

TRANSNET



SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT

**Scoping and Environmental Impact Assessment
for the proposed Manganese Export Facility and
Associated Infrastructure in the Coega Industrial
Development Zone, Port of Ngqura and Tankatara area**

DRAFT EIA REPORT

MARCH 2013

Prepared for Transnet SOC Ltd.

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Public Process Consultants
Environmental Impact Assessment and
Public Participation Management

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Report details

Title:	Scoping and Environmental Impact Assessment for the proposed Manganese Export Facility and Associated Infrastructure in the Coega Industrial Development Zone, Port of Ngqura and Tankatara area: DRAFT EIA REPORT
Purpose of this report:	<p>This Draft EIA Report forms part of a series of reports and information sources that are being provided during the Environmental Impact Assessment (EIA) process for the proposed Manganese Ore Export Terminal and associated Infrastructure at the Port of Ngqura and surrounding areas. In accordance with the EIA Regulations the purpose of the Final Scoping Report is to:</p> <ul style="list-style-type: none">• Provide a description of the proposed project, including a sufficient level of detail to enable stakeholders to raise issues and concerns with potential negative and positive impacts;• Describe the local planning context and environment within which the project is proposed, to assist further in identifying issues and concerns with potential negative and positive impacts;• Provide an overview of the process being followed in the Scoping phase, in particular the public participation process, as well as to present the final Plan of Study for EIA that would be followed in the subsequent EIA phase and• Present the issues and concerns identified to date from the stakeholder engagement process, together with an explanation of how these issues will be addressed through the EIA process. <p>All stakeholders are invited to comment on the Draft EIA Report and EMP, with comments to be submitted to Public Process Consultants by 27 May 2012 at the following contact details:</p> <p style="text-align: center;">Sandy Wren Public Process Consultants PO Box 27688, Greenacres, 6057 Phone 041 374 8426 / Fax 041 373 2002 Cell 082 4909 828 Email sandy@publicprocess.co.za</p>
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Statement of independence

CSIR has been commissioned by Transnet SOC Ltd an environmental impact assessment in terms of the 2010 EIA Regulations R.543, R.544, R.545 and R.546 under the National Environmental Management Act, 1998 (Act 107 of 1998, with amendments). CSIR complies with the general requirements set out below in the Regulations:

General requirements for EAPs or a person compiling a specialist report or undertaking a specialised process

An EAP appointed in terms of regulation 16(1) must -

- (a) be independent;
- (b) have expertise in conducting environmental impact assessments, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity;
- (c) perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- (d) comply with the Act, these Regulations and all other applicable legislation;
- (e) take into account, to the extent possible, the matters referred to in regulation 8 when preparing the application and any report relating to the application; and
- (f) disclose to the applicant and the competent authority all material information in the possession of the EAP that reasonably has or may have the potential of influencing-
 - (i) any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or
 - (ii) the objectivity of any report, plan or document to be prepared by the EAP in terms of these Regulations for submission to the competent authority.

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March 2013



Summary

Introduction

Transnet SOC Ltd (hereinafter referred to as “Transnet”) is a state owned company in South Africa and is mandated to assist in facilitating economic growth and ensuring security of supply through providing appropriate port, rail and pipeline infrastructure in a cost effective and efficient manner, within acceptable benchmarks. In line with this, Transnet holds a primary objective to construct and operate a highly efficient, Manganese Ore Export Facility in the Coega Industrial Development Zone (IDZ) and on the adjacent property (Remainder of Farm Tankatara Trust 643), located approximately 15 km north-east of Port Elizabeth within the Nelson Mandela Bay Municipality (NMBM) in the Eastern Cape Province. The proposed Manganese Ore Export Facility will be designed to handle a throughput capacity of 16 million tons per annum (Mtpa) of manganese ore, and will receive manganese ore from the existing rail link between Hotazel (in the Northern Cape Province) and Coega, via Postmasburg.

Need for the Project

In terms of tonnage, Manganese is the fourth most used metal after iron, aluminium and copper (International Manganese Institute, 2012). Manganese is predominantly utilized in the production of iron and steel (Geoscience Australia, 2012; United States Geological Survey (USGS), 2012). South Africa holds more than 80% of known world resources for Ore with Manganese content greater than 34%. In South Africa, the Kalahari Manganese Basin contains a high concentration of Manganese mines producing predominantly higher grade ores, whilst smaller mining operations are dispersed around the Lohatla region, which contains outcrops of lower grade Manganese reserves. Based on the quality of reserves, the South African Manganese Industry is therefore considered to be uniquely positioned in order to capitalize on the projected growth in the Manganese sector (TCP, pers. comm., 2012). According to Transnet, the South African Manganese Industry is anticipated to experience a strong growth in export demand in the future. When considering global supply characteristics and long term price forecasts, a stable demand for approximately 16 Mtpa of Manganese Ore does exist.

In line with the global uses, needs and demands for Manganese, the proposed Manganese Ore Export Facility at the Port of Ngqura and Coega IDZ has been conceptualized based on the need to secure and enhance the Manganese ore export potential and concurrent supply to the international market. The proposed project is required to service the Manganese Mining Sector in South Africa in terms of exporting and future development, as well as to provide new mining companies with access to an efficient exporting facility. In line with this, the overarching objective of the proposed project is to increase the export volumes of Manganese Ore currently exported via the existing facility at the Port Elizabeth Harbour, which is capable of holding a maximum capacity of approximately 5.5 Mtpa. After making a commitment in Parliament in 2009, Transnet is planning to decommission the existing



Manganese Facility at the Port Elizabeth Harbour once the proposed new Manganese Ore Facility at the Port of Ngqura is ready to operate. This impending decommissioning also forms motivation towards the construction of the new Manganese Export Facility. Transnet initiated the feasibility studies and the approvals process in early 2011/2012. The commencement of construction is planned for September 2014 in order for the exporting terminal to become operational in late 2017.

Project Description

The proposed project will consist of (a) a Manganese ore stockyard and handling facility in Zones 8 and 9 of the Coega IDZ, which includes the Port of Ngqura, (b) a rail compilation yard in Zones 11 and 13 of the Coega IDZ and on the adjacent Tankatara property located north-east of the Coega IDZ (i.e. Remainder Farm Tankatara Trust 643), as well as (c) the doubling of the railway line between the proposed compilation yard and the existing rail marshalling yard (Zones 13).

The manganese ore will be transported from Hotazel in the Northern Cape to the proposed Coega compilation yard via the existing railway line currently servicing the existing Manganese Ore Handling Facility located in the Port of Port Elizabeth. The trains are then organized into 100 wagon sets and sent to the proposed terminal where the manganese ore will be offloaded at the proposed stockyard, reclaimed when needed and finally transported via a proposed conveyor system to the existing Berths C100 and C101 situated in the Port of Ngqura, for exporting via ship.

The key components of the project are:

- **Manganese Ore Export Terminal:** The construction and operation of a bulk terminal for handling Manganese Ore, including a stockyard, conveyor systems linking the stockyard to the tippler and to the ship loader, as well as the associated infrastructure such as a tippler, stackers, reclaimers, ship loaders, surge bins, office buildings, bulk services infrastructure and additional rail infrastructure from the existing marshalling yard linking into the tippler.

The stockyard will cover an area of approximately 40 hectares in Zone 9 of the Coega IDZ and will hold a volume of approximately 1.8 million tons of Manganese Ore. A berm will be provided on the western side of the stockyard, to further reduce the prevailing wind generating dust in the stockyard area.

The tippler (dual rotary car) will feed Manganese Ore onto the conveyors leading to the stockyard. The stockyard will include three stackers mounted on rails to carry out the stacking and two luffing and slewing bucket wheel reclaimers, which will feed the overland conveyor system. A double overland conveyor system will link the stockyard to the ship loaders on the existing Berths C100 and C101 via a surge bin located at the quay. The conveyor system will be covered to reduce windblown dust being emitted from the conveyor. It is proposed that the ship loaders will be designed to load Panamax vessels at a rate of 3 000 tons/hour.

The total water requirement for the terminal is estimated to be 340m³ per day when surfactants are added to the water used for dust suppression. It is proposed to collect runoff water in the proposed stormwater control dam (located at the stockyard) and reuse this water for stockpile dust suppression at the stockyards. The main electrical supply for the stockpile and the quay areas will come from the Coega main substation by cable at 22kV. There will be three main 22kV substations



REPORT DETAILS AND SUMMARY

on the manganese ore terminal for the distribution of electricity on the terminal. The terminal will operate on a 24 hour (3 x 8-hour shifts), 365 days per year basis.

- **Rail Compilation Yard and Doubling of Railway Line:** The rail compilation yard will comprise five yard lines to allow for the consolidation and de-consolidation of four 200 wagon trains per day. A triangle will also be included to allow for the locomotives to turn around. The complete rail yard will include back roads to access the locomotive and wagon maintenance workshops, a diesel locomotive refuelling station (2 self-contained aboveground storage tanks with a total capacity of approximately 150 m³), a locomotive sanding facility and wash bay. Electrical locomotives will be used to haul the 200 wagon trains on the mainline from Hotazel to the compilation yard. From the compilation yard, diesel locomotives will haul the 100 wagon sets to and from the tippler. A security building, two shunter cabins, a Transnet Freight Rail operations building, and three signalling relay rooms are planned to be constructed at the rail compilation yard.

The proposed railway is planned to be fenced and will be provided with lattice bridge structures over watercourses in the Coega Open Space System (OSS). This will also allow for a continuity of the OSS corridor and for small animals to cross the railway line.

The railway line between the proposed Coega compilation and the existing marshalling yard in Zone 9 of the Coega IDZ is planned to be doubled. This will serve as a dedicated railway line to allow for the transportation of the rakes between the proposed Coega compilation yard and the tippler. This new dedicated line is required given the use of the existing rail line for freight and other purposes. This second railway line will be constructed within the existing reserve; however additional rail reserve will be required to ensure that the reserve width is sufficient.

Power will be supplied from the municipal network to the rail compilation yard. The compilation yard requires 500 kVa and this power requirement will be provided through overhead transmission lines (approximately 25 kV) that would need to be constructed by the NMBM. It is anticipated that the compilation yard will operate 349 days per annum on a 24 hour a day basis.

- **Ancillary Infrastructure and Services:** A stormwater control dam will be constructed at the stockyard with a storage capacity of approximately 50 Ml (megalitres) and will be constructed to accommodate a 1:100 year flood. The main function of the stormwater control dam will be to collect stormwater runoff from the stockyard (a PVC lining will be installed underneath the stockyard to collect the runoff water) and the tippler sump as well as treated service wastewater (i.e. oil/water separator overflow), which will be re-used in the dust suppression system at the stockyard. In addition, an attenuation pond will be constructed at the rail compilation yard to collect all stormwater runoff from this area and will have a storage capacity of approximately 18 Ml.

Two attenuation ponds (i.e. simulated wetlands or Sustainable Urban Drainage Systems) will be constructed at the rail compilation yard to collect all stormwater runoff from this area and will have a storage capacity of approximately 7514 kl and 200 kl respectively.

The proposed project will also include the construction of access roads at the stockyard area, including a road bridge over the Coega River and the proposed compilation yard as well as necessary crossings and rail bridges. In addition, a service road will be constructed along the proposed rail loop and rail link at the compilation yard.



Suitable erosion control measures will be included at all culverts to ensure that sediment is not washed away, e.g. reno mattress and suitable wing walls.

Approach to the EIA

In terms of the Environmental Impact Assessment Regulations (EIA) promulgated under Chapter 5 of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) published in GN R543, 544, 545 and 546 on 18 June 2010 and enforced on 2 August 2010, a full Scoping and EIA process is required for the proposed project. The need for the full Scoping and EIA is triggered by, amongst others, the inclusion of the following activity listed in GN R545 (Listing Notice 2):

1. "Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more."

An application to conduct the EIA process was submitted to the Provincial DEA on 26 June 2012. The application was accepted and the project proceeded into the Scoping phase. The Final Scoping Report and Plan of Study for EIA were submitted to DEA on 3rd September 2012. The notice to proceed to the EIA phase was issued by DEA on 15th October 2012.

The results of the specialist studies and other relevant project information are summarized and integrated into the EIA Report. This Draft EIA Report also includes a draft Environmental Management Programme (EMPr), which has been prepared in compliance with the relevant regulations and which is based on the recommendations made by specialists for design, construction and operation of the project. This Draft EIA Report is available in the main library in Port Elizabeth (Govan Mbeki Avenue), in the Motherwell Library, and on the project website at www.publicprocess.co.za. Written notifications, hard copies and/or CDs containing the document were sent to key stakeholders, including authorities. All I&APs on the project database have been notified of the release of the Draft EIA Report and EMP.

The Draft EIA Report and Environmental Management Plan (EMP) are released to stakeholders for a 40-day review period. All comments received will be included in the Final EIA Report, which will be submitted to DEDEAT for decision-making.

Requirement for Atmospheric Emissions Licence, Waste Licence and Water Use Licence

The proposed project may result in the release of atmospheric emissions (mainly dust) through its operations, thus requiring application for an Atmospheric Emission Licence (AEL) to be completed and submitted to the relevant AEL Authority, which in this case is the NMBM (Appendix B). The requirement of an AEL Application arises from conducting a listed activity in terms of Section 21 of the National Environment Management: Air Quality Act (NEM: AQUA) (Act 39 of 2004).



The proposed project also triggers certain listed waste management activities that have, or are likely to have, a detrimental effect on the environment in terms of the National Environmental Management: Waste Act (NEM: WA) (Act 59 of 2008). Based on this, an application for a Waste licence (Category A) has been lodged with the National Department of Environmental Affairs and was acknowledged on 17 May 2012 (Reference number: 12/9/11/L920/1- Refer to Appendix B).

A Water Use License (WUL) will be required in terms of Section 21 of the Water Act (Act 36 of 1998) as a result of the proximity to or the crossing of watercourses in the area. The WUL application will be submitted to the Department of Water Affairs who is the competent authority after submission of the draft EIA report to account for feedback from DWA.

Consideration of Alternatives

Apart from the no-go alternative, other types of alternatives were considered in the pre-feasibility planning for this project and as part of this EIA process. The analysis of the various alternatives is presented in Chapters 2 and 4 of this EIA Report, with a summary provided below:

Land use alternatives

Land use alternatives were not identified for the proposed project, as it falls within the Coega IDZ, in an area that has been designated for industry (special land use) since the conception of the IDZ and Port of Ngqura in the mid-1990s.

Location and routing alternatives

During pre-feasibilities studies in 2008, several possible locations for the **stockyard** were considered and assessed in terms of planning, engineering, commercial, environmental and sociological criteria. The environmental screening study (CSIR, 2008) concluded that the proposed location of the stockyard (north of the N2) is the most favourable in terms of environmental and social impacts. Consequently, no alternative locations for the stockyard were included in the EIA.

For the overland **conveyor routing**, two alternative routings have been investigated for the overland conveyor system as part of this EIA.

- The **preferred** overland conveyor route was developed with the future port expansion in mind and will not sterilise any future port expansions or quayside activities in this area due to it being placed 400m behind the future proposed quay wall.
- The **alternative** route makes use of the culvert that was originally constructed for the planned conveyor route from Berths C100 and C101 to the proposed aluminium smelter.

Other alternatives for the overland conveyor route have been considered as part of the site selection process but were excluded for various reasons. Please refer to Section 2.2 in Chapter 2 for further details.

Three alternatives for the design and location of the **rail compilation yard** were originally investigated by Transnet and comprised the following conceptual options: (i) linear layout rail line; (ii) loop line on the Tankatara farm area; and (iii) loop line in the IDZ. Option (i) and (ii) were excluded by Transnet and only option (iii) was being taken as a reasonable and feasible alternative. Following input from the CSIR team and its ecological specialist, two compilation layout alternatives



for the proposed compilation yard within the IDZ were identified and have been assessed as part of this EIA. These are referred to as Alternative 1 (preferred layout) and Alternative 2.

Technology alternatives as part of the development

No major technology alternatives are applicable for the proposed project. This is due to the fact that the technology proposed for the construction and operation of the Manganese Ore Export Facility will be guided by industry standards and global best practice in the manganese ore storage and handling industry. This therefore limits the amount of variability in terms of the technology. The applicable technology alternatives for this project relate to the infrastructure being installed and constructed, such as the type of roofing system for the conveyor system, the type of ship loaders, the type of stackers and reclaimers, spill contingency, and stormwater management.

As part of the management actions in the EIA, various technical and engineering alternatives were investigated to avoid or minimise the negative impacts of the project. For example, in the air quality study, the use of water and surfactants as well as the construction of a berm are proposed for dust mitigation. And in the aquatic and botanical studies, the use of lattice bridge structures for sections of the railway link line are recommended as an alternative to solid berms for the railway foundation.

Impact Assessment and Management Actions

Air quality

The main emissions to air from operations at the proposed Manganese Ore Export Facility result from wind-entrained dust, materials handling and fuel combustion from diesel locomotives at the compilation yard. The stockyard is the main source of dust emissions, with the stockpiles the largest source followed by stacking and reclaiming activities. The use of water and chemical surfactants as dust management measures, in addition to installed dust control equipment as proposed by the proponent, shows a marked reduction in the estimated emission for dust.

The main impact associated with the proposed facility assessed in terms of air quality is the potential health risk (i.e. exposure to manganese ore dust) to receptors at the northern boundary of the Cerebos Coega evaporation area and is anticipated to be of **medium** significance under normal operation conditions.

Under upset conditions (i.e. dust suppression with water and chemical surfactants not taking place), there is a **medium to high** health risk due to potential exposure to Manganese ore dust at the Cerebos Coega evaporation area centre and north respectively and a **medium** health risk associated with the 24 h cumulative PM₁₀ concentrations at Cerebos Coega evaporation area (northern boundary). Exceedances of the 24-hour ambient standard (PM₁₀ and PM_{2.5} concentrations) are also predicted under upset conditions at the stockyard and the immediate surrounding environment. However, there is no anticipated adverse health effect as a result of these potential exceedances.

The key recommendations include:

- Ensure that the proposed design and technologies are implemented as proposed by the proponent (refer to Chapter 2 project description and Part B EMP);
- Implement dust management actions included within Transnet General Construction EMP and Standard Environmental Specifications;
- Implement traffic control measures on the stockyard and limit access;



- Loads on vehicles carrying dusty construction materials should be covered on public roads (whether empty or not). While travelling on-site, the trucks must use practical mitigation for dust management;
- Equip ship-loader with loading spouts and install automated water cannons at stockpiles;
- Ensure that Standard Operating Procedures (SOPs) for the respective activities consider the control of dust;
- Ensure that SOPs are developed and implemented for the management of spills and general site maintenance such as road sweeping which will decrease the amount of wind-blown dust generated on site;
- Train operators on the use of dust control requirement;
- In the case of water restrictions being imposed, the recommended management action is to suppress dust on the stockpiles using chemical suppressant.
- In a severe drought (no available water), cease operations at the facility when the wind speed exceeds a predetermined threshold at which dust is visibly entrained (Proponent to determine threshold during commissioning).

Overall, the significance of potential residual air quality impacts, under normal conditions (i.e. full mitigation), associated with the proposed development is **medium to very low**.

Terrestrial Ecology

The range of Sundays Valley Thicket, Grassridge Bontveld, Motherwell Karroid Thicket, Sundays Doringveld and saltmarsh (manmade) vegetation communities cover the proposed Manganese Ore Export Facility. These areas, although largely intact or semi-intact, have in some areas been transformed and degraded predominantly through agricultural cultivation and some alien plant infestation, with the Sundays Valley Thicket along the slopes adjacent to the Coega River relatively pristine. The IDZ Open Space Management Plan (OSMP) incorporates an ecological corridor along the banks of the Coega River (on the eastern side south of the N2 and on both sides north of the N2) that allows for some permanent connectivity between the coastal and inland areas.

The main impacts on terrestrial ecology have been assessed to be the direct loss of Sundays Valley Thicket and Motherwell Karroid Thicket; and the fragmentation of ecological/movement corridors and disruption of ecological processes as a result of artificial barriers to faunal movement associated with the proposed development, in particular, the proposed rail link which traverses the designated IDZ open space network as well as designated Nelson Mandela Bay Municipality Draft Bioregional Plan (2011). In addition, frequent trucks or vehicle activity will result in an increase in mortality of amphibians, especially during rainy season. The above residual impacts are predicted to be of **medium** significance during the construction and operation phases.

The key recommendations include:

- Design of railway line and access roads to allow for the migration of fauna, i.e. install lattice bridge crossing structures and culverts as proposed by Transnet;
- Minimise the impact of the service road where lattice bridges are constructed for the rail line;
- Fencing of the railway line and compilation yard (rail link and loop) using “stock-proof” fence with spacing or gaps at the bottom of the fence to allow animals to pass underneath, while keeping out cattle and sheep.
- External fencing of the facility - where required, install security palisade fencing around all facilities, except in the following areas:
 - No palisade fencing in areas directly adjacent to or within animal movement corridors, i.e. the IDZ Open Space corridor
 - Install a standard game fencing where the Compilation Yard borders the Sundays River Conservancy (Tankatara Farm).



- The final layout plan for the railway link/line (Review alignment for railway link, loop and doubling of railway line, fencing design, and design and locations of culverts and bridges) should be presented to the Coega ELC and submitted to DEA for sign-off before the start of construction;
- The final layout plan must take cognisance of the trade-offs and Biodiversity Offsets requirements presented in the regional planning/biodiversity offset guidelines;
- Minimise and delineate construction boundaries (to limit area to be cleared), and keep disturbances within construction boundaries - Demarcate areas of disturbance;
- Prepare a Flora and Fauna Relocation Plan and implement an extensive Search and Rescue (for flora and fauna) to relocate animals/protected flora before construction commences;
- Implement the Fire Management Plan and the long-term Alien Plant Management Plan;
- Ensure compliance with Transnet Environmental Specifications, Construction EMP and with the Coega IDZ Alien Vegetation Management plan or with the Port of Ngqura Alien Invasive Vegetation Management Plan if within the port of Ngqura; and
- Implement a rehabilitation plan (to be developed in line with CDC IDZ Re-vegetation guidelines), including topsoil management, re-establishment of a movement corridor for displaced fauna etc.

Overall, the significance of potential residual impacts on terrestrial ecology associated with the proposed development is **medium** to **very low**.

Integrated water management and waste management

A relatively small volume of water of approximately 300 m³ per day is required during construction and operation (assuming the use of surfactants for dust suppression, which reduces water usage by ~60%). The amount of service wastewater anticipated to be generated on-site (e.g. truck washing, floors cleaning, etc.) during operations is also estimated to be minimal and will go through an oil water separator prior to be sent to the stormwater control dam for re-use. Best practices have also been incorporated in the design of the stormwater management system, e.g. all contaminated stormwater is kept separate from “clean” stormwater and is recycled, lining of the stormwater control dam.

The availability of sufficient spare water capacity at the Nooitgedacht Water Treatment works and at planned water treatment facilities (i.e. upgrade of existing facilities and proposed Coega Wastewater Treatment Works) to meet the Manganese Ore Export Facility water requirements has been confirmed by CDC and the NMBM. Alternative water sources are being investigated and include treated wastewater from the Fishwater Flats Wastewater Treatment Works and process wastewater from other facilities within the Coega IDZ (e.g. distilled water from the Cerebos operations) should this become available.

The main impact related to waste management is the handling, storage and disposal of manganese ore mud accumulated at the bottom of the stormwater control dams. Given the absence of in-depth information regarding the manganese ore mud, this product will at this stage be assessed as if it is hazardous (precautionary principle). During commissioning of the facility, the mud will undergo a hazard classification rating to verify if it is hazardous or not. If acceptable, the mud could be returned to the stockyards and used as a sacrificial layer at the stockyard. The composition of the Manganese ore mud (quality) will also determine if it has any potentially beneficial use which would lead to a positive impact. If confirmed hazardous, it will need to be disposed of at an appropriate hazardous waste landfill site (e.g. Aloes landfill facility). The residual impacts associated with manganese ore mud management are therefore predicted to be, at this stage, of **medium** significance.

The key recommendations include:

- Design of an effective stormwater management system and incorporate design parameters as proposed by the proponent (oil/water separator, concrete floor under overland conveyor, secondary containments, recycling, inspections and maintenance etc.);



- Line stormwater control dams at the stockyard and the quay with an impermeable clay layer or geosynthetic material;
- Where possible, adopt water conservation techniques and best practice during construction and operation;
- Review the available service water supply sources after 2 years operation and identify the best option (e.g. potable water, return effluent, effluent from other industries within the IDZ etc.);
- Develop a Stormwater Management Plan, including erosion management;
- Develop and implement a Railway/Stockyard and Quay Operation Management Plan that includes procedures and protocols for day-to-day activities;
- Ensure safe storage of chemicals and fuel dispensing stations, e.g. secondary containment, impervious area, sloping floors, Material Safety Data Sheet;
- No batching plants, vehicle refuelling or vehicle maintenance should occur within 32m of a water course or 50m from wetlands;
- Spill kits to be available at strategic locations through-out the facility;
- Develop a Waste Management Plan and initiate a waste minimisation system;
- Classification of the Manganese ore mud after commissioning of the facility to identify appropriate disposal methodology and investigate potential beneficial uses for the manganese ore mud.

Overall, the significance of potential residual **negative** impacts relating to integrated water management and waste management associated with the proposed development is **medium to low**.

Aquatic ecology

The main impacts of the project on aquatic ecology are the potential loss of wetland(s) and fragmentation of aquatic habitat (construction phase); and the loss of aquatic ecosystem services such as surface flow attenuation and surface flow filtration (construction and operation phases).

The compilation yard Alternative 1 (preferred layout) would impact on one wetland which is already degraded and contains several modifications; while the Alternative 2 layout for the proposed compilation yard would result in the loss of two relatively intact wetlands.

The railway lines for the compilation yard and the doubling of the railway line to the stockyard, and adjacent service road, lead to habitat fragmentation where they cross water courses. These crossings will either be via new culverts, lattice bridges or the road bridge over the Coega River. Secondly, the crossing of watercourses could also lead to loss of ecosystem services, such as affected surface flow attenuation and surface flow filtration.

The key recommendations include:

- Avoid all remaining wetland areas and their delineated buffer areas of 50m. Include the buffer areas as no-go areas;
- Where possible, avoid the delineated riverine/water course areas;
- Implement the 15 culverts and the 2 lattice bridges as identified by the proponent;
- Ensure that, following the construction of the road bridge, the longitudinal profile of the Coega River is close to natural with little or no impoundment resulting on the upstream side of the proposed crossing, i.e. implement the concept bridge for the road bridge over Coega River as proposed by the proponent;
- Construct and use of the two proposed Sustainable Urban Drainage Systems for the compilation yard;
- Install all erosion control/energy dissipation structures as described in the proposed design provided by the proponent, e.g. reno mattress and suitable wing walls; and



- Any areas that become destabilised should either be re-vegetated or erosion control mechanism such as gabions should be installed.

The residual **negative** impacts of the proposed development (considering the Alternative 1 layout for the compilation yard) are predicted to be of **low** significance, with the exception of the loss of wetlands which is of **medium** significance. The residual **negative** impacts in terms of loss of wetland habitats, loss of ecosystem services and habitat fragmentation associated with the construction of Alternative 2 compilation yard would remain of **high** significance.

Groundwater

The shallow groundwater of the area is saline and not used for socio-economic purposes. It, however, provides baseflow to the Coega River and this function must not be negatively impacted (both in terms of groundwater levels, gradients and quality). There is a deeper good quality aquifer beneath the site (approximately 25 m to 1 200 m deep), which is protected by a thick impermeable clay layer.

The potential impacts of the proposed development on groundwater relate to dust fall out, infiltration of stockpile leachate, contaminated stormwater outflows and accidental oil spillages/fuel leakages. None of these potential pollution sources are considered a direct geohydrological threat as the upper geological layers contain very little groundwater and the shallow groundwater is saline. In addition, the upper clay rich formations may also prevent any contamination from reaching the important bedrock aquifer.

The key recommendations include:

- Ensure that the stockpiles are placed on an impermeable barrier as proposed by the proponent (e.g. PVC layer)
- Determine a groundwater quality baseline in the study area. Install monitoring boreholes in the vicinity of the stockpiles and compilation yard to collect baseline data in that area
- Ensure that existing monitoring boreholes remain intact if at all possible. If a monitoring borehole is damaged or has to be removed it needs to be replaced as close as possible to the borehole damaged/destroyed.

Overall, the residual **negative** impacts associated with the proposed activities on groundwater are predicted to be of **low to very low** significance.

Marine ecology

Increased shipping at the Port of Ngqura and more widely in Algoa Bay as a result of the proposed facility, may lead to impacts of the marine environment. These risks associated with developing the Port of Ngqura were subject to an earlier Environmental Impact Assessment (CES, 2001) that was approved by the National Department of Environmental Affairs and Tourism. Nonetheless, the main specific impacts on marine ecology associated with the proposed Manganese Ore Export Facility have been assessed to be:

- Increased risk of invasive species transfer through release of ballast water - although the likelihood of ballast water to be exchanged in the port is very low, the potential associated impact could be significant and the residual impact is therefore predicted to be of **medium to low** significance; and
- Increased risk of collision and release of fuels and oils as a consequence. The significance of this residual impact is predicted to be **high**, due to the extent of a potential spill and magnitude of the die-off of organisms and possible effects on seabird communities in the event of such a spill. This significance does not, however, indicate a “no-go” for the proposed facility. Rather, it is a caution for



Transnet National Ports Authority (TNPA) to continue enforcing existing shipping management practices and international best practice (i.e. Marpol agreement) to prevent and/ or limit the occurrence of such a spill.

The key recommendations are as follows:

- Ensure that TNPA enforces existing shipping management practices and international best practice at all times (e.g. Marpol agreement, exchanging ballast water at sea, use bubble barriers around ships and where possible deploy skimmers during cargo loading, rigorous vessel traffic control plan);
- Reduce the amount of time any ore is resident on the quay by removing spills as soon as possible;
- Recommend that the Port of Ngqura Oil Spill Contingency Plan includes specifications for the management of oiled seabirds etc.
- Vessels to travel at lowest, navigationally safe speeds to give whales time to move away. Report whale sightings to port authorities so that ships can be warned to avoid collisions (i.e. on-going Marine Mammal Monitoring Plan).

Overall, the residual impacts associated with the proposed activities on marine ecology are predicted to be of **high to low** significance. There is no difference in the predicted significance of impacts for the preferred and alternative conveyor routes and for the preferred and alternative compilation yard layout.

Avifauna

The two main impacts on avifauna associated with the proposed development are disturbance due to habitat loss and fragmentation, and collisions with new powerlines/railway overhead cables.

Habitat fragmentation and loss

All components of the proposed development require the clearing of land which will be almost irreversibly altered from the natural state, including loss and fragmentation of vulnerable species such as Grassridge Bontveld and Sundays Valley Thicket habitat. The Bontveld habitat is very important for threatened and priority bird species such as Denham's Bustard, Secretarybird and Blue Crane as well as a number of raptors. The impact of the proposed development of Sundays Valley Thicket is less critical since the species inhabiting it are fairly widespread in distribution. The residual **negative** impact of the project on avifauna as a result of habitat reduction and fragmentation is predicted to be of **medium** significance.

Collisions with new powerlines

New powerlines/overhead cables pose a real threat to the movement of large bird species through the project area. Besides the Denham's Bustard, Secretary bird and Blue Crane, other large birds that could be affected adversely include eagles, herons, storks and flamingos. With the exception of the Martial and other eagles these large birds are not agile fliers and are likely to strike powerlines/rail overhead cables especially at night or in the windy conditions which occur frequently in the Coega area. The potential residual **negative** impact on the avifauna, particularly the large endangered species, associated with the installation of new powerlines/overhead cables will be of **medium** significance. It must however be noted that CDC/NMBM will be responsible to install the main powerlines to the site for the proposed projects and as such will also be responsible to implement the recommended associated management actions.

The key recommendations are as follows:

- Restrict night-time lighting to the minimum necessary for safe construction and operations;
- Install bird flight diverters that are visible both by day and by night, on powerlines/rail overhead cables at all locations where known bird flight paths intersect powerline routes and identified by an



ornithologist. Note that this recommended management action (for the main powerline sections) will be the responsibility of a 3rd party and that Transnet cannot guarantee that it will be implemented;

- Establish an avifaunal baseline monitoring programme: Transects through the vegetation/areas which will potentially receive the greatest quantity of manganese ore dust deposition should be monitored for their use by birds (mainly northeast and southwest of the stockyard)

Overall, the residual impacts on avifauna associated with the proposed development are predicted to be of **medium to low** significance.

Noise

The noise specialist study shows that current noise levels are in the order of 43 - 51 dB(A) during the day and night, which already exceeds the recommended rating levels at Motherwell for both day and night, and at the dwellings on Tankatara Farm for night time.

During the construction phase, the closest residents are not predicted to be impacted by noise generated from the project. Construction activities at the compilation yard are predicted to impact a worker's cottage on Tankatara farm located approximately 170 m west of the main railway line. However, this impact is anticipated to be of very short duration (i.e. construction of the first northern section of the compilation yard). The overall residual noise impact from the proposed development is predicted to be of **low** significance.

During the operational phase, noise levels of the manganese ore handling terminal (when no trains are operational at high speed) are well below the SANS 10103 recommended levels. For the rail operations, the noise from the main railway line and the shunting operations will be intermittent and occur approximately sixteen times per day for 200 wagon arrivals. The predicted noise levels associated with the rail operation will exceed SANS 10103 recommended levels at the main dwellings and workers cottage on Tankatara Farm and at the Coega Hotel during the day and at night, however, it will remain lower than the current ambient noise levels which already exceed SANS 10103 limits. The residual noise impacts associated with operational activities are therefore predicted to be of **low** significance.

The key recommendations are as follows:

- Limit activities exceeding the prescribed night time noise levels (SANS 10103) to daylight hours. No piling at night at the compilation yard.
- If possible, consider the relocation of the workers cottage located on Tankatara farm close to the railway line. Alternative management actions could include the construction of a noise screen or double glaze windows. Investigate the use of brake wagons to minimise the coupling and decoupling noise

The overall residual noise impacts from the site are expected to be of **low** Significance for both the construction and the operational phases.

Visual

Visual intrusion on sensitive viewers

Sensitive viewers include users of the N2 road, residents in the surrounding area and visitors to the GAENP. A Manganese Ore Export Facility is a large industrial development and the ore stockpiles are prominent since few viewers find them aesthetically pleasing. They attract attention due to their size and their strong contrast in colour and texture with most settings. The topographic screening by the deeply incised Coega River at this location is very effective and, from a visual perspective, it is



unlikely that there is a better site in the IDZ for locating the stockpiles. The conveyor system is a long, linear structure which will potentially be highly visible, particularly for sections requiring cut-and-fill. The compilation yard will be constructed in a relatively undisturbed area of the landscape (in terms of industrial developments) but there are very few highly sensitive visual receptors that will be affected by the development.

Visual intrusion of night lighting on sensitive viewers

The Manganese Ore Export Facility will add new lights to the region, potentially adding to light pollution such as glare and sky glow. The existing nightscape of the stockyard area is very bright with considerable sky glow and glare, while it is relatively dark with few lights in the immediate vicinity of the proposed compilation yard. The compilation yard will therefore introduce a new node of potential light pollution in the region and appropriate night lighting of the development will minimise the impact on visual receptors in the Greater Addo Elephant National Park.

The key recommendations are as follows:

- Adherence to CDC Visual Guidelines for Development¹ with regard to painting of structure, i.e. avoid using glossy or reflective surfaces; and select muted shades such as olive, ochre or rust.
- Consult a landscape architect on planting and rehabilitation of the cut-and fill areas and other steep slopes.
- The lighting design should minimise nightscape impacts such as sky glow, light spill and glare (i.e. bright lights located below the southern and northern river banks, light screening features which minimise uplighting and glare, minimise light spill beyond the project boundary, timer switches or motion detectors for areas that are not occupied continuously).
- Minimise night lighting of construction sites within requirements of safety and efficiency
- Laydown areas and construction camps to be located in low visibility areas, where possible
- Minimise vegetation clearance since the site contains relatively high thicket which should be used to conceal/screen construction activities and equipment as much as possible
- Implement a rehabilitation plan for sites where scarring can occur (e.g. conveyor route, access and haulage roads and railway tracks).

Overall, the residual visual impacts are predicted to be of **low** significance.

Heritage Resources

Archaeological resources

Apart from occasional Middle Stone Age stone artefacts, no other important sites/materials were observed within the study area. In addition, these stone tools are not associated with any other archaeological remains and therefore of low cultural significance. The proposed areas for development therefore appear to be of **low** archaeological sensitivity, but archaeological sites/materials may be exposed when the vegetation and top soil are removed (for example human remains), in particular in areas within 5 km from the coast.

The key recommendations are as follows:

- Zones 8 and 9 and Tankatara farm:
 - Inform construction managers/foremen, before construction, on the possible types of heritage sites which may be encountered.
 - Train a site monitor to report to the foreman when archaeological sites are found

¹ CKA. 2002. Coega Industrial Development Zone Visual Guidelines for Development. Guidelines. Pretoria: Cave Klappwijk and Associates.



- Ensure an archaeologist is present during the vegetation clearing in areas that have been identified as having potential for archaeological sites/materials
- Report any concentrations of archaeological material uncovered during construction (e.g. human remains, and/or accumulations of fossil bone, concentrations of marine shell and stone tools) to the archaeologist at the Albany Museum (tel. 046 622 2312) or to the Eastern Cape Provincial Heritage Resources Authority (tel. 043 642 2811) immediately. All work must stop to allow an archaeologist to conduct a systematic and professional investigation. Relevant permits must be granted to a professional archaeologist by the SAHRA to remove such material.
- Zone 11- Initiate a Phase 2 AIA before construction. Record any archaeological material before destruction and submit a report to SAHRA for review.
- Zone 13:
 - Ensure an archaeologist is present on site during the clearing of the vegetation
 - Use least intrusive methods for clearing of the vegetation (e.g. small machineries), where possible.
 - Conduct a Phase 2 archaeological investigation and submit a report to SAHRA for review (with further recommendations) if sensitive sites/features are exposed.

Palaeontological resources

Many infrastructure components of the proposed Manganese Ore Export Facility overlie sedimentary rocks that are of low palaeontological sensitivity and / or do not involve sizeable bedrock excavations at the construction phase. In all cases, irrespective of its permanent nature, the palaeontological impact significance of the construction phase of the proposed development is rated as **low to very low**, given its local extent (confined to the immediate development footprint) and the generally sparse occurrence of fossils in most – but not all - of the sedimentary rocks concerned.

The key recommendations are as follows:

- A qualified palaeontologist must be appointed in the case of substantial new excavations (e.g. more than 200 m³) into the potentially fossil-rich Kirkwood Formation, Sundays River Formation and Salnova Formation
- A palaeontologist must be present in the event of:
 - Deeper (>3m) excavations within the compilation yard footprint
 - Any new cuttings into the Sundays River Formation in the Brak River and Coega River Valleys along the doubled-up railway line
 - New excavations into Kirkwood and Sundays River Formation rocks along the conveyor line route in Zone 8 of the IDZ
- Environmental Officer to familiarize himself with the recent palaeontological report for the Coega IDZ (Dr J Almond, 2010) and the possibility of significant buried fossil heritage

If any substantial fossil remains are found, these should be safeguarded, preferably *in situ*, and the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) must be contacted. A qualified palaeontologist to record and sample the occurrence of these fossil remains, and also to advise on any further mitigation actions.

Historical and cultural resources

The proposed development will impact three graveyards located in Zones 9 and 13. A detailed study is being undertaken by Transnet to identify the precise extent to which these graveyards may be affected and specify the required grave exhumation process that must be followed. This will be done according to the legal requirements.

The key recommendations are as follows:

- Identify the number and exact location of graves to be relocated



- Develop a graves relocation plan.

Overall, the residual impacts on heritage resources associated with the proposed facility are predicted to be of **low to very low** significance.

Cumulative impacts

Surrounding developments have been taken into account when assessing cumulative effects and the following significant cumulative impacts associated with current and future developments within the Coega IDZ have been identified during this EIA process:

- Terrestrial habitat fragmentation and disruption of Ecological processes as a result of artificial barriers associated with developments;
- Increase in environmental degradation and loss of ecosystem function, in particular overlap or conflict with the designated Open Space Network;
- Aquatic habitat fragmentation, including the loss of wetlands and riverine habitats;
- Increased risk of avifauna collisions with infrastructures such as powerlines and wind turbines as a number of large birds such as the Denham's Bustard, Secretarybird, Blue Crane as well as other large birds, (herons, storks and flamingos) may pass through the area;
- Impacts on palaeontological features associated with the highly fossiliferous, but volumetrically limited, estuarine deposits of the Salnova Formation

NO GO ALTERNATIVE

The following main implications of the no-go alternative are discussed below:

- Constraints being placed on growth of the manganese mining sector in South Africa
- Loss of socio-economic development opportunities in the mining and transport/shipping sectors from growth in manganese ore export
- Continued environmental impacts from manganese export via the current terminal in the Port of Port Elizabeth and associated constraints for urban planning.

The no-go option would result in reduced potential for existing (and new) South African manganese ore mines to grow the country's share of the international manganese market, as a result of constrained ore export facilities. The no-go alternative will also lead to socio-economic opportunities being lost in the transport/shipping sector in the Port Elizabeth/Coega area; as well as reduced socio-economic opportunities associated with constraints to upstream mining potential in the Kalahari Basin (e.g. Northern Cape). The no-go alternative would therefore result in the loss of an opportunity of having a facility capable of handling a throughput capacity of 16 Mtpa, compared to the current maximum of 5.5 Mtpa via Port Elizabeth harbour, which could negatively influence the longevity and growth of manganese ore mines in the Kalahari Basin.

The no-go option could also require the existing Manganese Terminal in Port Elizabeth to be upgraded from 5.5 Mtpa to 16 Mtpa in order to meet the increase in Manganese ore export demands, therefore impeding on other potential developments at the Port of Port Elizabeth upon decommissioning of that Terminal. The current infrastructure would need to be upgraded, additional stockpile areas would be required and new equipment would be introduced. This would also include additional capacity in terms of a railway shunting yard, conveyers as well as quay areas for ship loading. It should also be noted that a terminal upgrade at Port Elizabeth harbour would



need an environmental authorisation which would result in delays to the ability of Transnet to meet the projected export demand for manganese ore. Such a delay could result in the SA manganese mining industry losing out on long-term contracts to supply high grade manganese ore to the international market.

OVERALL EVALUATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

The environmental impact assessment has investigated and assessed the significance of the predicted positive and negative impacts associated with the proposed Manganese Ore Export Facility. No negative impacts have been identified within the ambient area of this EIA that, in the opinion of the Environmental Assessment Practitioner, should be considered “fatal flaws” from an environmental perspective, and thereby necessitate substantial re-design or termination of the project. The fact that this is an industrial development taking place in an IDZ should be taken into account when considering the main residual impacts of the project.

Overall, there is no significant difference in the significance levels between the impacts assessed for the preferred and alternative conveyor routes and compilation yard layouts, with the exception of the impact associated with the loss of wetlands. This impact is assessed to be of high significance for the alternative compilation yard layout and of medium significance for the preferred compilation yard layout. The Environmental Assessment Practitioner (EAP) therefore recommends the following alternatives are adopted:

- 1) Preferred Compilation yard layout (Alternative 1), given that this alternative only impacts one partly degraded wetland
- 2) Preferred conveyor route given that there is no difference in the significance rating for the two conveyor route alternatives (both are medium to low significance) and that this alternative is consistent with the medium to long term planning for the port development.

The project design incorporates best international practices detailed in the various specialist studies. Taking into consideration the findings of the EIA process for the proposed Manganese Ore Export Facility, it is the opinion of the EAP that the project benefits outweigh the costs and that the project will make a positive contribution to steering South Africa on a pathway towards sustainable infrastructure development. Provided that the specified mitigation measures are applied effectively, it is proposed that the project receives environmental authorization in terms of the EIA Regulations promulgated under the National Environmental Management Act (NEMA).



Glossary

<i>BA</i>	Basic Assessment
<i>BID</i>	Background Information Document
<i>CSIR</i>	Council for Scientific and Industrial Research
<i>DEA</i>	Department of Environmental Affairs
<i>DEDEAT</i>	Department of Economic Development, Environmental Affairs and Tourism
<i>DEIA</i>	Draft Environmental Impact Assessment
<i>DSR</i>	Draft Scoping Report
<i>DWT</i>	Dead Weight Tonne (measure of how much weight a ship is carrying or can safely carry)
<i>FSR</i>	Final Scoping Report
<i>EAP</i>	Environmental Assessment Practitioner
<i>EIA</i>	Environmental Impact Assessment
<i>EMP</i>	Environmental Management Programme
<i>I&AP</i>	Interested and Affected Party
<i>IDP</i>	Integrated Development Plan
<i>Infra sound</i>	Sound that is lower in frequency than 20 Hz or cycles per second, the "normal" limit of human hearing
<i>kWh</i>	Kilowatt Hours
<i>LTMS</i>	Long Term Mitigation Strategy
<i>MW</i>	Megawatts
<i>NEMA</i>	National Environmental Management Act (Act 107 of 1998)
<i>NGA</i>	National Groundwater Archive
<i>NHRA</i>	National Heritage Resources Act (Act 25 of 1999)
<i>ORE GRADE</i>	Distinct type of manganese ore based on physical and chemical properties
<i>PANAMAX</i>	Largest size of vessel that can fit through the Panama Canal
<i>PPC</i>	Public Process Consultants
<i>PSEIA</i>	Plan of Study for EIA
<i>RAKES</i>	Group of rail wagons containing a single consignment of manganese ore
<i>SAHRA</i>	South African Heritage Resources Agency
<i>SDF</i>	Spatial Development Framework
<i>SOC</i>	State Owned Company
<i>STOCKYARD LINES</i>	Area in the stockyard that can accommodate a row of stockpiles
<i>TFR</i>	Transnet Freight Rail
<i>TIPPLER</i>	Machine that unloads rail wagons
<i>ToR</i>	Terms of Reference
<i>TRANSFER POINTS</i>	Structure that allows the transfer of manganese ore from one conveyor to another
<i>TRIPPER</i>	The shiploader is fed from a dock conveyor running the length of the shiploader travel range. A tripper is attached to the shiploader and discharges the material from the dock conveyor on to the shiploader.