance.
- Refine identified mitigation measures to further reduce potential impacts to minimal or insignificant levels.
- Stipulate specific actions to assist in mitigating the environmental impact of the project.
- Identify measures that could optimize beneficial impacts.
- Create management structures that address the concerns and complaints of I&APs with regards to the development.
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity.
- Ensure that environmental safety recommendations are complied with.
- Specify time periods within which mitigation measures must be implemented, where appropriate.

1.2 Legal Framework and Environmental Authorisation

This EMPr is focused on sound environmental management practices and is based on national and international best practices, relevant legislation, policies and guidelines. All stakeholders should note that obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

All legislation applicable to the development must be strictly enforced, including the following:

- The Constitution of the Republic of South Africa, Act 108 of 1996, (Chapter 2: Bill of Rights, Section 24: Environmental right, Section 25: Rights in property).
- National Environmental Management Act, 107 of 1998, as amended.
- National Environmental Management: Protected Areas Act, 57 of 2003.
- National Environmental Management: Biodiversity Act, 10 of 2004.

- The National Water Act, 36 of 1998.
- Hazardous Substances Act, 15 of 1973.
- National Heritage Resources Act, 25 of 1999.
- Conservation of Agricultural Resources Act, 43 of 1983.
- Occupational Health and Safety Act, 85 of 1993.
- National Veld and Forest Fire Act, 101 of 1998.
- National Environmental Management: Air Quality Act, 39 of 2008).
- National Environmental Management: Waste Management Act, 59 of 2008.
- Mineral and Petroleum Resources Development Act, 28 of 2002.
- Health Act, 63 of 1977.
- Integrated Coastal Management Act, 24 of 2008.

The list of applicable legislation provided above is intended to serve as a guideline only and is not exhaustive.

1.3 Details of the Principal Parties

1.3.1 Details of the Project Proponent

Mr. Fazeel Christian, Transnet SOC Limited
Table Bay Building, Tygerberg Park, Platteklouf, Cape Town
PO Box 1545, Bellville, 7535
Phone: +27 21 9401947, Fax: +27 866731435

1.3.2 Details of the Project Manager

Mr. Willie van Dyk
Table Bay Building, Tygerberg Park, Platteklouf, Cape Town
PO Box 1545, Bellville, 7535
Phone: +27 21 9401874

1.3.3 Details of the Environmental Assessment Practitioner (EAP)

This EMP was prepared by Dr. Norbert Klages who is a senior environmental scientist at GIBB (Pty). Dr. Klages is a certified EAP of the interim Certification Board for Environmental Assessment Practitioners of South Africa. He is also a registered Professional Natural Scientist (Ecological Science) with the South African Council for Natural Scientific Professions (Pr.Sci.Nat. No. 400412/04).

He holds a Bachelor of Science Degree: Hannover University, Germany, 1976, Master of Science (*cum laude*): Kiel University, Germany, 1979 and Doctor of Natural Sciences (*cum laude*): Kiel University, Germany, 1983. The contact details for the EAP are:

GIBB (Pty) Ltd, PO Box 63703, Greenacres 6057, Port Elizabeth
Phone: 041 3927500, Fax: 041 3639300, Email: nklages@gibb.co.za

1.3.4 Specialist Studies

An air quality impacts specialist study was undertaken by Dr. Lucian Burger of Airshed (Pty) Ltd to inform the assessment of the potential impacts arising from this proposed project.

1.4 Summary of the Proposed Activities

1.4.1 Tippler 3

Transnet proposes to install a third tippler (Tippler 3) in the Port of Saldanha. The Port of Saldanha has a dedicated iron ore export facility. Trains transport iron ore from mines in the Sishen area of the Northern Cape to Saldanha for export. The iron ore wagons are unloaded at the tippler facility. The tipplers empty wagons by rotation and iron ore is then transported on conveyors to stockpiles. The Port of Saldanha is currently operating using two iron ore tipplers. These tipplers require major overhaul and threaten to develop major technical problems with diminishing reliability. A third tippler is required to serve as a backup when one of the other two tipplers is out of operation for repair.

The site for the proposed new tippler is located inside the Saldanha Port, in the Saldanha Bay Local Municipality, Western Cape. The Port of Saldanha is South Africa's largest deep water port and it is approximately 130 km distant to the north of Cape Town. The site is bordered on the northern side by the road-over-rail bridge providing access to the west coast road just south of Salkor Yard (the marshalling yard) and on the southern side by the rail stop-block near the port jetty. The existing two tipplers (Tipplers 1 and 2) are located just north of the stockpile area which is adjacent to the port loading facility. A conveyor system transports the ore from the tipplers to the stockpile. The preferred location for new tippler is approximately 1.4 km north of the existing tipplers near the Saldanha steel factory ArcelorMittal. From here a system of conveyors will also transport the ore to the stockpiles. **(Error! Reference source not found., Figure 2).**

The proposed project hereafter referred to as Tippler 3, will involve the following:

- Construction of a new tippler and associated dust extraction equipment.
- Construction of a new conveyor belt to link Tippler 3 to the iron ore stock piles.
- Associated workshops.
- Relocation of the existing private Duferco Bridge.
- Widening of the public Camp Road Bridge.
- Construction of four additional railway lines.
- Relocation of a section of an existing overhead power line.
- Relocation of existing haul roads.

1.4.2 Tippler Alternatives

Three location alternatives (preferred alternative and two other alternatives) for Tippler 3 were considered during the Basic Assessment process (Figure 1). Each of

the three alternatives that were assessed had its own characteristic challenges in the ecological impact sector and also in terms of technical constructability. The preferred alternative was rated to have the least impacts. Alternatives 2 and 3 were rejected as their high negative impacts presented little leverage for lasting mitigation.

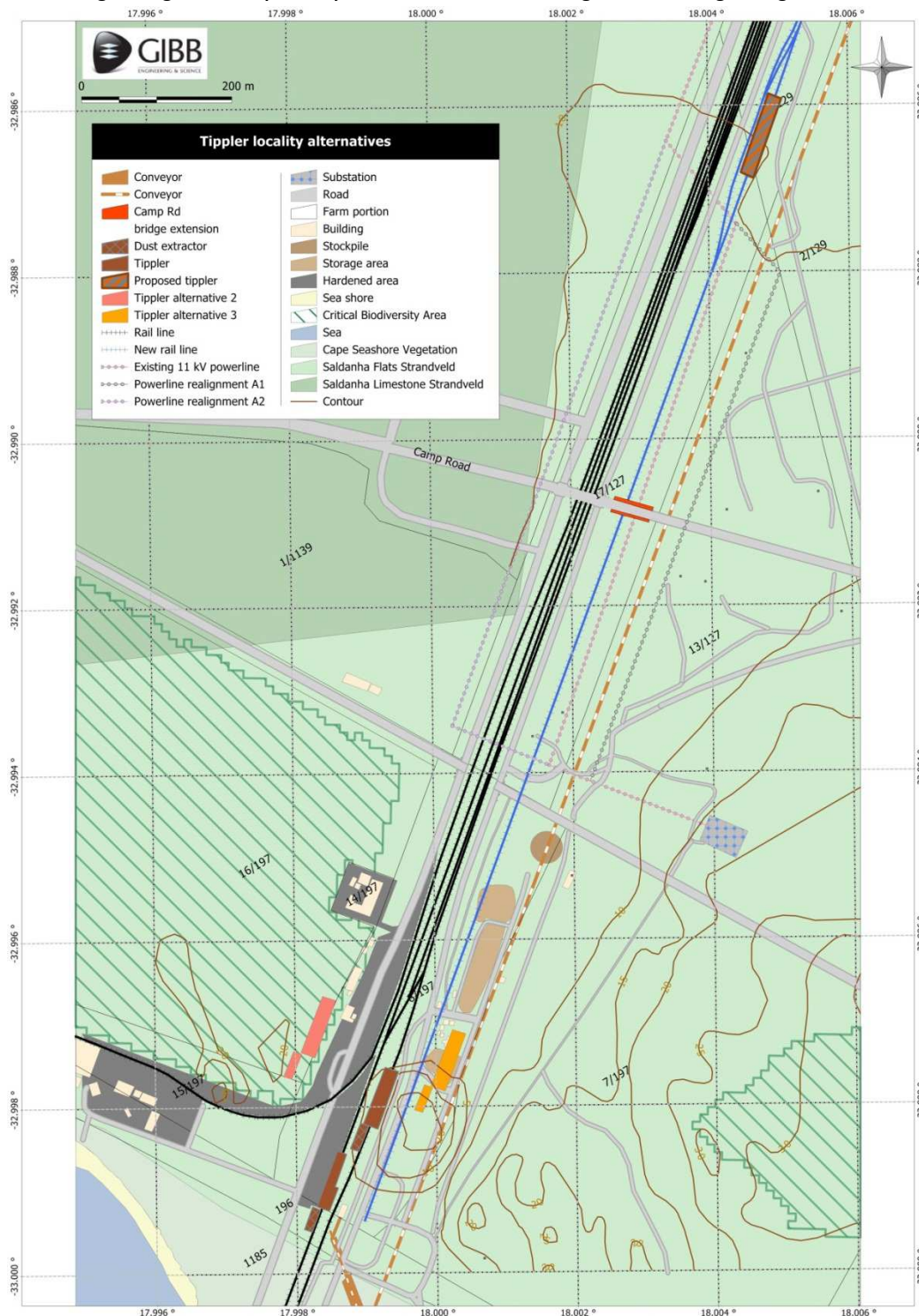


Figure 1. Map of the three alternative site locations for the third tippler.

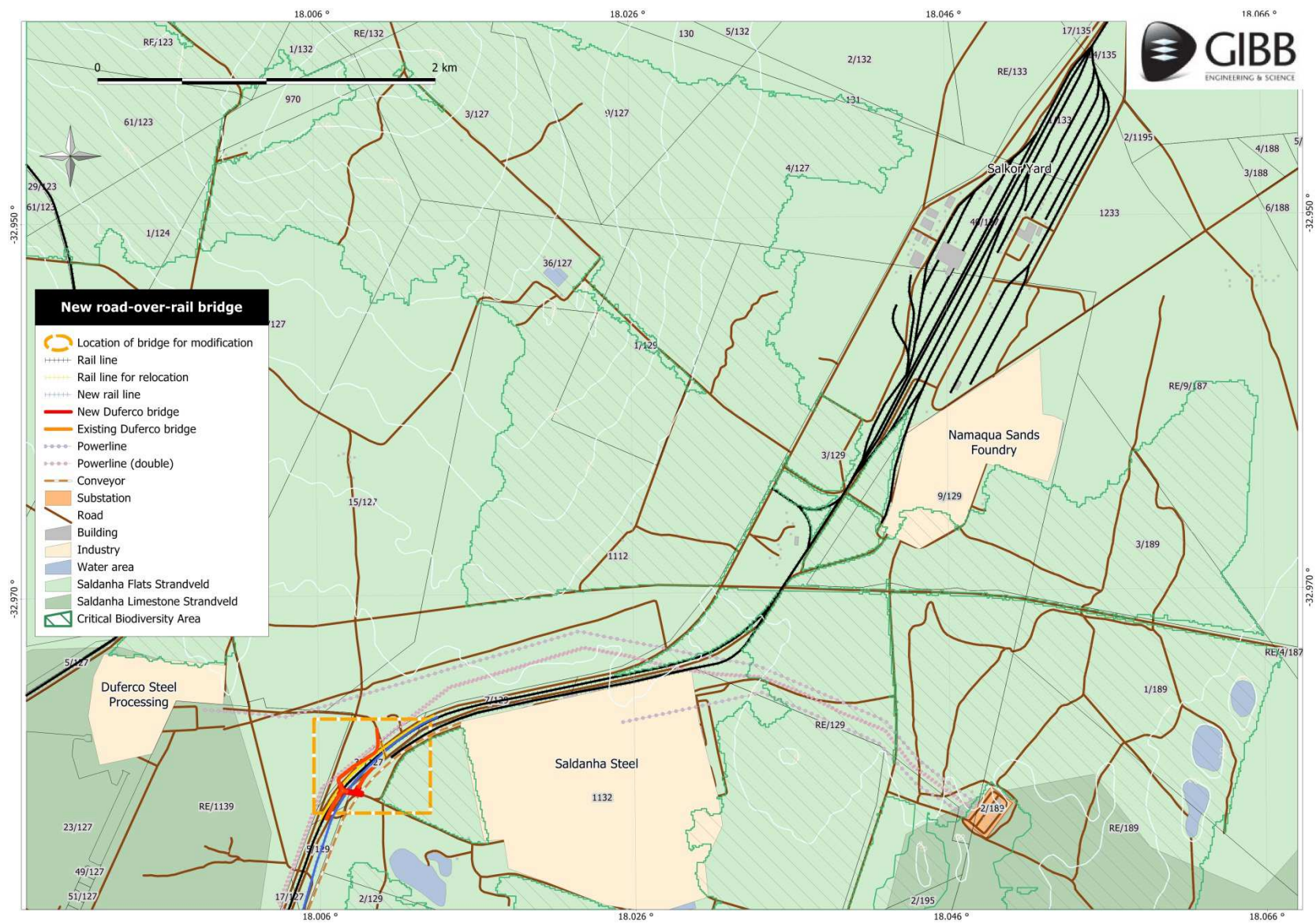


Figure 2. Bridge sensitivity map showing vegetation types and critical biodiversity areas in close proximity to the site.

1.5 The Receiving Environment

1.5.1 Land use

Surrounding land use is predominantly industrial, Saldanha steel maker Arcelor Mittal and Duferco Steel Processing are located on land neighbouring the site. The activities will be largely contained within the rail reserve, which is zoned for transportation.

1.5.2 Vegetation

The tippler will be located in the Saldanha Flats Strandveld vegetation type (Mucina and Rutherford, 2006). Approximately half (51.8%) of this vegetation type is found within the Saldanha Bay Municipal area (Maree and Vromans, 2010). Saldanha Flats Strandveld was classified as an endangered vegetation type by Mucina and Rutherford, 2006. The original extent of Saldanha Flats Strandveld was 760.23 km². Only 36% of Saldanha Flats Strandveld remains (CapeNature pers. comm.). Clearing of vegetation for the proposed Tippler 3 and associated infrastructure will reduce this figure to 34.7%. The section of vegetation to be cleared is not part of a continuous patch of vegetation, but isolated by linear features, namely the rail lines and conveyor belts. Currently only 11% of the remaining Saldanha Flats Strandveld is protected, this figure is lower than the conservation target of 24%. The main threats to Saldanha Flats Strandveld are transformation for cultivation, urban development and alien invasive infestation.

A short section of the new 11/66 kV power line route, approximately 160 m, will be located in Saldanha Limestone Strandveld. This vegetation type is also classified as endangered (Mucina and Rutherford, 2006). The new Duferco bridge and the extension of the Camp Road bridge are both located in Saldanha Flats Strandveld.

1.5.3 Critical Biodiversity Areas

The proposed position for the Duferco bridge is located approximately 7 m from a Critical Biodiversity Area (CBA). The area has been designated as a CBA due to the presence of irreplaceable wetland and endangered vegetation remnants. The conservation objective for this land is to maintain natural land or rehabilitate degraded land to a natural or near natural state and ensure there is no further degradation (Pence and Magidi, 2008).

1.5.4 Avifauna

The site and broader surrounding area are home to several endemic bird species including Barlow's Lark (*Certhilauda barlowi*). A number of species of conservation concern also occur in the areas; these include the Black Harrier (*Circus maurus*) classified as vulnerable (Maree and Vromans, 2010).

1.5.5 Mammals

Thirty two mammal species are likely to occur on site or in the surrounding area, including the dune field south of the site. Species which may be present on site include Yellow Mongoose (*Cynictis penicillata*), Cape Serotine Bat (*Neoromicia capensis*), Karoo Bush Rat (*Otomys irroratus*), Cape Hare (*Lepus capensis*) and Cape Fox (*Vulpes chama*).

1.5.6 Heritage Resources

Searches on site yielded no heritage resources. Should substantial fossil remains be exposed during work on the foundations, such as vertebrate bones and teeth, plant-rich fossil lenses or dense fossil burrow assemblages, the ECO should safeguard these, preferably *in situ*, and alert the SAHRA (South African Heritage Resources Agency), as well as Heritage Western Cape, as soon as possible so that appropriate action (e.g. recording, sampling or collection) can be taken by a professional palaeontologist. Should substantial archaeological heritage resources be exposed during construction, e.g. human remains, the ECO should safeguard these and alert SAHRA, as well as Heritage Western Cape, immediately so that appropriate action can be taken by a professional archaeologist.

1.5.7 Dust

Iron ore dust is currently an issue in the Port of Saldanha and surrounding residential areas. Sources of dust include tipplers, conveyor belts, transfer points, stacker reclaimers, wind erosion of stockpiles, vehicle entrainment and ship loading.

1.6 Summary of Identified Impacts

Potential impacts of the Tippler 3 project were identified and assessed as part of the Basic Assessment process. The proposed development is predicted to have some potentially negative environmental impacts on the surrounding environment. The most probable negative impacts are the loss of the surrounding vegetation, concomitant habitat destruction, and increased dust emissions. Impacts vary between the proposed location alternatives (as shown in Figure 1).

Traffic impacts will be experienced if Alternative 1 is implemented. Alternative 1 will require the widening of an existing road-over-rail bridge. The bridge is on Camp Road. Camp Road links Saldanha to Langebaan and acts as a commuters' route between the two towns. A detour will be used during the construction phase. The detour will add an approximately 13.5 km to the travelling distance between Saldanha and Langebaan.

Alternative 2 will result in interruption to rail operations and safety impacts as it will require the construction of a new rail line which will cross existing lines. Alternative 2 is also situated in a CBA. The indigenous vegetation is fairly intact inside the CBA causing more severe impacts than the other two site localities.

Alternative 3 will require excavation into a 20 m high vegetated dune. The presently stable dune may be compromised by such excavations and may become mobile threatening infrastructure from windblown sand.

The proposed development is also predicted to have some positive impacts. The export of iron ore from South Africa contributes significantly to the South African economy. The installation of a third tippler will ensure that the export of iron ore is maintained at its current level. If Tippler 3 is not installed it is possible that due to the increased maintenance requirements of the two ageing tipplers it will not be possible to maintain the current level of iron ore export leading to negative economic impacts.

On balance, the preferred alternative (alternative 1) has the least impact on biodiversity resources and endangered vegetation; it is therefore recommended to be implemented. Construction- and operation-related nuisances, (noise, dust) can be fully mitigated to acceptable levels provided mitigation measures stipulated in the EMPr are followed. An Environmental Control Officer shall be employed throughout the duration of construction.

2 MANAGEMENT AND ORGANISATIONAL STRUCTURE

2.1 Contractual Obligation

In order to ensure that the EMPr and its derivatives are enforced and implemented, these documents must be given legal standing. This shall be achieved through incorporating the EMPr and/or subsequent versions as an addendum to the contract documents for the particular project and specifying under particular conditions of the contract for the tender that the requirements of the EMPr and/or derivatives apply and must be met. This will ensure that the obligations are clearly communicated to contractors and that submitted tenders have taken into account, and budgeted for the environmental requirements specified in the EMPr and/or its derivatives.

All parties should note that obligations imposed by the EMPr are legally binding in terms of the environmental authorisation granted by the relevant environmental permitting authority.

2.2 The Developer

Transnet SOC Ltd is the Developer and has overall responsibility for ensuring that the construction and development of the project is undertaken in an environmentally sound and responsible manner, and in particular, reflects the requirements and specifications of the EMPr and recommendations from the relevant authorities.

2.2.1 Role

The Developer will be required to assume overall responsibility for the environmental aspects of the construction and operation of the project.

2.2.2 Responsibilities

The responsibilities of the Developer will include the following:

- Establish and maintain regular and proactive communications with the PM, Contractor(s) and ECO.
- Review and comment on environmental reports produced by the ECO.
- Ensure that the EMPr is reviewed and updated as necessary.
- Participate in Environmental Management Committee meetings.

2.2.3 Reporting Structure

The developer will liaise with the following stakeholders or I&APs:

- Relevant authorities.
- Landowners.
- Key stakeholders.
- General public.

2.3 Project Manager (PM)

The PM will ensure that the approved EMP_r is included in the contract documentation issued to prospective contractors.

2.3.1 Role

Specific to the implementation of the EMP_r, the role of the PM will be to:

- Review and approve Method Statements produced by the Contractor in response to stipulations in the EMP_r.
- Oversee the general compliance of the Contractor with the EMP_r and other pertinent site specifications.
- Liaise between and with the Contractor and ECO on environmental matters, as well as any pertinent engineering matters where these may have environmental consequences.

The TCP Environmental Manager, who works together with the TCP Project Manager,

2.3.2 Responsibilities

The PM's responsibilities will include:

- Be familiar with the contents of the EMP_r, and his role and responsibilities as defined therein.
- Communicate to the Contractor, verbally and in writing, the advice of the ECO and the outcome and recommendations of the ECO reports.
- Request for, review and approve the Method Statements prepared by the Contractor in consultation with the ECO.
- Review and approve drawings produced by the Engineer, Contractor or professional team in connection with any aspect of the proposed development.
- Issue site instructions giving effect to the ECO recommendations and requirements where necessary.
- Review complaints received and make instructions as necessary.
- Discuss with the ECO the application of penalties for the infringement of the Environmental Specifications, and other possible enforcement measures when necessary.
- Issue penalties as and when necessary.
- Implement Temporary Work Stoppages as advised by the ECO, where serious environmental infringements and non-compliances continue to occur.
- Facilitate proactive communication between all role-players in the interests of effective environmental management.
- While the PM retains the responsibility for the overall implementation of the project, he may delegate certain of his functions to the TCP Environmental Manager to ensure that requirements of the Environmental Authorisation are met (see section 1.1.31.1.3).

2.3.3 Reporting Structure

The PM will report to the Developer, as and when required.

2.4 Environmental Control Officer (ECO)

The Developer must appoint an ECO to monitor implementation of the EMPr and measure environmental compliance during the proposed construction works. The ECO is independent from the Developer, the PM and the Contractor(s). The ECO is given authority to ensure that the EMPr is fully implemented and that appropriate actions are undertaken to address any discrepancies and non-compliances.

2.4.1 Role

The overall role of the ECO is to be the site 'custodian' for the implementation, integration and maintenance of the EMPr in accordance with the contractual requirements. The ECO will be required to liaise with the PM on the level of compliance with the EMPr achieved by the Contractor on a regular basis for the duration of the contract.

2.4.2 Responsibilities

The ECO will have the following responsibilities, at a minimum:

- To advise the PM on the interpretation and enforcement of the Environmental Specifications (ES), including evaluation of non-compliances.
- To supply environmental information as and when required.
- To review Method Statements produced by the Contractor, in conjunction with the PM.
- To arrange for the demarcation of particularly sensitive areas (including all no-go areas) and to pass instructions through the PM concerning works in these areas.
- To monitor any basic physical changes to the environment as a consequence of the construction works – e.g. evidence of erosion, dust generation and silt loading in runoff – according to an audit schedule.
- Attend regular site meetings between engineers and contractors.
- To undertake regular monthly audits of the environmental aspects of the construction works and to generate monthly audit reports. These reports are to be forwarded to the PM who will communicate with the Developer.
- If required by the conditions attached to the Environmental Authorisation, the ECO will also forward the monthly audit reports to the DEA.
- To communicate frequently and openly with the Contractor and the PM to ensure effective, proactive environmental management, with the overall objective of preventing or reducing negative environmental impacts and/or enhancing positive environmental impacts.
- To advise the PM on remedial actions for the protection of the environment in the event of any accidents or emergencies during construction, and to advise on appropriate clean-up activities.

- Review complaints received and make instructions as necessary.
- Identify and make recommendations for minor amendments to the EMPr as and when appropriate.
- Ensure that the Contractor, his employees and/or Subcontractors receive the appropriate environmental awareness training prior to commencing activities.

2.4.3 Reporting Structure

The ECO will report to the competent authority issuing the Environmental Authorisation, the DEA.

2.5 Contractor

The Developer, or PM acting on his behalf, will appoint a Contractor to implement the development. It will be binding to the Contractor to undertake the activities in an environmentally responsible manner, as described in the EMPr.

2.5.1 Role

Specific to the EMPr, the role of the Contractor will be to:

- Implement, manage and maintain the EMPr for the duration of the contract.
- Designate, appoint and/or assign tasks to personnel who will be responsible for managing all or parts of the EMPr.
- Assign appropriate authority, accountability and responsibility for these personnel to carry out their duties.
- Ensure that all subcontractors and other workers appointed by the Contractor are aware of their environmental responsibilities while on site or during the provision of their services off site.
- Ensure that all subcontractors and other workers appointed by the Contractor are complying with and implementing the EMPr during the duration of their specific contracts.
- Provide appropriate resources including budgets, equipment, personnel and training for the effective control and management of the environmental risks associated with the construction.
- Maintain a record of complaints and communicate these to the Project Manager and the ECO.

2.5.2 Responsibilities

The Contractor will have the following responsibilities:

- Be familiar with the contents of the EMPr, and his role and responsibilities as defined therein.
- Comply with the Environmental Specifications contained in the EMPr and subsequent revisions.

- Confirm legislative requirements for the construction works, and to ensure that appropriate permissions and permits have been obtained before commencing activities.
- Prepare Method Statements, programme of activities and site plans for submission to the PM (and ECO) before affected construction activities may commence..
- Review the site inspection reports and take cognisance of the information and implement recommendations contained therein.
- Notify the ECO and PM, verbally and in writing, immediately in the event of any accidental infringements of the Environmental Specifications and ensure appropriate remedial action is taken.
- Notify the ECO and PM, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timely.
- Ensure environmental awareness among employees, subcontractors and workforce so that they are fully aware of, and understand the Environmental Specifications and the need for them.
- Maintain a register of environmental training for site staff and sub-contractor's staff for the duration of the contract.
- Undertake the required works within the designated working areas.
- Rehabilitating services, utilities, private/public property and other areas adversely affected by construction activities outside of demarcated areas in accordance with the PM's instructions.
- Communicate and liaise frequently and openly with the PM and ECO to ensure effective, proactive environmental management with the overall objective of preventing or reducing negative environmental impacts while enhancing positive environmental impacts.

2.5.3 Reporting Structure

The Contractor will report to and receive instructions from the PM.

2.6 Subcontractors

The Contractor may from time to time appoint Subcontractors.

2.6.1 Role

On behalf of the Contractor, Subcontractors perform certain services and/or provide certain products. The Subcontractors will be contractually required to undertake their activities in an environmentally responsible manner, as described in the EMPr.

2.6.2 Responsibilities

The Subcontractor will have the following responsibilities:

- Be familiar with the contents of the EMPr, and his role and responsibilities as defined therein.
- Subcontractors shall comply with the Environmental Specifications in the EMPr and associated instructions issued by the Contractor to ensure compliance.
- Notify the Contractor verbally and in writing, immediately in the event of any accidental infringements of the Environmental Specifications and ensure appropriate remedial action is taken.
- Notify the Contractor, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timely.
- Ensure environmental awareness among employees so that they are fully aware of, and understand the Environmental Specifications and the need for them.

2.6.3 Reporting Structure

Subcontractors will report to and receive instructions from the Main Contractor.

2.7 Site Documentation and Record Keeping

The following documents must be kept on site:

- Physical access plans
- Site instructions
- Pre-construction audit report, including photographic record.
- Complaints register
- Method statements all filed correctly and up to date
- Records of all remediation / rehabilitation activities.
- Records of the quantities of general and hazardous waste generated on site and disposal certificates or details of volumes of waste recycled
- Water consumption during the construction and operational phase
- Electricity consumption measured in Watt hours
- Copy of this EMPr.
- Copy of the Transnet Construction Environmental Management Plan and Standard Environmental Specifications
- Copy of the Environmental Authorisation
- Copy of all environmental permits
- Copies of all close out reports, where applicable
- Monthly compliance report minutes, incident reports and corrective action reports
- Environmental training records.
- Emergency response procedures and emergency contact numbers
- Sampling protocols to be followed

2.7.1 Environmental Inspections and Audits

Environmental audits should be conducted according to the table below:

Table 1: Environmental audit details

Place	Inspector/ Auditor	Auditee	Inspection/ audit frequency
Work places	Contractor	Contractor's team	Daily inspection
Construction site	ECO	Contractor's Environmental Officer	Monthly audit
Construction site (entire area)	ECO	Entire project	Monthly

The monthly compliance report shall include:

- Complaints received from affected parties and details of the actions taken.
- Environmental incidents, spills of hazardous substances, etc.
- Environmental damage which requires rehabilitation.
- Damages of private property such as buildings.
- Consultation with Contractor's staff including sub-contractors and suppliers
- Document checks.

3 ENVIRONMENTAL SPECIFICATIONS DURING CONSTRUCTION

3.1 Principles, Compliance and Method Statements

3.1.1 Environmental Principles for the Construction Works

1. The environment is considered to be composed of both biophysical and social components.
2. Construction is a disruptive activity and all due consideration must be given to the environment, including the social environment during the execution of a project to minimise the impact on affected parties.
3. Minimisation of areas disturbed by construction activities (i.e. the 'footprint' of the construction area) should minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
4. Every effort shall be made to minimise, reclaim and/or recycle waste materials.

3.1.2 Compliance with Environmental Legislation and permit application

1. The ECO/PM shall maintain a database of all pertinent legislation, regulations and guidelines pertinent to the environmental management of the activities being undertaken.
2. The Contractor shall ensure that all pertinent legislation concerning the protection of the environment is adhered to and that prevention of pollution is strictly enforced.
3. The Contractor shall ensure that all relevant permits, certificates and permissions have been obtained prior to any activities commencing on site and are strictly enforced.

3.1.3 Method Statements

1. The Contractor shall submit written Method Statements to the PM and ECO for the activities identified by the PM and/or the ECO.
2. Method Statements indicate what will be done to comply with relevant environmental specification as set out in the EMPr.
3. Method Statements shall be submitted at least 10 working days prior to the proposed commencement of work on an activity to allow the PM and ECO time to study and approve the method statements.
4. The Contractor shall not commence work on any activity until such time as the Method Statement has been approved in writing by the ECO and/or PM.
5. The ECO may require changes to a Method Statement if it does not comply with the specification or if, in the reasonable opinion of the ECO, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by the EMPr or any legislation.

6. The Contractor shall carry out the activities in accordance with the approved Method Statement.
7. Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel.
8. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract.
9. No claim for delay or additional cost incurred by the Contractor shall be entertained due to inadequacy of a Method Statement.

3.1.4 Content of Method Statements

The Method Statement shall state clearly:

- Timing of activities.
- Materials to be used.
- Storage of materials.
- Transportation of equipment to and from site.
- The containment (or action to be taken if containment is not possible) of leaks or spills or any liquid or material that may occur.
- Equipment and staffing requirements.
- Proposed construction procedure designed to implement the relevant environmental specifications.
- The system to be implemented to ensure compliance with the above.
- Other information deemed necessary by the ECO.

The following Method Statements shall be prepared by the Contractor for approval:

1. Contractor's SHE Officer and Fire Officer

The name and letter of appointment of the Contractors SHE Officer and Fire Officer must be given to the ECO and the terms of reference for the work to be undertaken must be detailed including time on site, roles and responsibility, interaction with the Contractor and environmental offices, etc.

2. Site layout

The graphical representation with detailed notes of the location, layout and method of establishment of the construction camp must be provided and must including the following:

- All Contractor's buildings, and/or offices.
- Lay down areas.
- Vehicle and plant storage areas, including wash areas.
- Workshops, if required and approved by ECO.
- Fuel storage and dispensing areas, if required and approved by ECO.
- Cement/concrete batching areas, if required and approved by ECO (including the methods employed for the mixing of concrete and particularly the containment of runoff water from such areas and the method of transportation of concrete).

- Other infrastructure required for the running of the project.

3. Access Routes

Details, including a drawing, showing where and how the access points and routes will be located and managed must be provided in a Method Statement. Final locations of planned new access roads will be subject to successful negotiations with landowners. Details of fences and gates affected or used during the construction activities, including a drawing showing the location of fences and access gates must be provided.

4. Pollution Control

Expected solid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites must be identified and stated in a Method Statement. The Method Statement shall further include methods of minimising, controlling, collecting and disposing of contaminated water, and details of any hazardous substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances.

5. Safety Considerations

The Contractor shall provide details identifying what safety precautions will be implemented to ensure the safety of all staff, and the general public at large, on site during the life of the project. This will include protective clothing requirements for all types of construction activities on site, including protection against dust, noise, falling objects, work associated with electricity and work at heights.

6. Emergency Procedures

The Contractor shall provide details regarding all relevant emergency procedures that will be implemented for fire control and accidental leaks and spillages of hazardous substances (including fuel and oil). The Contractor shall further include details of risk reduction measures to be implemented including fire fighting equipment, fire prevention procedures and spill kits.

7. Waste Management Control

The Contractor shall provide details regarding how solid and liquid waste generated on the construction site and site camp will be collected, stored, transported and disposed of. Details of any service provider(s) appointed to manage this task must also be provided.

8. Storm Water and Erosion Control

The Contractor shall provide details of how storm water emanating within or adjacent to the construction site may impact on construction activities. Details on how the Contractor will deal with storm water runoff and potential erosion within the construction footprint and reserve must be provided. Details of any service provider(s) appointed to manage this task must also be provided.

3.2 Environmental Awareness

1. Environmental awareness and training is an important aspect of the implementation of the EMPr.
2. An initial environmental awareness training session for all of the Contractor's staff is required prior to any work commencing which shall be conducted by a suitably qualified person.
3. The ECO will provide the Contractor with the course content for the environmental awareness training course, and the Contractor shall communicate this information to his employees on the site, to any new employees coming onto site, to his subcontractors and to his suppliers.
4. The training session shall be delivered in the languages of the site staff.
5. The emphasis should be on any (potential) environmental impacts relating to the construction activities to be undertaken on site and the related environmental precautions, which need to be taken to avoid or mitigate these impacts.
6. Training shall cover:
 - The importance of the EMPr.
 - Specific details of the EMPr.
 - Employees' role in compliance with the EMPr.
 - Training targeted at specific personnel for example operators of heavy machinery.
 - The environmental impacts, actual or potential, of their work activities.
 - The environmental benefits of improved personal performance.
 - Their roles and responsibilities in achieving conformance with the environmental policy and procedures.
 - Emergency preparedness and response requirements.
 - The potential consequences of departure from specified operating procedures.
 - The mitigation measures required to be implemented when carrying out their work activities.
 - Environmental legal requirements and obligations.
 - Details regarding floral/faunal species of special concern and protected species, and the procedures to be followed should these be encountered.
 - The consequences of poaching of animals or removal of indigenous vegetation.
 - The importance of not littering.
 - The importance of using supplied toilet facilities.
 - The need to use water sparingly.
 - Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible.
 - Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should such be encountered.
7. Records of training session including attendance, nature of training and date of training shall be kept to ensure all staff members have received the necessary training.

3.3 Site Establishment

3.3.1 Site Identification

1. A demarcated area at or close to the site must be provided for the storage of machinery and trucks as necessary. This area shall also serve as the Contractor's site camp.
2. The site for the Contractor's Camp shall be determined in collaboration with the PM and ECO before the Contractor moves on site, such that it is effectively isolated from the sensitive elements of the surrounding environment.
3. The Contractor's Camp shall also be of sufficient size to accommodate the needs of all subcontractors that may work on the project.
4. The Contractor will produce a Site Layout Plan illustrating the location and layout of the proposed site camp and working areas. This plan must be approved by the PM in consultation with the ECO.
5. The Contractor shall produce a photographic record of the area earmarked for the site camp prior to site establishment. This will serve as the benchmark against which rehabilitation will be measured and shall be kept in the site environmental file.
6. It will be the responsibility of the Contractor to reinstate the site camp to its original condition once the project has been completed.
7. The working areas shall be kept to a minimum to reduce the total physical 'footprint' of the construction site thereby reducing environmental damage.
8. Utilities and other service providers such as Eskom shall be advised of the construction activities. The Contractor will be responsible for any damage to these services/utilities.

3.3.2 Site Demarcation

1. Prior to construction commencing, the Contractor, PM and ECO shall inspect the site and identify any sensitive environments.
2. Where necessary, the no-go areas shall be identified and indicated on the site map. The no-go areas may be demarcated if need be.
3. The Contractor will be required to maintain all demarcation fencing and other demarcating materials for the duration of construction activities or as otherwise instructed by the PM.
4. The Contractor shall ensure that, insofar as he has the authority, no person, plant equipment or material will enter the no-go areas at any time.
5. The general bounds of all no-go areas are shown in Figure 3.

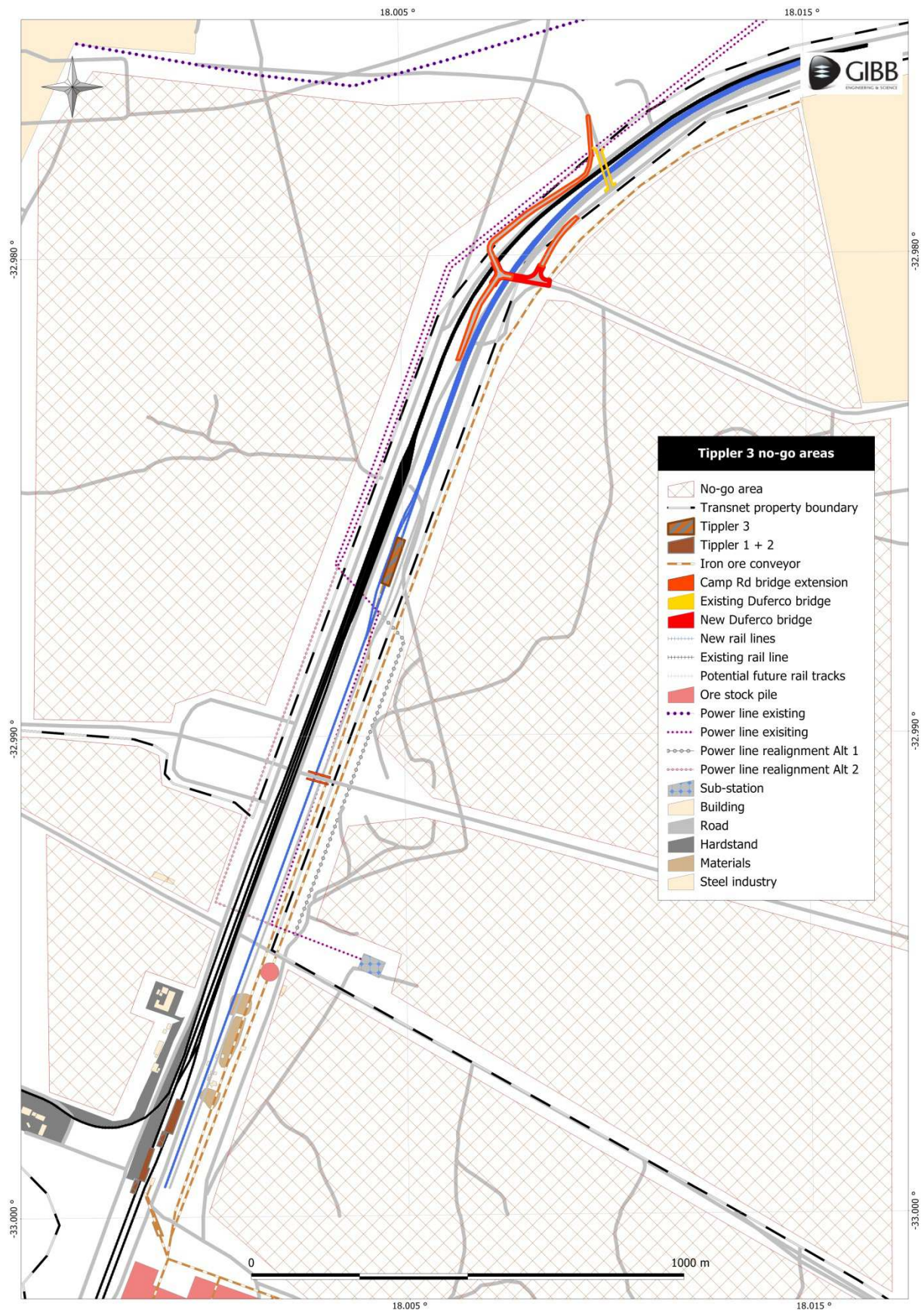


Figure 3. Details of the space requirements of the proposed Tippler 3 and general no-go areas.

3.4 Traffic Management

1. The movement of trucks to and from the construction site must be well coordinated by the PM, together with the Contractor, and in consultation with the Western Cape Provincial Roads & Transport Management Branch of the Department of Transport and Public Roads.
2. Large trucks and other heavy-duty machinery may not be left unattended outside the contractor's site camp or designated area.
3. Existing access roads to the site must be used as far as possible
4. Temporary road closures and detours shall be planned well in advance.
5. A section of the Camp Road may have to be closed during the construction period. This road links Langebaan to Saldanha.



Figure 4: Proposed detour route (blue) between Saldanha and Langebaan when Camp Road (red) is closed

6. The closure of Camp Road must be communicated to residents in surrounding towns 2 weeks in advance of the road closure. Appropriate methods of communication may include:
 - Notice boards,
 - Newspaper advertisements,
 - Radio announcements.

7. All lane closures and warning signs must comply with the official municipal, provincial and SANRAL specification governing road works.
8. All traffic calming measures on the detour must be constructed or erected according to the appropriate municipal, provincial or SANRAL specifications governing road works.
9. Construction on Camp Road bridge shall not occur during high traffic periods, such as during the Christmas/New Year holidays.

3.5 Biodiversity Management

3.5.1 Vegetation Clearance

1. No flora shall be removed, damaged or disturbed nor shall any vegetation be planted except to the extent necessary for the carrying out of the construction works.
2. Vegetation clearance shall take place strictly in accordance with the Site Layout Plan developed by the Contractor.
3. The minimum amount of vegetation clearance, as advised by the ECO, must take place.
4. Mechanical, rather than chemical, methods shall be used where possible.
5. Where possible avoid de-stumping, cut trees to ground level to retain roots.
6. Site clearing must take place in phased matter, as and when required.
7. The search and rescue of rare, endemic or endangered species prior to site clearance must be carried out.
8. The removal and stockpiling of topsoil must also be carried out in accordance with the EMPr.
9. Areas which are not to be affected by construction for a period of two months into the future must, in order to reduce erosion risks, not be cleared.
10. Areas to be cleared must be clearly demarcated and this footprint strictly maintained.
11. Spoil that is removed from the site must be removed to an approved spoil site or municipal licensed landfill site.
12. Silt fences and erosion control measures must be implemented in areas where these risks are more prevalent. These include wetlands and steep areas.
13. All plants not interfering with construction shall be left undisturbed.
14. Collection or wilful damage to any plants outside of the areas demarcated for clearing is not allowed.

3.5.2 Plant Rescue and Protection

1. Once the site layout has been determined a suitably qualified person shall be contracted to oversee implementation of the plant relocation and vegetation clearing plan.

2. Areas to be cleared of vegetation shall be clearly demarcated before clearing commences.
3. Areas shall only be stripped of vegetation as and when required, especially grasses, to minimize erosion risk.
4. Once demarcated the area to be cleared of vegetation shall be surveyed by the vegetation clearing team under the supervision of the botanist and horticulturalist to identify and mark species suitable for rescue.
5. Plants to be rescued should include both species of special concern requiring removal for relocation as well as species that would be suitable for use in rehabilitation.
6. Depending on growth form this material should be appropriately removed from its locality and stored in the nursery holding areas or immediately relocated where it may be required elsewhere immediately.
7. Small trees and shrubs (<1 m in height) can often be rescued and planted temporarily in potting bags for later use.
8. Wherever possibly any seed material should be collected immediately and stored for later use, particularly species that occur in low numbers.
9. Before any earthmoving activities are commenced any ripe grass seed should be collected (using a sickle or similar implement), dried and stored for use during regressing.
10. Comprehensive notes shall be kept as to the identification, habitat, and any potential biophysical requirements of plants, and any species of special concern removed for relocation shall have a GPS locality recorded.
11. Grass sods (e.g. *Cynodon dactylon*) can also be collected for immediate use in any areas requiring revegetation.

3.5.3 Removal of Invasive Species

1. All invasive alien vegetation within the works area shall be removed and destroyed.
2. The Contractor, or responsible sub-contracted service provider, must ensure that seeds from alien vegetation collected during site clearance are not dispersed so as to counter the spread of this vegetation type. Failure to do so may result in prosecution in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983, which states that any person removing any weed (which includes alien vegetation) shall ensure that it is not able to reproduce itself.
3. Removed invasive vegetation shall not be stockpiled on site for more than 1 week
4. Collect and remove as much material from site
5. Removed vegetation must not be stockpiles in areas of sensitive vegetation.
6. Bare soil must be replanted with appropriate indigenous species to prevent the establishment of invasive species.

7. In areas where vegetation has been removed short term measures such as the use of geofabrics to stabilise banks may be necessary.
8. All areas disturbed by construction activities shall be inspected regularly for invasive species to prevent the establishment and spread of such species.

The following table describes removal methods for different invasive species:

Table 2: Removal methods for invasive species

Removal method	Plant group	Comments
Hand pulling and uprooting	Seedlings, saplings and small plants	Hand pulling is most effective on species with shallow root networks and should be completed when the soil is wet.
Shovelling	Aquatic weeds, small plants	Shovelling removes the vegetation and silt or sediment they are rooted in. This activity may disturb or damage the river bed to a limited degree.
Slashing	Alien or invasive species	Almost all invasive or alien species will re-establish in small patches after slashing, but repeated slashing during the growing season will weaken the root reserves. Chemicals can be applied to vegetation after slashing.
Felling	Large woody plants	Felling of most invasive trees results in re-growth. To prevent this remove the bark of the stump to ground level or treat using chemicals. Pines and black wattle do not sprout again once felled.
Ring-barking and strip-barking	Large woody plants	To be used when felling of trees is unpractical, however felling of trees is more difficult once dried out. Ring-barking: 30 cm ring of bark and cambium must be removed. Strip-barking: strip all bark from ground level to a height of 50 cm

3.5.4 Wild Animal Management

1. Trapping, poisoning and/or shooting of animals is strictly forbidden.
2. Any animals rescued or recovered will be relocated to suitable habitat away from the development. Only a suitably qualified person shall be permitted to handle and relocate wild animals.
3. Logs and stumps provide important habitats for several reptile species as well as smaller mammals, amphibians, arachnids and scorpions. These animals shall be allowed to escape to suitable habitat away from the disturbance or must be removed by a suitably experienced and qualified person.
4. During construction activities wherever possible work shall be restricted to one area at a time. This will give smaller birds, mammals, reptiles and amphibians an opportunity to move into undisturbed areas close to their natural habitat.
5. No domestic pets or livestock are permitted on site.

3.6 Soil Impacts

3.6.1 Topsoil

1. Topsoil shall only be stripped from areas that are to be developed.

2. Stripping of topsoil will be undertaken in such a manner as to minimise erosion by wind or runoff.
3. No stripping of top soil during wet or windy conditions.
4. Topsoil will be stripped to a depth not exceeding 150 mm from the original ground level.
5. Areas from which the topsoil is to be removed will be cleared of any foreign material which could reduce the quality of the topsoil.
6. The Contractor shall ensure that subsoil and topsoil are not mixed during stripping, excavation, reinstatement and rehabilitation.

3.6.2 Stockpiles

1. Topsoil will be temporarily stockpiled, separately from (clay) subsoil and rocky materials.
2. Topsoil will be stockpiled in areas as indicated on the site plan/s approved by the PM and ECO.
3. Soil must not be stockpiled on drainage lines or near watercourses without prior consent from the ECO.
4. Stockpiles to be positioned above the 1:20 year flood line.
5. Stockpiles shall be kept free of weeds.
6. Stockpiles shall not exceed 2 m in height.
7. If stockpiles are exposed to windy conditions or heavy rain, they shall be covered to prevent loss of topsoil.
8. Stockpiled topsoil must not be mixed with spoil (excavated subsoil), rubble or building material or be subject to compaction or contamination by vehicles or machinery. This will render the topsoil unsuitable for use during rehabilitation.
9. Stockpiles can either be vegetated with indigenous grasses or covered by a suitable fabric to prevent invasion of weeds.

3.6.3 Erosion

1. The contractor must ensure that measures to limit erosion and improper drainage caused by construction vehicles and activities are in place.
2. The contractor shall be responsible for checking and maintaining all erosion and sedimentation controls.
3. Slopes must be restored to an acceptable level. No environmental rehabilitated slopes steeper than 1(V):3(H) to be allowed.
4. Areas where construction is completed shall be rehabilitated immediately.
5. All existing disturbed areas will be revegetated to control erosion and sedimentation.

6. Existing vegetation will be retained as far as possible to minimize erosion problems.

3.7 Construction Plant, Material and Site Management

3.7.1 Equipment Maintenance and Storage

1. All vehicles and equipment shall be kept in good working order and shall be stored in the site camp or an area approved by the PM.
2. All vehicles and plant will be inspected daily for leaks and spills. Maintenance checks shall be logged and signed off in a site maintenance file after each inspection.
3. Leaking equipment shall be repaired immediately or removed from the site.
4. Stationary plant must be supplied with drip trays to prevent soil contamination after hours.

3.7.2 General Materials Handling, Use and Storage

1. Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent it from spilling over the side of the vehicle during transit.
2. The Contractor shall be responsible for any clean-up resulting from the failure by his staff or supplier to properly secure materials to be transported.

3.7.3 Stockpiling of Construction Material

1. Any stockpiling of gravel, cut, fill or any other material including spoil shall be in areas approved by the ECO within the defined working area.
2. The Contractor shall ensure that stockpiled material is not lost due to exposure to the elements. If the stockpiled material is in danger of being washed or blown away, the Contractor shall cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil shall not be covered with plastic.
3. No stockpiling of any material shall be allowed within the 100 m of any residential areas or 20 m of any "no go" area.

3.7.4 Workshop

1. If an on-site workshop is to be established for the duration of construction, the Contractor shall obtain the approval of the PM prior to commencing activities and confine maintenance activities to the identified workshop area.
2. The Contractor shall ensure that there is no contamination of the soil or surface water from the on-site workshop. Each contractor must have a spill control kit and staff appropriately trained to utilise it.

3.7.5 Mortar and Concrete Batching

1. Concrete shall be transported in pre-mixed from a supplier however if this is not possible the following shall be adhered to.
2. The proposed location of batching areas (including the location of cement stores and sand and aggregate stockpiles) shall be indicated on the Site Layout Plan and approved by the ECO.
3. Batching areas shall not be located within any “no-go” areas.
4. Where possible, the Contractor should make use of ready-mix concrete.
5. Concrete and mortar shall not be mixed directly on the ground. Mixing trays, wheelbarrows or concrete mixing machines can be used.
6. The mixing works shall be kept neat and clean at all times.
7. Contaminated storm water and wastewater runoff from the mixing works and aggregate stockpiles shall be led to a pit and removed off the site.
8. Used cement bags must be stored tidily in weather-proof containers until disposal off-site. Unused cement bags must be stored weather-proof to prevent leaching of cement.
9. All reasonable measures must be taken to ensure that transportation of concrete does not result in spillage.
10. Cleaning of equipment and flushing of mixers shall not result in pollution of the surrounding environment.
11. Suitable screening and containment shall be in place to prevent windblown contamination associated with any loading and batching.
12. Waste concrete, cement sludge and mortar leftovers shall be removed from site to an approved landfill site. Washing the remains into the ground is not acceptable.
13. Water used to clean concrete off machinery shall be treated as grey water and disposed of at licensed water treatment works.

3.7.6 Trenching and Excavations

1. Top soil and subsoil excavated during trenching may be stockpiled next to the trench, but must be set back from the edge of the trench by a minimum distance of 1 m.
2. A ladder or exit point must always be available close to the workforce in the trench.
3. The SHE Officer must check the walls of all trenches for stability daily before staff may be allowed to enter a trench.
4. The SHE Officer shall further check all trenches for wild animals and dangerous reptiles every morning before staff will be allowed to commence work in a trench. Animals may not be harmed and must be released back into the environment away from the construction site.

5. All trenches must be demarcated or barricaded at all times to warn staff and the general public of the danger.
6. Staff must wear full protective clothing when work is conducted in trenches.
7. Staff shall not be allowed to work in isolation in a trench. Each worker will pair up with a co-worker and will work in close proximity to one another at all times while conducting work in a trench.

3.7.7 Work Stoppage and Temporary Site Closure

1. The Engineer, in consultation with the ECO, shall have the right to order work to be stopped in the event of significant infringements of the Project Environmental Specifications until the situation is rectified in compliance with the specifications. In this event, the Contractor shall not be entitled to claim for delays or incurred expenses.

3.8 Waste Management

3.8.1 Solid Waste Management

1. The Contractor shall be required to prepare and submit a Method Statement on waste control and management at the site.
2. The contractor must obtain documentation to prove where waste was disposed of.
3. Waste rock and inert building rubble shall be disposed of at the nearest registered solid waste disposal facility.
4. No burning, burying or dumping of any waste materials, vegetation, litter or refuse shall be permitted.
5. Solid waste shall be removed from site on a regular and frequent basis by the Contractor or appropriate service provider.
6. Domestic waste must be collected in a skip and disposed of at the nearest registered solid waste disposal facility.
7. No burning of cleared vegetation or waste on site.
8. Solid waste shall be recycled where possible and the remainder disposed of at an approved municipal land fill site or waste disposal service provider.
9. Labelled recycling containers shall be provided.
10. Disposal certificates for each waste removal event shall be issued and kept in the site environmental file for auditing purposes.
11. No burning of cleared vegetation shall be allowed on site. Chipping or composting of vegetation shall be allowed where viable.

3.8.2 Wastewater Management

1. The Contractor shall prepare a Method Statement on the control and management of wastewater on site, including providing for the appropriate disposal of contaminated water.
2. No grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) to adjacent or nearby water bodies shall be permitted.
3. Water containing environmental pollutants shall be discharged into a conservancy tank, where appropriate, for removal from site.
4. The Contractor shall also prevent runoff loaded with sediment and other suspended materials from the site/working areas from discharging to adjacent watercourses and/or storm water infrastructure.
5. Potential pollutants of any kind and in any form shall be kept, stored and used in such a manner that any escape can be contained.
6. Wash down areas must be approved by the PM and ECO and shall not pollute the surrounding environment.
7. The Contractor shall notify the PM and ECO of any pollution incidents on site.

3.8.3 Sanitation

1. Adequate washing and toilet facilities are to be provided at the construction site camp.
2. Portable chemical toilets at a ratio of one toilet per 10 workers shall be provided at the site camp. Separate toilet facilities for males and females shall be provided.
3. Portal chemical toilets must be located above the 1:100 year flood line or within a horizontal distance of 100 m (whichever is greater) from a watercourse.
4. All temporary/portable toilets shall be secured to the ground to the satisfaction of the PM to prevent them from toppling over or being blown over by wind.
5. The type and exact location of the toilets shall be approved by the PM prior to establishment. No septic tanks are to be established.
6. The Contractor shall ensure maintenance of all toilets in a clean sanitary condition to the satisfaction of the PM. Toilets are to be serviced at least once per day and toilet paper shall be provided.
7. The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the site to an appropriate location/facility. The Contractor/service provider is to provide proof that the toilet contents are disposed of at an appropriate facility.
8. Discharge of waste from toilets into the environment and burial of toilet waste is strictly prohibited.

3.8.4 Fuels (Petrol and Diesel) and Oil

1. Unless specifically authorised, fuel shall not be stored on site, but shall be transported to the site in small quantities as and when required, and vehicles to be fuelled off site.
2. Where fuel is to be stored on site, all necessary approvals regarding storage and dispensing shall be obtained from the appropriate authorities.
3. The location of the fuel storage area shall be approved by the PM and ECO.
4. Areas for the storage of fuel and other flammable materials shall comply with standard fire safety regulations.
5. Fuel and chemical depot(s) shall be located at least 100 m from any water body.
6. Fuel storage on site above ground may not exceed 30 m³ in volume. Fuel must be in compliance with the SANS specification for that type of fuel
7. The Contractor shall ensure that all liquid fuels and oils are stored in tanks with lids and that these are kept firmly locked at all times. The design and construction of the storage tanks shall be in accordance with a recognised code and as approved by the PM.
8. The tanks shall be lined and be situated in a bunded area that has a volume of at least 1.5 times of the volume of the largest tank. The floor of the bunded area must be impermeable and the bunds must be without leaks.
9. A separate container must be made available for the biological treatment of soil polluted by oil.
10. The contractor shall provide details of the proposed fuel storage and fuelling facility to the ECO.
11. At least one person trained in first aid and the handling of fuels must be available to the construction team at all times.
12. Storage tanks are to be removed on completion of the works.
13. No smoking shall be allowed in the vicinity of the fuel storage area. At least one no-smoking warning sign must be erected and be clearly visible at the fuel storage area to warn all staff of associated dangers.
14. Smoking may only be allowed in designated areas, which must contain a fire extinguisher.
15. There shall be adequate fire fighting equipment at or close to the fuel storage and dispensing area(s).
16. Fuel shall be kept under lock and key at all times.
17. Where reasonably practical, plant shall be refuelled at a designated refuelling area. The surface under the temporary refuelling area shall be protected against pollution to the reasonable satisfaction of the PM prior to any refuelling activities.
18. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/break down any hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200 litres of hydrocarbon

liquid spill. This material must be approved by the PM prior to any refuelling or maintenance activities.

19. In the case of a spill, contaminated material must be removed from the site immediately and disposed of at an appropriate hazardous waste facility.
20. Do not allow the washing of plant particularly trucks delivering concrete anywhere but in designated wash bays equipped with runoff containment

3.8.5 Other Hazardous Substances

1. All potentially hazardous raw and waste materials are to be handled by the Contractor's trained staff and stored on site in accordance with manufacturer's instructions and legal requirements.
2. All hazardous waste must be disposed of in accordance with national, regional and local legislation.
3. Appropriate training for the handling and use of such materials is to be provided by the Contractor as necessary. This includes providing for any spills and pollution threats that may occur.
4. Products shall be clearly labelled and symbolic safety/ hazard warning signs shall be provided.
5. If potentially hazardous substances are to be stored on site, the Contractor shall provide a Method Statement detailing the substances/materials to be used together with the procedures for the storage, handling and disposal of the materials in a manner which will reduce the risk of pollution that may occur from day to day storage, handling, use and/or from accidental release of any hazardous substances used.
6. Hazardous chemical substances used during construction shall be stored in secondary containers.
7. The relevant Material Safety Data Sheets (MSDS) shall be available on site. Procedures detailed in the MSDS shall be followed in the event of an emergency situation.
8. Where hazardous substances is removed from site for disposal, proof of disposal for auditing purposes shall be kept in the form of disposal certificates.

3.8.6 Emergency Procedures

1. The Contractor shall ensure that his employees and subcontractors on site are aware of the procedure for dealing with accidental spills and leaks.
2. All leaks of hydrocarbons or chemicals shall be repaired immediately.
3. Stormwater runoff must not be contaminated by leaking oil or chemicals.
4. The Contractor shall also ensure that the necessary materials and equipment for dealing with the spills and leaks are available on site at all times.

5. The site shall have a supply of absorbent material readily available to absorb any accidental hydrocarbon spills. The quantity of such material shall be able to absorb/ deal with a minimum of 200 litres of spill.
6. The contractor shall contain the spill using sand berms, sandbags, sawdust or absorbent materials.
7. The area shall be cordoned off and secured.
8. Contaminated material shall not be disposed of into stormwater or sewer systems
9. The Contractor shall notify the ECO, PM and relevant authorities of any spills that occur.
10. The treatment and remediation shall require method statements.
11. The Contractor shall assemble and clearly list the relevant emergency telephone contact numbers for staff and brief staff on the required procedures. These contact details shall be listed in Afrikaans, Xhosa and English in the site office, construction camp and any other suitable areas.
12. The treatment and remediation of areas affected by emergencies shall be undertaken to the satisfaction of the PM and ECO at the cost of the Contractor where his staff have been proven to be responsible for the emergency.

3.9 Storm Water Management and Erosion

1. The Contractor shall take all reasonable measures to control storm water and the erosive effects thereof and shall provide a Method Statement for approval by the PM and ECO.
2. During construction, the Contractor shall protect areas susceptible to erosion by installing necessary temporary or permanent drainage works as soon as possible.
3. Areas affected by construction related activities and/or susceptible to erosion must be monitored regularly for evidence of erosion.
4. On any areas where the risk of erosion is evident, special measures may be necessary to stabilise the areas and prevent erosion. These may include, but not be restricted to:
 - Confining construction activities.
 - Using cut-off berms.
 - Using mechanical cover or packing structures such as geofabric to stabilise steep slopes or hessian, gabions and mattress and retaining walls.
 - Straw stabilising – must not contain weed seeds.
 - Brush cut packing – only brush from indigenous species shall be used.
 - Constructing anti-erosion berms.
5. The erosion prevention measures must be implemented to the satisfaction of the PM and ECO.

6. Where erosion does occur on any completed work/working areas, the Contractor shall reinstate such areas and areas damaged by the erosion at his own cost and to the satisfaction of the PM and ECO.
7. Traffic and movement over stabilised areas shall be restricted and controlled. Any damage to the stabilised areas shall be repaired and maintained to the satisfaction of the PM and ECO.
8. The Contractor shall be liable for any damage to downstream property caused by the diversion of overland storm water flows.
9. The Contractor shall clear stagnant stormwater.

3.10 Air Quality

3.10.1 Air Emissions

1. The Contractor will be required to ensure that all vehicles and plant used are maintained in good working order to help reduce air emissions.
2. The burning of waste in open fires will not be permitted.

3.10.2 Dust Control

1. The Contractor shall be responsible for the control of dust arising from his operations and activities.
2. Control measures shall include regular spraying of working/exposed areas with water at an application rate that will not result in soil erosion or runoff. The frequency of spraying will be agreed with the PM. A proper watering programme can realistically achieve up to 75% efficiency.
3. Soil stockpiles shall be wetted and/or sheltered from the wind, as required.
4. Drop heights of material when stockpiling shall be minimised
5. Dust sources such as access roads and stockpiles shall be sprayed with water regularly at an application rate that will not result in soil erosion or runoff.
6. The excavation, handling and transport of erodible materials shall be avoided under high wind conditions.
7. Vegetation shall only be removed when soil stripping is required.
8. Operate vehicles within speeds limits, where no speed limit has been specified the limit shall be 40 km/h.
9. Wash or sweep paved surfaces within the construction area twice a week.
10. Vehicles heavily contaminated with dust to be washed or brushed before leaving the site to prevent the spread of dust.
11. Vehicles transporting materials which may generate dust shall be covered with a tarpaulin.

3.11 Noise Control

1. Noisy activities such as demolition with a wrecking ball or demolition hammer to be restricted from 06:00 h to 20:00 h, Monday to Saturday and excluding public holidays.
2. No restriction is placed on other construction activities if the nearest inhabited residence is located more than 2 km from the site.
3. The contractor shall keep the noise level within acceptable limits. The Contractor shall comply with all relevant guidelines and regulations.
4. All vehicles and machinery shall be fitted with appropriate silencing technology that shall be properly maintained.
5. Reverse hooters of heavy earthmoving vehicles must be set at such a level that the beeping sound does not create a nuisance to other port users at their workplaces.
6. The use of all plant and machinery shall be appropriate to the task required in order to reduce noise levels and/or environmental damage.
7. Should the PM approve any noisy construction activities outside of normal working hours, affected residents and ECO shall be notified by the Contractor at least 5 days in advance of the event.
8. Any complaints received by the Contractor regarding noise will be responded to and recorded and communicated to the PM and ECO.

3.12 Community and Labour Relations

3.12.1 Community Relations

1. The Contractor shall erect and maintain information boards in the positions, quantities, designs and dimensions required by municipal specifications. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the ECO.
2. The Contractor must keep a Complaints Register on Site. The Register shall contain contact details of complainants, the nature of the complaint, details on the complaint itself, as well as the date and time that the complaint was made and resolved.
3. The Contractor and/or ECO shall be responsible for responding to queries or complaints.
4. Develop, implement and maintain an appropriate public and stakeholder engagement and awareness programme [for all project phases].
5. Ensure that adequate lines of communication are established between Transnet, the contractors, neighbouring landowners/operators and the public at large to deal with any public grievances
6. Develop, implement and maintain an effective public complaints registration and response system

7. Train and raise awareness of staff to respect public property, needs and right of way and to minimise disturbance and treat public members respectfully
8. Deal with transgressions by staff severely (fines and dismissals).
9. Make use of local labour, local service providers and local suppliers of material as much as reasonably possible.
10. Engage proactively with local authorities/ SAPS/ Community Policing Forums to ensure that job seekers do not settle illegally in the vicinity of the construction site. [When necessary].
11. Formulate a rapid response plan to deal with security matters.

3.12.2 Impact of Workers

1. Establish a labour policy to facilitate the employment and skills training of locals, where feasible and as far as possible.
2. Set clear targets and criteria for local employment in all tender documents etc.
3. Create opportunities for the employment of women, where feasible.
4. Use labour intensive methods of construction where possible.
5. All contractors to make it clear that no on the door recruitment will be undertaken, this will hopefully mitigate a possible influx of job seekers to the area.
6. Adhere to the Transnet Recruitment Policy.
7. Launching HIV/AIDS awareness programmes to Transnet employees, local schools and community centres in the area.
8. Introducing a “buddy system” where new employees are looked after by current employees to facilitate integration into communities.
9. Introducing life skills development and induction programmes relating to the social environment.
10. Local leaders may address the newcomers on values and rules of the community.

3.12.3 Liaison with Landowners

1. The Contractor must obtain a list of affected land owners, their contact details and portions of land owned from the Project Manager in advance.
2. All land owners must be informed 10 working days in advance of the desired dates at which construction is to commence on their property.
3. Details of the construction activities to be undertaken, staff undertaking these activities and any potential damage to property are to be discussed with the landowners before construction commences.
4. The demolishing of the Duferco Bridge must be discussed with a representative from Duferco Steel Processing and a Method Statement agreed upon.
5. The new Duferco Bridge must be in place and operational before the existing bridge is demolished

6. The Contractor shall not engage in any formal discussions with landowners without prior consent from the PM.

3.12.4 Prevention of Damage to Private Property

1. The Contractor, and his staff, must be extra vigilant, during the construction activities, to prevent damage from occurring to any private property including buildings, fences, cultivated fields and roads.
2. If damage to private property occurs the Contractor must notify Transnet and take photographic evidence of the event.
3. The Contractor shall be responsible, at his own cost, for the repair and reinstatement of any damages to existing structures resulting from the construction works.
4. Any complaints received from the public or landowners regarding any of the listings above shall be investigated and, if substantiated, may result in a fine, suspension or dismissal of the guilty party.

3.13 Security and Crime

1. Any poaching or theft of plants must be immediately reported to DEA.
2. Unsocial activities such as the consumption or illegal selling of alcohol or drugs on site are prohibited.
3. Any staff of the Contractor or Developer found to be engaged in prohibited activities shall have disciplinary and / or criminal action taken against them.
4. No person shall enter the site unless authorised to do so by the Contractor or ECO.
5. If any fencing interferes with the construction process, it may be temporarily moved or removed until construction is completed. The extent of such moving or removal of fences shall be negotiated and agreed with the landowner in advance and in writing.
6. Trespassing on properties adjoining the site is strictly forbidden.
7. The site must be secured in order to reduce the opportunity for criminal activity at the locality of the construction site.
8. Appropriate fencing, security gates, shelter, signage and/or security guards are to be provided at the construction site to prevent theft of plant and materials, as well as to ensure the security of site staff.
9. Gates must be closed after use where necessary during the construction period.
10. The entrance gates to the site camp shall be locked after hours to prevent unauthorised access to the site camp.

3.14 Health and Safety

3.14.1 General Safety at the Construction Site

1. Comply with all regulations of the Occupational Health and Safety Act (85 of 1993).
2. Safety precautions must be taken to ensure that residents of communities residing in the area do not come to harm.
3. All potential construction-related danger areas must be clearly demarcated with hazard tape and/or be fenced as appropriate.
4. The construction site shall be off limits to the general public at all times during the construction period and during site clean-up.
5. Emergency numbers for local police, fire department, Transnet and the Local Municipality must be placed in a prominent clearly visible area on site.
6. Fire fighting equipment must be placed in prominent positions across the site where it is easily accessible. This includes fire extinguishers, a fire blanket as well as a water tank.
7. A speed limit of 40 km/h must be adhered to by all vehicles and plant.

3.14.2 Personal Protective Equipment

1. PPE must be made available to all construction staff and the wearing and use of PPE shall be compulsory.
2. Hard hats and safety shoes must be worn at all times and other PPE worn where necessary i.e. dust masks, ear plugs, hard hat, safety boots and overalls etc.
3. No person is to enter the site without the necessary PPE.

3.14.3 Staff Safety Considerations

1. All safety measures, work procedures and first aid must be implemented on site.
2. A health and safety plan in terms of the Occupational Health and Safety Act (85 of 1993) must be developed by the Contractor to govern staff safety while on site.
3. Contractors must ensure that all equipment is maintained in safe operating condition.
4. A record of health and safety incidents must be kept on site.
5. Any health and safety incidents on site must be reported to the Project Manager immediately.
6. First aid facilities must be available on site at all times.
7. Material stockpiles must be stable and well secured to avoid collapse and possible injury to site workers.

3.14.4 Cooking Facilities

1. The Contractor shall designate an all-weather cooking and eating area, subject to the approval of the PM.

2. Any cooking on site shall be pre-approved by the ECO and only done on well-maintained gas or electric cookers. These shall be located away from flammable vegetation or construction materials.
3. No open fires shall be allowed on site.
4. The cooking and eating areas must be kept tidy and clean at all times to prevent the luring of vermin, domesticated or wild animals.
5. Sufficient bins with vermin proof lids for waste disposal, as described in the Environmental Specification, shall be present within a 5 m radius of the cooking/eating area at all times.

3.14.5 Fire Prevention and Control

1. The Contractor shall take all reasonable and precautionary steps to ensure that fires are not started as a consequence of his activities on site.
2. The Contractor shall ensure that there is basic fire-fighting equipment available on site. Fire-fighting equipment must be in working order and serviced to date.
3. The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed. The Contractor shall forward the name of the Fire Officer to the ECO for his approval within 7 days of being on site.
4. Flammable materials shall be stored under conditions that will limit the potential for ignition and the spread of fires.
5. Smoking shall not be permitted in those areas where there is a fire hazard, e.g. fuel storage areas and areas susceptible to the rapid spread of fires.
6. Smoking should be discouraged for all areas on site but if required should only be allowed in designated areas with fire extinguishers.
7. The Contractor shall hold fire prevention talks with staff to create an awareness of the risks of fire.

3.15 Monitoring

3.15.1 Obligations of the Parties

1. The Contractor, or suitably qualified and experienced staff member acting on his behalf, shall inspect the site on a daily basis to ensure that the environmental specifications of the EMPr are adhered to.
2. The Contractor shall provide the PM with a monthly verbal report, at a minimum, detailing compliance with the EMPr as well as environmental performance.
3. The Contractor shall maintain a record of incidents (spills, impacts, complaints, legal transgressions, etc.) as well as corrective and preventive actions taken, for submission to the PM at the scheduled project meetings.

3.15.2 Audit Schedule

1. The audit programme for the ECO shall consist of the following at a minimum:
 - First audit no later than 1 month after construction commences.
 - Thereafter audits at monthly intervals at a minimum.
 - An audit one week prior to practical completion of the project.
 - A post construction audit within 1 week after the contractor has moved off site.

3.15.3 Monitoring of bulk earth works

1. The PM shall appoint a qualified and experienced heritage practitioner to conduct palaeontological monitoring of bulk earthworks during construction. The inspections shall take place as bulk excavations are being made and shall occur prior to the casting of foundations, piling, or erection of superstructures.
2. A report shall be prepared for Heritage Western Cape detailing the fossils that may have been unearthed.
3. Should any fossils be discovered during the bulk earth works, excavations shall be stopped and the fossils shall be left in place until a directive is received from Heritage Western Cape and/or from SAHRA how to proceed.

3.15.4 Compliance with the EMPr

The Contractor and/or his agents are deemed not to have complied with the EMPr and remedial action if:

4. Within the boundaries of the site or extensions there is evidence of contravention of the EMPr clauses.
 1. Environmental damage ensues due to negligence.
 2. The Contractor fails to comply with corrective or other instructions issued by the PM, within a time period specified by the PM.

3.15.5 Tolerances

1. Environmental management is concerned not only with the final results of the Contractor's operations to carry out the Works, but also with the control of how those operations are carried out.
2. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operation required to complete the Works.
3. It is thus required that the Contractor shall comply with the environmental requirements on an ongoing basis and any failure on his part to do so will entitle the PM to certify the imposition of a penalty subject to the details set out.

3.15.6 Penalties

1. Penalties will be issued for the transgressions and non-compliances where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications. The Contractor shall be liable to pay a penalty over and above any other contractual consequence.
2. Penalties may be issued per incident at the discretion of the PM. The exact value of the penalty imposed shall be at the discretion of the PM and enforcement shall be at the discretion of the Developer. The contractor will also be responsible for remediation costs.
3. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the EMP. The PM will inform the Contractor of the contravention and the amount of the penalty, and will deduct the amount from monies due under the Contract.
4. The PM shall be the judge as to what constitutes a transgression in terms of this clause subject to the provisions of the General Conditions of Contract. In the event that transgressions continue, the Contractor's attention is drawn to the provisions of the General Conditions of Contract, under which the PM may cancel the Contract.
5. For each subsequent similar offence, the penalty may, at the discretion of the PM be doubled in value to a maximum value to be determined by the PM.
6. Payment of any penalty in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

Table 3: Proposed penalties for environmental incidents and non-conformances

Typical Incidents incurring penalties	Value
Failure to stockpile topsoil correctly inside demarcated areas	R 500.00
Failure to stockpile materials in designated areas	R 500.00
Insufficient education of staff regarding environmental matters and site housekeeping practices	R 500.00
Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refuelling.	R 500.00
Failure to provide drip trays and/or empty them frequently	R 500.00
Not making use of the site ablution facilities.	R 500.00
Dust or excess noise on or emanating from the site.	R 500.00
Any person, vehicle, item of plant, or anything related to the Contractor's operations causing a public nuisance	R 500.00
Improper use of plant or equipment	R 500.00
Construction vehicles not adhering to speed limits	R 500.00
Failure to demarcate working servitudes and/or maintain demarcation tape.	R 1,000.00
Untidiness and litter at camp	R 1000.00
Failure to provide adequate sanitation, waste disposal facilities or services.	R 1,000.00
Inappropriate mixing of cement/concrete and poor management of slurry	R 1,000.00
Failure to reinstate disturbed areas within the specified timeframe.	R 1,000.00
Failure to provide equipment for emergency situations	R 1,000.00
Failure to maintain basic safety measures on site	R 1,000.00
Failure to obey site protection measures specified by the PM.	R 1,000.00
Inappropriate use of bins and poor waste management on site	R 1,000.00
Inappropriate offsite disposal of waste from site	R 1,000.00
Failure to maintain a register of incidents on site	R 1,000.00
Any contravention with Method Statement	R 1,000.00
Any contravention of the environmental and health and safety specification.	R 1,000.00
Failure to submit Method Statements timely	R 2,000.00
Failure to secure construction site from public access.	R 2,000.00

Typical Incidents incurring penalties	Value
Hunting or removing any organism from nature reserve or marine reserve	R 2000.00
Pollution of natural water bodies – including increased suspended solid loads.	R 5,000.00
Causing fire through negligence.	R 5,000.00
Failure to remove all temporary features and leftovers from the construction site and works areas upon completion of the works.	R 10,000.00

3.16 Construction Site Decommissioning

3.16.1 Removal of Site Camp

1. All structures, vehicles, plant and material comprising the construction camp are to be removed from site.
2. The construction camp footprint area is to be checked for spills of contaminant substances, and these shall be cleaned up and disposed of appropriately.
3. All hardened surfaces within the construction camp footprint area shall be ripped, the area covered with top soil to re-vegetate.
4. All residual stockpiles must be removed or spread on site as directed by the ECO.

The Contractor must repair any damage that the construction works has caused to neighbouring properties, specifically, but not limited to, damage caused by poor storm water management.

3.16.2 Temporary Services

1. The Contractor must arrange the cancellation of all temporary services.
2. All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.

3.17 Completion of Contract

1. Prior to completion, the Contractor is to timely notify the PM of proposed 'Practical Completion' meetings and 'snagging lists' to provide an opportunity to identify work outstanding or incomplete.
2. The PM is to approve 'Practical Completion' and must timely inform the ECO of Contract Completion so that a final audit can be arranged.
3. A copy of the final audit completed by the ECO must be sent to the DEA for review and comment.

4 ENVIRONMENTAL SPECIFICATIONS DURING THE OPERATION

4.1 Noise Management

1. The tippler shall be serviced regularly, particularly with regards to lubrication.
2. The positioning equipment shall be well maintained to minimise shunting noise.
3. The tipplers are designated noise zones where hearing protection must be worn.

4.2 Dust Management

The comprehensive dust management plan presented in Appendix J of the Basic Assessment Report that was approved by Transnet for implementation shall form the basis of dust management action during the operation period.

1. The maintenance of the tippler dust extractor equipment is the responsibility of Transnet SOC Ltd.
2. If the dust extractor is faulty or out of operation the tippler must not be operated.
3. Dust emissions from the tippler shall be monitored regularly to ensure the dust extractors are working effectively. The extent and frequency of dust monitoring shall be in accordance with the requirements of the Atmospheric Air Emissions Licence.
4. Adherence to a routine maintenance programme for the filtering system and dust extractor shall be compulsory.
5. The tippler shall only be operated under a valid Atmospheric Emissions License. All conditions of the license must be adhered to.
6. All waste material, including iron ore dust, generated at the tippler must be removed according to the waste management plan implemented by the Terminal Operator.
7. Vehicles transporting waste iron ore dust from site shall be covered with a tarpaulin.
8. The maintenance of the iron ore conveyor belt system linking the tippler with the main iron or stock pile is the responsibility of Transnet SOC Ltd.
9. If the dust cover of the iron ore conveyor belt system is faulty, the conveyor belt system must not be operated until the fault has been remedied.
10. Dust emissions from conveyor belts shall be mitigated, especially at transfer points, to the maximum practical extent.
11. Dust suppression through spraying shall be implemented at transfer points
12. The iron ore moisture content shall be maintained at 1.2% in order to suppress dust generation. Use of a chemical suppressant as a moisture control to maintain a stable moisture level over a long period of time is recommended.
13. All dust spillages from the conveyor belt system shall be swept up regularly.
14. All iron ore transfer points and conveyor belts shall remain covered to reduce dust generation where this is practical.

15. All new roads servicing the new Tippler 3 shall be paved or tarred.

4.2.1 Dust Monitoring

1. A particulate air sampling campaign at the Tippler 3 location shall be initiated to establish baseline conditions more accurately and to determine the incremental increase in PM_{2.5} and PM₁₀ concentrations with the addition of Tippler 3.
2. A fallout monitoring network shall be implemented in compliance with the National Environmental Management Air Quality Act (39 of 2004). The Act requires the monitoring of dustfall at the facility be implemented, with three months running average fallout rates not to exceed the limit value for adjacent land use, in eight principal wind directions.

4.3 Biodiversity Management

1. No further loss of Saldanha Flats Strandveld should be permitted by future port expansion activities unless authorised by the competent authority (e.g. DEA, DEA&DP) through an EIA process.
2. The use of the presently available space inside the rail reserve shall be thoroughly optimised. The open spaces either side of the rail reserve corridor shall be out of bounds for routine operations (Figure 3).
3. The area disturbed by the construction must be monitored for the regrowth of alien plant species. Monitoring shall occur at least in 6-months intervals and any regrown alien plants shall be removed promptly.

Revegetation and habitat rehabilitation plan

It is a requirement by the Department of Environmental Affairs for the acceptance of the Application for Authorisation that a revegetation and habitat rehabilitation plan must be drawn up for the project.

After the end of construction the site will be rehabilitated in its entirety as per plan with the objective of restoring natural processes as much as this is possible. All equipment and temporarily erected structures, such as the site office, will be removed from the site. The site will be cleared of all litter and scrap, which may have accumulated.

Topsoil will be returned to the site, and its vegetation cover will be monitored according to the rehabilitation plan. Temporary access roads will be scarified to facilitate revegetation.

1. The Contractor shall rehabilitate all disturbed areas to the satisfaction of the PM and the ECO.
2. The Contractor shall appoint a suitably experienced landscaping contractor or horticulturist to compile a vegetation rehabilitation plan that will stipulate seeding methods, planting and vegetation establishment in all construction areas and procedures for watering planted areas.
3. The Contractor shall submit the vegetation rehabilitation plan to the PM and ECO for approval.
4. Rehabilitation shall be required for all specified areas disturbed by the works and site camp.
5. Rehabilitation shall ensure that all specified areas disturbed by the works are returned to a similar or better state than before the construction works commenced.
6. The Contractor shall implement a programme of progressive rehabilitation, i.e. rehabilitation and/or re-vegetation must commence once works are complete in particular areas.
7. Any contaminated soil shall be excavated and disposed of at a suitable permitted landfill site
8. Topsoiling will be done after shaping to blend in with the environment and scarification of top 50 mm if required. Topsoil will be placed in a layer of approximately 100 mm from the topsoil stockpiles established prior to construction and supplemented by topsoil from commercial sources if insufficient quantities are available from these stockpiles.
9. Exposed areas with a slope of less than 1 horizontal: 1.5 vertical shall be rehabilitated by seeding with a grass mix that blends in with the surrounding vegetation. The selected grass mix shall consist of a mix of quick covering grasses (pioneer species), mat-forming grasses and tufted grasses to ensure prompt and adequate coverage of the exposed soil whilst also achieving long-term stability.

10. Where rehabilitation of an area is not successful, the Contractor will rehabilitate these areas at no additional cost to the Developer.
11. The revegetation programme must take cognisance of the climatic and seasonal conditions conducive to plant establishment and growth.
12. The rehabilitated areas will be weeded by the nominated rehabilitation contractor until natural vegetation is established.

5.1.1 Shrubs and Trees

1. If shrubs or trees are to be planted they shall consist of indigenous species obtained from a reputable nursery.
2. The horticulturalist shall ensure that each plant is handled and packed in the approved manner for that species or variety, and that all necessary precautions are taken to ensure that the plants arrive on site in a proper condition for successful growth.
3. Trucks used for transporting plants shall be equipped with covers to protect the plants from windburn.
4. No plants or plants with exposed roots shall be subjected to prolonged exposure to drying winds and sun, or subjected to water logging or force-feeding at any time after purchase.
5. The horticulturalist shall ensure that the plants are in a good condition and free from plant diseases and pests. The horticulturalist shall immediately remove plants containing any diseases and/ or pests from the site.
6. All plants supplied by the horticulturalist shall be healthy, well formed, and well rooted. Roots shall not show any evidence of having been restricted or deformed at any time. The potting materials used shall be weed free.
7. There shall be sufficient topsoil around each plant to prevent desiccation of the root system. Where plants are stored on site prior to planting they shall be maintained to ensure that the root systems remain moist.

5.1.2 Grass

1. Grass shall have been grown specifically for sod purposes, mown regularly and cared for to provide an approved uniformity to the satisfaction of the horticulturist. It shall be harvested by special machines manufactured for this purpose to ensure an even depth of cut with sufficient root material and soil.
2. Grass sods shall be delivered in healthy conditions and be free from weeds and disease.
3. Sods shall be obtained from an approved nursery. Nursery sods shall have been maintained regularly to the required quality. Nursery grass sods shall have at least a 30 mm layer of topsoil.
4. Runners shall be of an approved quality and free from disease or weeds.
5. If sufficient growth has not been established after two months, the still barren areas must be hydroseeded with an indigenous grass mix.

6. Fertiliser, while not essential, will improve the success of the rehabilitation effort and speed up the process towards a sustainable condition. Slow-release organic fertilisers such as bone meal (source of phosphorus) at 30 kg ha⁻¹ could be used initially to increase the number of rooted seedlings. Inorganic fertiliser ASN (ammonium sulphate nitrate) at 30 kg ha⁻¹ could be used at the first sign of germination. Super phosphate at 200 kg ha⁻¹ could be applied after one year.

5.1.3 Mulch, Wood Chips and Compost

Depending on local and seasonal availability of material, mulch, wood chips and compost shall be used to enhance plant growth.

1. Mulch shall be harvested from areas that are to be denuded of vegetation during construction activities, provided that they are free of seed-bearing alien invasive plants.
2. No harvesting of vegetation outside the area to be disturbed by construction activities shall occur.
3. The horticulturalist shall take every effort to ensure the retention of as much seed as possible in mulches made from indigenous vegetation.
4. Brush-cut mulch shall be stored for as short a period as possible, and seed released from stockpiles shall be collected for use in the rehabilitation process.
5. Vegetation cleared from the site prior to construction activities that is suitable for mulching shall be stockpiled for later use. The horticulturalist shall ensure that no alien species are used to make indigenous vegetation brush cut mulch without the approval of the Botanist.
6. If wood chips are used during revegetation and rehabilitation of the site, the chips shall be no longer than 50 mm in length or breadth and shall be free of alien seed. The horticulturist shall approve the source of chips.
7. Indigenous seed may be added to wood chip mulches.
8. The compost shall be well decayed, friable and free from weed seeds, dust or any other undesirable materials.

5.1.4 Biodegradable Netting and Matting

1. Biodegradable netting and matting shall be made from jute, sisal, coir or similar material.
2. The netting/matting shall be sufficiently robust to last for a period of not less than 5 years under normal service conditions.

5.1.5 Soil Stabilizers

1. Soil stabilisers shall consist of an organic or inorganic material to bind soil particles together and shall be a proven product able to suppress dust and form an encrustation without hindering the germination of grass and indigenous seeds.

5.1.6 Topsoil and Subsoil

1. All soil imported to act as bedding material shall be free of alien plant seeds, and their use shall be restricted to 500 mm below the soil surface.

5.1.7 Boulders and Rocks

1. Boulders or rocks used in rehabilitation shall come from comparable geomorphological units to those that they are being utilised to rehabilitate.