Basic Assessment for the proposed Decommissioning and Upgrade of a Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal

DRAFT BASIC ASSESSMENT REPORT

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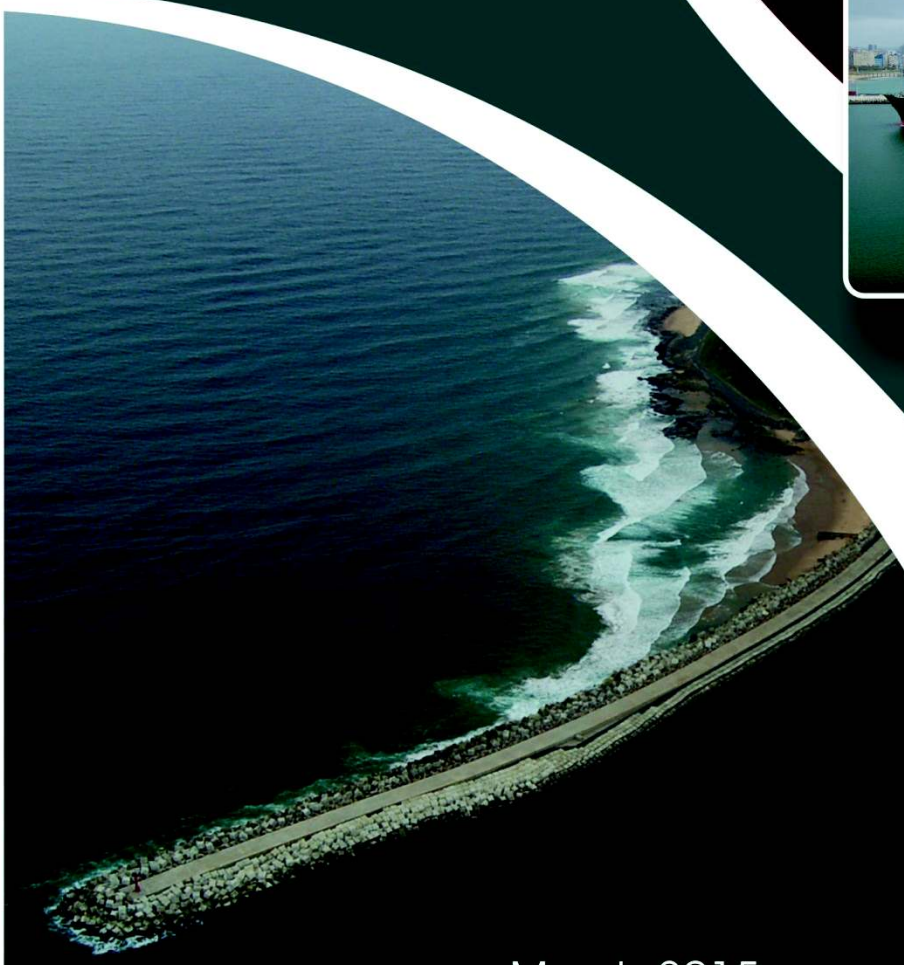

March 2015

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Oiltanking GC

DRAFT
BASIC ASSESSMENT REPORT

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INTRODUCTION AND BACKGROUND

Oiltanking Grindrod Calulo Terminals (PTY) Ltd (hereinafter referred to as OTGC) (i.e. the Project Applicant) is proposing to decommission and upgrade their existing Bulk Liquid Storage and Handling Facility (also referred to as a Tank Farm or Storage Terminal) in Maydon Wharf, located within the Port of Durban, eThekwini Municipality.

OTGC is an independent Bulk Liquid storage provider and was established in South Africa in 2009. The company is an amalgamation of the internationally renowned Oiltanking GmbH, as well as the locally based Grindrod South Africa (PTY) Ltd and Calulo Terminals (PTY) Ltd. Each of the aforementioned companies comprises several subsidiary companies. Oiltanking GmbH is a subsidiary of Marquard and Bahls AG, which is a leading privately owned petroleum company. Oiltanking GmbH owns and operates a network of 75 storage terminals in 22 countries within Europe, North America, South America, India, Asia, and the Middle East. Oiltanking GmbH is classed as one of the world's largest providers of independent tank storage for crude oil, petroleum products, as well as liquid chemicals and gases.

Grindrod South Africa (PTY) Ltd is a subsidiary of the Grindrod Freight Services Division which focuses on the transportation, storage and handling of dry and liquid bulk commodities. The Grindrod group operates in 24 countries across the world. In addition, Grindrod Tank Terminals, also a division of Grindrod Freight Services, caters mainly for the storage, handling and distribution of Molasses and Vegetable Oil products. Grindrod Tank Terminals is responsible for distributing approximately 400 000 tons of product per annum into the South African domestic market. The Calulo Group is an investment group with interests in a range of business entities mainly in the petroleum, chemicals, and other oil and gas sector related activities. As a company, OTGC specialises in developing, constructing, and operating Bulk Liquid storage terminals throughout South Africa.

The proposed project was conceptualised based on the need to enhance service delivery in the Bulk Liquid Storage and Handling Industrial Sector. The proposed project will play a key role in the importation and redistribution of Molasses, Vegetable Oils and other chemical products within South Africa.

ENVIRONMENTAL ASSESSMENT PROCESS

The CSIR has been appointed by OTGC to undertake the Environmental Assessment Process required for the project, with Paul Lochner and Rohaida Abed being the independent Environmental Assessment Practitioners (EAPs). Mr Lochner has been a registered Environmental Assessment Practitioner – South Africa since 2003 and Ms Abed is a registered Professional Natural Scientist (Pr.Sci.Nat. No. 400247/14).

Pre-application discussions were held with the KZN Department of Economic Development, Tourism and Environmental Affairs (KZN DEDTEA) to discuss the proposed project. Based on the industrial zoning and transformed state of the proposed project site, as well as the nature of the proposed

project activities, a motivation to downgrade the project from a full Scoping and Environmental Impact Assessment (EIA) Process to a Basic Assessment (BA) Process was submitted to the KZN DEDTEA on 26 August 2014. This is in line with Regulation 20 (4) of the National Environmental Management Act (Act 107 of 1998, as amended) EIA Regulations (18 June 2010, as amended). The KZN DEDTEA granted permission in writing, on 8 September 2014, to conduct a BA Process instead of a full Scoping and EIA Process. In line with this, the Application for Environmental Authorisation was submitted to the KZN DEDTEA on 25 September 2014. The KZN DEDTEA acknowledged receipt and accepted the Application for Environmental Authorisation on 15 October 2014, and allocated the following reference numbers: KZN DEDTEA EIA Reference Number: DM/0071/2014 and NEAS Reference Number: KZN/EIA/0001665/2014 to the application. Therefore, the Application for Environmental Authorisation was **submitted and accepted in terms of the 2010 EIA Regulations (as amended)**, prior to the promulgation of the new EIA Regulations in Government Notice (GN) 982, 983, 984 and 985 on 8 December 2014.

PROJECT DESCRIPTION

The proposed upgraded Storage Terminal will occupy a total area of 1.32 hectares and will be located at the corner of Johnstone and Fletcher Roads in Maydon Wharf, within the Port of Durban. The facility will be developed in line with relevant international and national standards and legislation, and it will mainly include the construction of the following:

- Storage tanks;
- Bunding;
- Site office;
- Parking area;
- Workshop;
- Fencing and entrance gate;
- Road tanker loading gantry;
- Security kiosk;
- Oil/Water separator;
- Pump bays;
- Drainage channels;
- Boiler room;
- Pipelines; and
- Associated service infrastructure.

The proposed project will include the following main construction activities:

- Decommissioning and demolition of ancillary infrastructure, including three storage tanks at the existing terminal site.
- Operation of the two remaining tanks for the storage of Molasses at the existing terminal site.
- Operation of the two existing pipelines at the existing terminal site. These two existing pipelines first need to be inspected and tested before being used or upgraded (i.e. substituted).
- Decommissioning all existing structures and infrastructure at the Marine Training School site.
- Site clearing and levelling.
- Construction of new tanks for the storage of Caustic Soda, Vegetable Oils and Ethylene Glycol (MEG), as well as ancillary infrastructure.
- Installation of six pipelines between the upgraded terminal and the existing Berths 8 and 9.
- Installation of the road tanker loading gantry.
- Establishment of a future marine vessel loading pump area if the customers opt for reloading of a vessel.

The following layout alternatives have been included in the Draft BA Report:

- Alternative 1 – Phase 1 (Preferred);
- Alternative 1 – Phase 2 – Option 1 (Preferred);
- Alternative 1 – Phase 2 – Option 2; and
- Alternative 2.

Layout Alternative 1 (Phase 1 and Phase 2) allows for the proposed (upgraded) Storage Terminal to be constructed in phases in order to allow certain sections of the terminal to become operational sooner in order to meet customer demand. This includes the initial construction and subsequent operation of the Caustic Soda storage tanks and pipelines (during Phase 1). Once the Caustic Soda storage tanks and pipelines are operational, the rest of the infrastructure will be constructed for storage of MEG and Vegetable Oils (during Phase 2). During both Phases 1 and 2, the terminal will still be allowed to continue with the existing storage, handling and distribution of Molasses.

Layout Alternative 2 does not entail construction phasing. All structures and infrastructure will be constructed simultaneously during this alternative, with no particular phasing.

IMPACT ASSESSMENT

Four specialist studies were carried out as part of the BA Process. These studies included a Traffic Impact Assessment, Risk Assessment, Noise Impact Assessment and Visual Impact Assessment. The findings of these studies are summarised below. It is important to note that the impacts described below apply to all layout alternatives assessed in this Draft BA Report.

Traffic Impact Assessment:

A Traffic Impact Assessment (Appendix D.1 of this Draft BA Report) was conducted as part of the BA Process in order to identify and assess traffic impacts associated with the construction and operation of the proposed project. The study included conducting traffic surveys at three critical intersections connecting Maydon Wharf to the Metropolitan Road Network. These intersections included Maydon Road and Margaret Mncadi Avenue; Rick Turner Road, Shadwell Road and Maydon Road; and Rick Turner Road and Sydney Road. Trip generation and distribution was thereafter undertaken based on the predicted operational phase traffic. The next step involved establishing and assessing the traffic impact on the surrounding roads via modelling and the use of SIDRA Intersection Software. The traffic generation during the operational phase formed the focus of the modelling assessment as it has the highest volume of generated heavy vehicle movements based on the worst case scenario (i.e. a maximum of 85 expected heavy vehicle movements throughout the day (i.e. spread across a 24 hour day)). The Traffic Impact Assessment concluded that the current road network has ample spare capacity to absorb the additional trips, with little influence to the Level of Service.

The following main impacts were identified in the Traffic Impact Assessment:

- Construction phase: Impact of construction vehicles on the Maydon Wharf road network and parking of construction vehicles on public roads when not in use.
- Operational phase: Impact of extra operational vehicles on the Maydon Wharf road network.
- Operational phase: Impact of extra parked vehicles waiting to be serviced on Johnstone Road (e.g. blocking access to the road) during the operational phase.

The study specified that no significant traffic impacts are expected during the decommissioning phase (i.e. should the terminal close down in the distant future). The study also did not identify any cumulative impacts as a result of the construction, operation or decommissioning of the proposed project.

The identified traffic impacts and associated significance have exactly the same operational impact on the ambient traffic for all alterative layouts proposed as part of the BA, as both alternatives will have the same ultimate potential additional trip generation.

The above impacts were all predicted to be of a **low significance** without the implementation of mitigation measures. Overall, with the implementation of mitigation measures, the impacts identified in the Traffic Impact Assessment (Appendix D.1 of this Draft BA Report) have a **low significance**.

The following main mitigation measures were identified in the Traffic Impact Assessment specialist study:

- Design phase: Ensure that the design allows for the provision of a three lane gantry upon completion of the entire construction phase.
- Construction phase: Accommodate all construction vehicles on site during the construction phase. Construction vehicles should not be parked on Johnstone Road or Fletcher Road.
- Operational phase: Implement good logistics planning during the operational phase in order to prevent waiting road tankers.
- Operational phase: Conduct stringent scheduling of the road tanker arrival, loading and departure process in order to reduce parking impacts.

Risk Assessment:

A Safety, Health and Environmental Risk Assessment was carried out as part of the BA Process in order to identify the potential major hazards associated with the operation of the proposed project, as well as to determine the causes, consequences and effects (impacts) of these hazards. The study included the quantification of the identified hazards in terms of their magnitude and likelihood. The consequences of the hazards and their severity were also determined, followed by an estimation of the individual risks.

The Risk Assessment (Appendix D.2 of this Draft BA Report) study established the following:

- The handling of Molasses does not have any significant impact on safety, health or the environment.
- Spillage of Molasses and Vegetable Oil is predicted to have little impact on the surrounding environment, apart from inconveniences e.g. stickiness and slipperiness.
- The Vegetable Oil and MEG products that are planned to be stored at the Storage Terminal are combustible and can have thermal burn impacts on persons in the event of a fire.
- Caustic Soda solution is highly corrosive and can have serious impacts when splashed on persons.
- Caustic Soda solution and MEG spillages can have an impact on aquatic life in the harbour water if spilt (for prolonged periods). However, toxic effects were found to be insignificant.

The Risk Assessment studied the possibility of the following hazards occurring as a result of the transfer of materials from the berths to the storage tanks, the bulk storage of the products at the terminal, and the transfer of the products to the road tankers via the gantry:

- Physical burst;
- Fire (external), e.g. pool fires, jet fires; and
- Toxic release.

In terms of the acceptability of risks to the public, the United Kingdom's Health and Safety Executive's criteria were used. These criteria regard an individual risk of less than a $1 * 10^{-6}$ chance per person per year (i.e. one in a million) as acceptable and less than $1 * 10^{-4}$ as tolerable. The Risk Assessment concluded that the risks posed to the public by the proposed upgraded Storage

Terminal do not exceed the target of a $1 * 10^{-6}$ chance of a fatality per person per year, and can therefore be regarded as acceptable.

In terms of the risk to employees within a typical organisation, a risk level of a $1 * 10^{-3}$ chance of a fatality per person per year (i.e. one in a thousand) is accepted in the United Kingdom as being the maximum tolerable. Overall for the proposed operations, the Maximum Individual Risk of being exposed to fatal hazards at the centre of the site where employees are present would be approximately a $7 * 10^{-7}$ chance of a fatality per person per year, reducing to $1 * 10^{-8}$ at a distance of 18 m away outside the site. Thus, the maximum risk of a $7 * 10^{-7}$ chance of a fatality per person per year posed to employees can be regarded as acceptable.

Furthermore, the upgraded Storage Terminal is not classified as a Major Hazard Installation as the proposed operations do not have the potential to seriously impact on persons outside the site boundary. In addition, the likelihood of achieving ignition of the stored materials is so rare, that a fire is almost impossible.

The following main impacts were identified in the Risk Assessment for the construction phase (which includes demolition processes) and the decommissioning phase (should the terminal close down in the distant future):

- Pollution of sea water as a result of spillages and washing of Molasses tanks;
- Noise generation from demolition and construction activities;
- Construction and decommissioning health injuries;
- Heavy traffic, congestion and potential for collisions;
- Construction and decommissioning safety injuries; and
- Pollution of water and ground as a result of Caustic Soda spills and building rubble.

The following main impacts were identified in the Risk Assessment, for the operational phase:

- Pollution of the ground and water;
- Atmospheric pollution;
- Health injuries;
- Safety injuries;
- Heavy traffic, congestion and potential for collisions;
- Minor accidents to the public and moderate accidents to employee's e.g. fires; and
- Minor accidents to the public and moderate accidents to employee's e.g. corrosive spillages.

None of the impacts identified for the construction, operational or decommissioning phases of the proposed project were rated with a high significance with the implementation of mitigation measures. With the implementation of mitigation measures, the safety, health and environmental impacts identified in the Risk Assessment (Appendix D.2 of this Draft BA Report) have a **low-medium significance**.

In terms of cumulative impacts, none are expected during the construction phase as the impacts are regarded as temporary. In terms of the operational phase, the impacts of existing industries within the area, together with the impact of the proposed project, will not result in any significant cumulative impacts.

The following main mitigation measures were identified in the Risk Assessment specialist study:

Design phase:

- A preliminary Hazard and Operability Analysis (HAZOP study) must be carried out before detailed design, followed by a detailed HAZOP study on the final design, in addition to incorporating the recommendations into the final design of the storage installation.

Construction and decommissioning phases:

- The risks of excavations must be assessed by reviewing cable and pipe routings. Provisions must be made for safe excavations during the construction phase.
- During the construction phase, it must be ensured that roads are not closed in such a manner, whereby access for emergency services is restricted.
- During the construction phase, the Contractor must comply with all applicable legislative requirements, specifically as prescribed in the Occupational Health and Safety Act under the Construction Regulations, as well as the OTGC site health, safety and environmental procedures.
- Any spilled, undiluted Molasses should be recycled by returning it to the storage tanks during the initial demolition process of the construction phase.
- The material resulting from the washing of the storage tanks should be pumped into tankers and correctly disposed by an approved waste disposal Contractor during the construction phase (as per the OTGC decommissioning procedures).
- The Contractor must carry out a Risk Assessment during the construction and decommissioning phases of the proposed project.
- Contractors must provide construction personnel with suitable Personal Protective Equipment for use as required, as well as what is required by the OTGC permit to work system.
- Suitable parking areas must be provided and designated for trucks and vehicles during the construction phase.
- A Construction Supervisor should be appointed to co-ordinate construction traffic (by drawing up a traffic plan prior to the commencement of construction).
- The skill and competence (in terms of safety standards) of the Contractor must be evaluated during the appointment process.
- A Construction Site Manager or Safety Supervisor must be appointed, via co-ordination with the project manager, to monitor all safety aspects during the construction phase.

Operational phase:

- Scheduled inspections should be implemented by operating personnel during the operational phase in order to assure and verify the integrity of hoses, piping and storage tanks, in line with American Petroleum Institute (API) 650 and OTGC standards (based on best practice and international standards).
- The operating personnel should undergo proper training to prevent overfilling incidents during the operational phase.
- An Emergency Plan should be compiled by OTGC in order to deal with potential spillages of the stored product at the berths and on site, in line with OTGC Health, Security, Safety and Environment (HSSE) policies. Records of practices (including emergency drills) should be kept on site.
- Flanges and joints should be minimised on the Caustic Soda pipelines and flange guards should be specified (this is optional for other pipelines carrying products that are not toxic and corrosive).

Noise Impact Assessment:

The Noise Impact Assessment (Appendix D.3 of this Draft BA Report), conducted as part of the BA Process, investigated the potential noise impacts resulting from the construction and operation of the proposed upgraded OTGC Storage Terminal. The Noise Impact Assessment included a desktop study to model the likely noise emissions from the proposed terminal, as well as a field study to determine the existing ambient noise. The current ambient noise levels were recorded at the closest residential receptors and on site at the existing OTGC Storage Terminal. The closest residential receptor is the suburb of Glenwood, which is located approximately 780 m away from the proposed project site. Given the existing context, Glenwood is not considered as a significant sensitive noise receptor for this proposed project.

The results of the monitoring show that the current noise levels exceed the South African National Standards (SANS) 10103:2008 recommended levels in the immediate vicinity of the OTGC Storage Terminal, as well as at Glenwood.

The results of the modelling show that the closest residents should not be impacted by noise generated from the proposed construction activities, with the exception of piling, which could potentially affect the residents and surrounding neighbours. The modelling also shows that the predicted noise levels as a result of road tanker filling operations and increased traffic at the proposed terminal are below the current ambient levels/actual noise.

The following impacts were identified in the Noise Impact Assessment, for the construction and operational phases of the proposed project:

- Construction phase: Noise impact from the use of construction equipment;
- Construction phase: Noise impact from piling during the construction phase;
- Operational phase: Noise impact from road transport during the operational phase; and
- Operational phase: Noise impact from tanker filling during the operational phase.

The study indicated that the noise impacts during the decommissioning phase (i.e. should the terminal close down in the distant future) will be the same as those impacts identified for the construction phase.

The above noise impacts are predicted to be of a low significance without the implementation of mitigation measures. Overall, all noise impacts on the closest residential receptors (i.e. the suburb of Glenwood) were rated with a **low significance** with the implementation of recommended mitigation measures. In some instances, mitigation measures are not recommended based on the minimal nature of the impact.

The noise impacts and associated significance are the same for all alternative layouts (i.e. the different alternatives will not impact on the significance of the noise impacts).

Based on the low impact of the current and future noise emissions and the minimal increase in the hourly traffic volumes, no significant cumulative noise impacts were predicted as a result of the proposed activities at the Storage Terminal.

The following key mitigation measures were identified in the Noise Impact Assessment specialist study:

- Construction phase: Limit piling operations to daylight only (i.e. 06:00 – 22:00, as defined in SANS 10103).
- Operational phase: Place all transfer pumps inside dedicated pump houses or within bunded areas to mitigate the noise emissions.
- Operational phase: Educate the tanker drivers to minimise the use of air brakes if possible.

Visual Impact Assessment:

The Visual Impact Assessment was conducted in order to assess the potential visual impact that the proposed project will have on sensitive visual receptors in the surrounding landscape. In terms of the surrounding landscape, Maydon Wharf is bordered by the Congella industrial area towards the west, as well as large railway infrastructure and the Southern Freeway. The suburb of Glenwood is located to the west of Congella. Glenwood contains smaller properties and blocks of flats on the coastal plain and larger properties further west against the ridge.

In terms of visual receptors, the residents living against the ridge on the western boundary of Glenwood are classified as highly sensitive as they potentially have scenic views of the harbour and

Indian Ocean. In addition, recreational users of parks and sports facilities in the areas surrounding the proposed project site will be moderately sensitive to changes in their views and the landscape.

As indicated in the Visual Impact Assessment, the visual intrusion for the proposed project will be categorised as low based on the following reasons:

- it will replace an existing development with the same or similar structures;
- it will be built in an industrial area where surrounding industrial developments are of a similar type; and
- the proposed storage facility will fit in with its surroundings and the area's sense of place.

The following impacts were identified in the Visual Impact Assessment for all layout alternatives:

- Construction phase: Potential visual intrusion of construction/demolition activities on the existing views of sensitive visual receptors;
- Operational phase: Potential visual intrusion of structures and buildings associated with the proposed development on existing views of sensitive visual receptors;
- Operational phase: Potential impact of night lighting of the development on the nightscape of the surrounding landscape; and
- Decommissioning phase: Potential visual intrusion of decommissioning activities on the existing views of sensitive visual receptors.

The significance of the abovementioned impacts is rated with a **low significance** without the implementation of mitigation measures. As a result of this, no specific mitigation measures are recommended for the potential visual impacts, except for appropriate site camp management during the construction and decommissioning phases, as well as proper planning of night lighting at the terminal during the operational phase.

In terms of cumulative impacts, there are several developments proposed within the Port of Durban. These proposed developments are all related to port activities and are not unexpected for a port in terms of visual impact (i.e. the development types are consistent with port activities, structures and services). Based on the findings of the Visual Impact Assessment, the cumulative visual impact for the OTGC Storage Terminal upgrade project will be low since all the proposed developments are similar in type and are congruent with existing developments in the Port of Durban. As a result, the cumulative visual intrusion is considered to be low.

Additional Impacts:

In addition to the impacts identified above in the specialist studies, various other negative environmental impacts were identified by the EAPs. The impacts are summarised below for the construction, operational and decommissioning phases of the proposed project:

- Increased risk of the spread of alien invasive species during the construction and decommissioning phases.
- The possibility of re-establishment of exotic species on site during the operational phase.
- Removal of planted indigenous species during the construction phase.
- Disturbance of existing infrastructure (as a result of the relocation of the municipal substation and electrical infrastructure) during construction.
- Increased water usage during the construction, operational and decommissioning phases.
- Potential spillage of domestic effluent from portable sanitation facilities (during the construction phase) and sewer system (during the operational phase).
- Pollution caused by spillage or discharge of waste water into the surrounding environment during the construction phase.
- Discharge of contaminated stormwater into the surrounding environment during the construction and decommissioning phases.

- Increased stormwater discharge during the operational phase.
- Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste during the construction, operational and decommissioning phases.
- Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillage of hazardous materials and waste during the construction, operational and decommissioning phases.
- Impact on the Durban Bay Estuary as a result of stockpiling of excavated material during the construction phase.
- Air Quality Impact: Emissions from construction vehicles and generation of dust as a result of earthworks and demolition during the construction and decommissioning phases.
- Air Quality Impact: Emissions from staff vehicles and road tankers that make use of the upgraded Storage Terminal during the operational phase.
- Fuel/product spills as a result of potential collisions between vessels or a collision between a vessel and the berth, or fire and explosion during the arrival, berthing or departure of a vessel in the Port during the operational phase.
- Potential pipeline leak and poor housekeeping on the vessel deck and berth during the discharging process undertaken during the operational phase.

The significance of the **majority** of the abovementioned impacts that are predicted to occur during the construction, operational and decommissioning phases of the proposed project is regarded as **medium to low** without mitigation. The **majority** of impacts will have a **low** significance with the implementation of the recommended mitigation measures.

However, those impacts on the Durban Bay Estuary during the construction, operational and decommissioning phases are rated with a high significance without the implementation of mitigation measures. However, with the implementation of mitigation measures, the significance is reduced overall to **medium-low**. It is important to note that the probability of the impacts occurring and significantly impacting the estuarine system (in terms of abiotic and biotic processes) is improbable. During the operational phase, the stringent design criteria (such as bunding and spill containment at the terminal and loading gantry) will significantly reduce the probability and intensity of the potential impact. Furthermore, in terms of the vessel traffic, a minimal increase is expected (i.e. up to four vessels per month based on the full operations). It is also important to point out that the risk of impacts on the estuary is evident even without the implementation of the proposed project, as the port and Maydon Wharf are currently operational.

Furthermore, the following positive biophysical impact was identified by the EAPs for the construction phase of the proposed project:

- Removal of planted exotic species from the proposed project area during the construction phase.

In addition, the following positive socio-economic impacts were identified for the proposed project by the EAPs:

- Improved service delivery and operational capacity of the Storage Terminal during the operational phase.
- Improved economic investment from attracting additional investors to the Port of Durban during the operational phase.
- Employment creation and skills development opportunities during the construction phase (which is expected to give rise to approximately 350 jobs) and operational phase (which is expected to give rise to approximately 12 additional jobs).

With the implementation of the suggested enhancement measures, the above positive socio-economic impacts are predicted to have a **medium-high** significance.

EAP'S Recommendation

Based on the findings of this BA Process, it is therefore the opinion of the EAPs that conducted this BA Process, i.e. Mr Paul Lochner and Ms Rohaida Abed, that there are no negative impacts that should be considered as "fatal flaws" from an environmental perspective, and thereby necessitate substantial re-design or termination of the project. Based on the findings of this Draft BA Report, it is the opinion of the EAPs that the project benefits outweigh the negative environmental impacts, and that the project will make a positive contribution towards infrastructural development in the Port of Durban and in facilitating improved service delivery within South Africa for Molasses, Vegetable Oils and the other chemical products included.

The impacts identified in this Draft BA Report are the same for both layout alternatives. The specialist studies confirm that there is no preferred alternative in terms of the two layout options. It is therefore recommended by the EAPs that both layout alternatives be included in the Environmental Authorisation (should such authorisation be granted for the proposed project). The Project Applicant, will then need to complete the detailed engineering phase and make an informed decision in terms of whether to construct the facility at once (i.e. Alternative 2) or in phases (i.e. Alternative 1 – Phase 1 and Phase 2 (Option 1 or Option 2)). The detailed engineering phase should be informed by the customer demand levels and timing requirements.

A Draft Environmental Management Programme (EMPr) has been compiled for the proposed project. This Draft EMPr captures the project specific information for all phases of the development and includes all mitigation actions identified in this BA Process. The Draft EMPr is a dynamic document that should be updated regularly and provide clear and implementable measures for the establishment and operation of the proposed project. It is our recommendation that all the mitigation measures be implemented for the proposed project.

Concluding statement from EAPs: Provided that the specified mitigation measures are applied effectively, it is proposed that the project receive Environmental Authorisation in terms of the EIA Regulations promulgated under the NEMA.

glossary

AEL	Atmospheric Emissions Licence
API	American Petroleum Institute
BA	Basic Assessment
BID	Background Information Document
CSIR	Council for Scientific and Industrial Research
DEA	National Department of Environmental Affairs
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
EAP	Environmental Assessment Practitioner
EAPs	Environmental Assessment Practitioners
EAPSA	Environmental Assessment Practitioner for South Africa
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
ERAP	Emergency Response Action Plan
ERM	Environmental Resources Management (PTY) Ltd
HAZOP	Hazard and Operability Analysis
HSSE	Health, Security, Safety and Environment
I&AP	Interested and Affected Party
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
KZN	KwaZulu-Natal
MEG	Mono-Ethylene Glycol (referred to as Ethylene Glycol in this Draft BA Report)
MER	Marine and Estuarine Research cc
NWA	National Water Act (Act 36 of 1998)
NEM: AQA	National Environment Management: Air Quality Act (Act 39 of 2004)
NEM: ICMA	National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)
NEMA	National Environmental Management Act (Act 107 of 1998)
NHRA	National Heritage Resources Act (Act 25 of 1999)
OTGC	Oiltanking Grindrod Calulo Terminals (Pty) LTD
PPP	Public Participation Process
RTG	Radar Tank Gauging
SACNASP	South African Council for Natural Scientific Professions

SANS	South African National Standards
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
TAS	Terminal Automation System
TFR	Transnet Freight Rail
TNPA	Transnet National Ports Authority
TOR	Terms of Reference

Summary of where requirements of Section 22 of the 2010 NEMA EIA Regulations (GN R 543, as amended) are provided in this Basic Assessment Report

SECTION 22 REGULATION	YES / NO	SECTION IN BAR
1) The EAP managing an application to which this Part applies must prepare a basic assessment report in a format that may be determined by the competent authority. 2) A basic assessment report must contain all the information that is necessary for the competent authority to consider the application and to reach a decision contemplated in regulation 25, and must include -		
(a) details of – i. the EAP who prepared the report; and	√	Section A and Appendix G.6
ii. the expertise of the EAP to carry out basic assessment procedures;	√	Section A and Appendix G.6
(b) a description of the proposed activity;	√	Section B
(c) a description and a map of the property on which the activity is to be undertaken and the location of the activity on the property, or, if it is - i. a linear activity, a description of the route of the activity; or ii. an ocean-based activity, the coordinates within which the activity is to be undertaken;	√	Section B, Section C, Appendix A, and Appendix C
(d) a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;	√	Section B, Section C and Appendix D
(e) an identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report;	√	Section B, Section C and Appendix D
(f) details of the public participation process conducted in terms of regulation 21(2)(a) in connection with the application, including - i. the steps that were taken to notify potentially interested and affected parties of the proposed application; ii. proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; iii. a list of all persons, organisations and organs of state that were registered in terms of regulation	√	Section D, Appendix E, and Appendix H

SECTION 22 REGULATION	YES / NO	SECTION IN BAR
55 as interested and affected parties in relation to the application; and iv. a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;		
(g) a description of the need and desirability of the proposed activity;	√	Section B
(h) a description of any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity;	√	Section B
(i) a description and assessment of the significance of any environmental impacts, including - i. cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity; ii. the nature of the impact; iii. the extent and duration of the impact; iv. the probability of the impact occurring; v. the degree to which the impact can be reversed; vi. the degree to which the impact may cause irreplaceable loss of resources; and vii. the degree to which the impact can be mitigated;	√	Section E and Appendix D
(j) any environmental management and mitigation measures proposed by the EAP;	√	Section E and Appendix F
(k) any inputs and recommendations made by specialists to the extent that may be necessary;	√	Section E, Appendix D, and Appendix F
(l) a draft environmental management programme containing the aspects contemplated in regulation **33**;	√	Appendix F
(m) a description of any assumptions, uncertainties and gaps in knowledge;	√	Appendix D
(n) a reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	√	Section F
(o) any representations, and comments received in connection with the application or the basic assessment report;	√	Appendix E and Appendix H
(p) the minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants;	**N/A**	N/A
(q) any responses by the EAP to those representations, comments and views;	√	Section D, Section E and Appendix E
(r) any specific information required by the competent authority; and	**N/A**	N/A
(s) any other matters required in terms of sections 24(4)(a) and (b) of the Act.	**N/A**	N/A

DRAFT BASIC ASSESSMENT REPORT

Basic Assessment for the proposed Decommissioning and Upgrade of a Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal

BASIC ASSESSMENT REPORT

contents

edtea
Department :
Economic Development, Tourism and Environmental Affairs
PROVINCE OF KWAZULU-NATAL

	(For official use only)
EIA File Reference Number:	DC/
NEAS Reference Number:	KZN/EIA/
Waste Management Licence Number: (if applicable)	
Date Received:	

BASIC ASSESSMENT REPORT

Submitted in terms of the Environmental Impact Assessment Regulations, 2010 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998)

This template may be used for the following applications:

- **Environmental Authorization** subject to basic assessment for an activity that is listed in Listing Notices 1or 3, 2010 (Government Notices No. R 544 or No. R 546 dated 18 June 2010); or
- **Waste Management Licence** for an activity that is listed in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) for which a basic assessment process as stipulated in the EIA Regulations must be conducted as part of the application (refer to the schedule of waste management activities in Category A of Government Notice No. 718 dated 03 July 2009).

Kindly note that:

1. This **basic assessment report** meets the requirements of the EIA Regulations, 2010 and is meant to streamline applications. This report is the format prescribed by the KZN Department of Economic Development, Tourism & Environmental Affairs. Please make sure that this is the latest version.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with text.
3. Where required, place a cross in the box you select.
4. An incomplete report will be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it will result in the rejection of the application as provided for in the regulations.
6. No faxed or e-mailed reports will be accepted.
7. The report must be compiled by an independent environmental assessment practitioner ("EAP").
8. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
9. The KZN Department of Economic Development, Tourism & Environmental Affairs may require that for specified types of activities in defined situations only parts of this report need to be completed.
10. The EAP must submit this basic assessment report for comment to all relevant State departments that administer a law relating to a matter affecting the environment. This provision is in accordance with Section 24 O (2) of the National Environmental Management Act 1998 (Act 107 of 1998) and such comments must be submitted within 40 days of such a request.
11. **Please note that this report must be handed in or posted to the District Office of the KZN Department of Economic Development, Tourism & Environmental Affairs to which the application has been allocated (please refer to the details provided in the letter of acknowledgement for this application).**

DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	KZN DEDTEA EIA Reference Number: DM/0071/2014 NEAS Reference Number: KZN/EIA/0001665/2014
File reference number (Waste Management Licence):	

SECTION A: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

1. NAME AND CONTACT DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Name and contact details of the EAP who prepared this report:

Business name of EAP:	**Council for Scientific and Industrial Research (CSIR)**		
Physical address:	**11 Jan Celliers Street, Stellenbosch, 7599**		
Postal address:	**P. O. Box 320, Stellenbosch**		
Postal code:	**7599**	**Cell:**	**084 442 3646**
Telephone:	**021 888 2486**	**Fax:**	**021 888 2693**
E-mail:	**PLochner@csir.co.za**		

2. NAMES AND EXPERTISE OF REPRESENTATIVES OF THE EAP

Names and details of the expertise of each representative of the EAP involved in the preparation of this report:

Name of Representative of the EAP	Education Qualifications	Professional Affiliations	Experience at Environmental Assessments (Years)
Paul Lochner *Role: Project Leader*	BSc Civil Engineering MPhil Environmental Science	Certified Environmental Assessment Practitioner of South Africa (EAP-SA Certified) since 2003	**22**
Rohaida Abed *Role: Project Manager*	MSc Environmental Science	South African Council for Natural Scientific Professions (SACNASP) (Pr. Sci. Nat. No. 400247/14)	**4**

Note from the CSIR: In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations (18 June 2010, as amended), an Application for Environmental Authorisation was submitted to the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN DEDTEA) on 25 September 2014. The KZN DEDTEA acknowledged receipt and accepted the Application for Environmental Authorisation on 15 October 2014, and allocated the abovementioned reference numbers (i.e. KZN DEDTEA EIA Reference Number: DM/0071/2014 and NEAS Reference Number: KZN/EIA/0001665/2014) to the application. It is important to note that the Application for Environmental Authorisation was submitted and accepted in terms of the 2010 EIA Regulations (as amended), **prior to** the promulgation of the new EIA Regulations in Government Notice (GN) 982, 983, 984 and 985 on 8 December 2014. In accordance with the Transitional Arrangements included in the 2014 EIA Regulations, i.e. Regulation 53 (1), the proposed application can continue to be assessed and processed in terms of the 2010 EIA Regulations (as amended). However, for purposes of completeness and relevance, the listed

activities that apply to the proposed project in terms of the 2014 EIA Regulations have also been included and assessed in this Draft Basic Assessment (BA) Report.

In addition, at the time of submission of the Application for Environmental Authorisation to the KZN DEDTEA, the EAP assigned to this proposed project was Mr. Ismail Banoo, a Principal EAP of the CSIR Environmental Management Services (EMS) Unit. However, the EAP for the proposed project has subsequently been changed to Mr. Paul Lochner, Manager of the CSIR EMS Unit. Paul has 22 years of experience in environmental assessment and management studies, primarily in the leadership and integration functions. This includes Strategic Environmental Assessments (SEAs), EIAs and Environmental Management Plans (EMPs). He has been a certified EAP with the Certification Board for Environmental Assessment Practitioners of South Africa (EAPSA) since July 2003; and has conducted several EIA Processes both in South Africa and internationally. He has also authored several Guidelines for national and provincial government, such as the Guideline for EMPs published in 2005 by the Western Cape government. Paul will be supported by Rohaida Abed, who will fulfil the role of the Project Manager. Refer to Appendix G.6 of this Draft BA Report for the CVs of the EAP.

A letter informing the Competent Authority of the above amendment to the EAP will be provided to the KZN DEDTEA together with this Draft BA Report.

3. NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:

Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment report	Title of specialist report/ s as attached in Appendix D
Jacobus de Kock	**B. Eng (Civil) MSc Eng**	**Civil Engineer (Traffic Specialist)**	**E**	**Traffic Impact Assessment**
Daniël Rademeyer	**BSc (Chemical Engineering)**	**Chemical Engineer (Risk Specialist)**	**E**	**Risk Assessment**
Dr. Brett Williams	**PhD**	**Noise Specialist**	**E**	**Noise Impact Assessment**
Henry Holland	**MSc Geology/GIS**	**GIS and Visual Specialist**	**E**	**Visual Impact Assessment**

SECTION B: ACTIVITY INFORMATION

1. PROJECT TITLE

Describe the project title as provided on the application form for environmental authorization:

Basic Assessment for the proposed Decommissioning and Upgrade of a Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal

2. PROJECT DESCRIPTION

Provide a detailed description of the project:

2.1. Introduction and Background

Oiltanking Grindrod Calulo Terminals (PTY) Ltd (i.e. the Project Applicant) is proposing to decommission and upgrade their existing Bulk Liquid Storage and Handling Facility (also referred to as a Tank Farm or Storage Terminal) in Maydon Wharf, located within the Port of Durban, eThekwini Municipality.

It is important to note that at the time of submission of the Application for Environmental Authorisation to the KZN DEDTEA on 25 September 2014, the Trading Name for the Applicant was indicated as "Oiltanking Grindrod Calulo (PTY) Ltd" on the Application Form. However, the Trading Name needs to be amended to Oiltanking Grindrod Calulo Terminals (PTY) Ltd (hereinafter referred to as OTGC). However, the contact person and details thereof, as stipulated in the Application for Environmental Authorisation (as contained in Appendix G.4 of this Draft BA Report), remain unchanged. A letter informing the Competent Authority of the above amendment to the Trading Name of the Applicant will be provided to the KZN DEDTEA together with this Draft BA Report.

OTGC is an independent Bulk Liquid storage provider and was established in South Africa in 2009. The company is an amalgamation of the internationally renowned Oiltanking GmbH, as well as the locally based Grindrod South Africa (PTY) Ltd and Calulo Terminals (PTY) Ltd. Each of the aforementioned companies comprises several subsidiary companies. Oiltanking GmbH is a subsidiary of Marquard and Bahls AG, which is a leading privately owned petroleum company. With its headquarters based in Germany, Oiltanking GmbH was founded in 1972, and has accumulated more than 30 years of experience in successfully designing, building, owning, and operating petroleum related storage facilities. Oiltanking GmbH owns and operates a network of 75 storage terminals in 22 countries within Europe, North America, South America, India, Asia, and the Middle East. Oiltanking GmbH is classed as one of the world's largest providers of independent tank storage for crude oil, petroleum products, as well as liquid chemicals and gases.

Grindrod South Africa (PTY) Ltd is a subsidiary of the Grindrod Freight Services Division which focuses on the transportation, storage and handling of dry and liquid bulk commodities. The Grindrod group operates in 24 countries across the world. In addition, Grindrod Tank Terminals, also a division of Grindrod Freight Services, caters mainly for the storage, handling and distribution of Molasses and Vegetable Oil products. Grindrod Tank Terminals is responsible for distributing approximately 400 000 tons of product per annum into the South African domestic market. The Calulo Group is an investment group with interests in a range of business entities mainly in the petroleum, chemicals, and other oil and gas sector related activities. As a company, OTGC specialises in developing, constructing, and operating Bulk Liquid storage terminals throughout South Africa.

The proposed project was conceptualised based on the need to enhance service delivery in the Bulk Liquid Storage and Handling Industrial Sector. The proposed project will play a key role in the importation and redistribution of Molasses, Vegetable Oils and other chemical products within South Africa.

2.2. Environmental Assessment Process

As indicated in Section A of this Draft BA Report, OTGC has appointed the CSIR to undertake the Environmental Assessment Process required for the project, with Mr Paul Lochner and Ms Rohaida Abed being the independent EAPs. During the pre-application phase, the CSIR contacted the KZN DEDTEA to discuss the proposed project. The CSIR provided the KZN DEDTEA with a description of the project (based on conceptual design) in order to confirm the

Environmental Assessment Process required. On 2 June 2014, the Department provided the CSIR with a correspondence to confirm that in terms of the NEMA EIA Regulations (18 June 2010, as amended), a full Scoping and EIA Process is required for the proposed project. However, further telephonic discussions were held with the KZN DEDTEA to discuss various options for the way forward in terms of the EIA Process. Based on the industrial zoning and transformed state of the proposed project site, as well as the nature of the proposed project activities, the possibility of downgrading the proposed project from a full Scoping and EIA Process to a BA Process was discussed with the KZN DEDTEA. In addition, a meeting was held with the Applicant and the KZN DEDTEA on 26 August 2014 to discuss the motivation to downscale. Thereafter, in line with Regulation 20 (4) of the NEMA EIA Regulations (18 June 2010, as amended), the CSIR, on behalf of the Applicant, submitted a written motivation to the KZN DEDTEA to seek permission to downscale the proposed project to a BA Process. A copy of the motivation letter that was submitted to the KZN DEDTEA by the CSIR is included in Appendix G.2 of this Draft BA Report. The motivation to downscale to a BA Process is summarised below:

- The proposed project will take place in Maydon Wharf within the Port of Durban, in an area designated for industrial activity. Furthermore, the proposed project site has already been developed on and is thus transformed.
- The proposed site does not fall within the areas zoned as "Conservation" or "Recreation" in terms of the Durban Bay Zonation Plan, which was compiled as part of the Bay of Natal Estuarine Management Plan (dated 2012).
- The proposed project will result in an upgrade of the existing storage terminal. Therefore, the existing operations (i.e. storage and handling of Bulk Liquids) will not change as a result of the proposed project. Furthermore, the proposed activities will be in line with the Liquid Bulk Terminal Operator Licence that was issued to OTGC by Transnet National Ports Authority (TNPA), which permits the storage of Liquid Bulk products at the Storage Terminal, that are non-flammable or that have a flash point of 60.5°C or above, including Caustic Soda.
- The potential impacts occurring as a result of the proposed project have been sufficiently assessed as part of the BA Process.
- Specialist studies (i.e. Traffic Impact Assessment, Risk Assessment, Noise Impact Assessment, and Visual Impact Assessment) have been conducted as part of the BA Process to ensure that potential impacts are assessed and that suitable and feasible mitigation measures are identified.
- Additional impacts have been identified and assessed by the EAP.
- The specialist studies conducted as part of the BA Process have been subjected to the same level of impact assessment rigour as that of a Scoping and EIA Process.
- The Public Participation Process is considered to be sufficient to inform all relevant Interested and Affected Parties (I&APs) and stakeholders of the proposed project.

The KZN DEDTEA granted permission in writing, on 8 September 2014, to conduct a BA Process instead of a full Scoping and EIA Process. This approval letter, dated 8 September 2014, is included in Appendix G.3 of this Draft BA Report.

2.3. Existing Storage Terminal

As mentioned above, OTGC currently owns a Storage Terminal, located at 55 Johnstone Road in Maydon Wharf. Currently, the terminal operations include the storage, handling and distribution of Molasses. The terminal has reportedly been storing Molasses since 1964 under the name of Pure Cane Molasses (Environmental Resources Management (ERM), 2012), and the initial lease was signed in 1960. In 2003, the name of the terminal operator changed from Pure Cane Molasses to Tate and Lyle (ERM, 2012). In 2006, Grindrod Tank Terminals took over the terminal from Tate and Lyle (ERM, 2012). Grindrod Tank Terminals have therefore been operating the Storage Terminal since 2006. On 19 July 2012, TNPA issued Grindrod Tank Terminals with a Liquid Bulk Terminal Operator Licence, in terms of Section 57 (1) and Section 65 of the National Ports Act (Act 12 of 2005). This licence was then transferred to OTGC on 18 July 2013. This licence is valid until May 2035; however the lifespan of the terminal is estimated to be between 40 and 50 years. As mentioned above, the licence permits the storage of Liquid Bulk products at the Storage Terminal, that are non-flammable or that have a flash point of 60.5°C or above, including Caustic Soda; Molasses; Fish, Vegetable and Edible Oils; Animal Fats; Glycerine; and Palm Oils and its fractions.

The Storage Terminal is located in a corner property at the intersection of Fletcher and Johnstone Roads. Refer to Appendix A.6 of this Draft BA Report for a map illustrating the roads in proximity to and leading to the existing terminal site. The area demarcated in grey in Figure 1 indicates the approximate location of the existing terminal (Appendix A of this Draft BA Report includes several maps indicating the location of the existing terminal). The existing terminal site is divided into two main portions by a disused railway track. An additional disused railway track currently runs through the main terminal area, adjacent to the Office Buildings (i.e. Siding Number 650447). This track will be removed as part of

the proposed project. These disused railway tracks are owned by Transnet Freight Rail (TFR), and are shown in Figure 2 below.

The Storage Terminal is located approximately 315 m to the west of the Port of Durban (i.e. Durban Bay Estuary), on reclaimed land. The topography of the site is characterised by a gentle gradient and an elevation of approximately 7 m above mean sea level (amsl) (ERM, 2012). The terminal is located within the boundaries of the Port of Durban, under the jurisdiction of TNPA. The site is therefore surrounded by industries mainly related to freight handling and storage, shipping and engineering. Immediately adjacent to the site is a Maritime Training School (i.e. Unicorn Marine Training School), the Maydon Wharf Police Station, and railway tracks. Johnstone Road borders the western perimeter of the Storage Terminal, whilst Fletcher Road borders the northern perimeter. The Storage Terminal is located in a developed, transformed area that is designated for industrial activity.

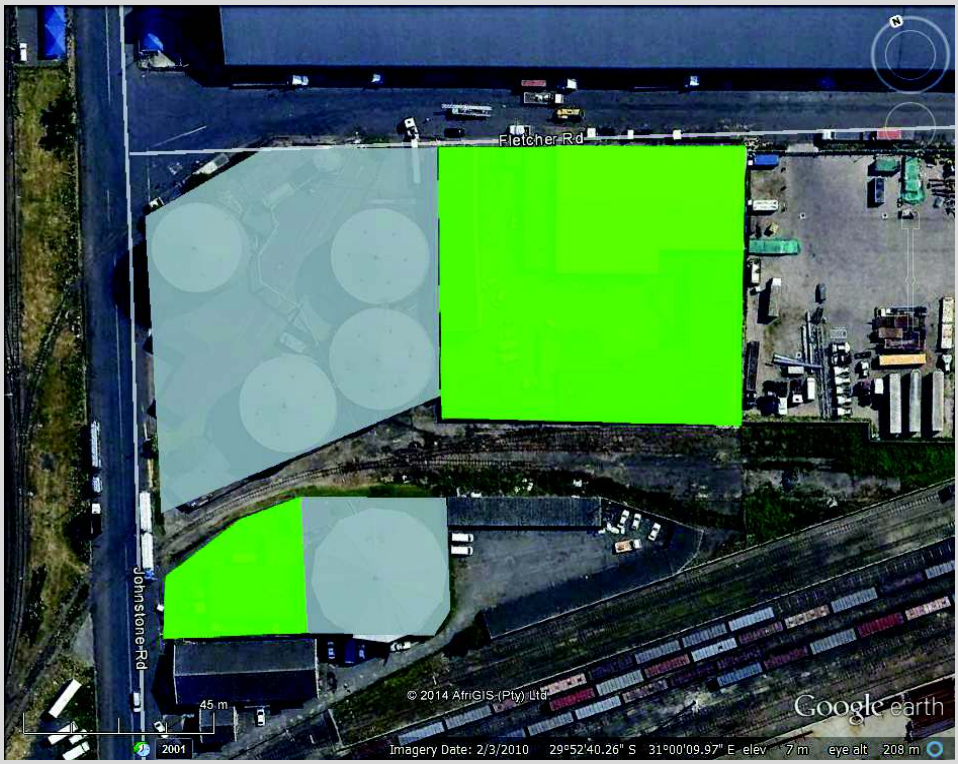

Figure 1: Location and approximate extent of the existing terminal (shown in grey) and area of expansion (shown in green). Imagery Source: Google Earth (2014).

Figure 2: A) Disused Railway Track (i.e. Siding Number 650447) running through the main terminal site. B) Disused Railway Track dividing the Storage Terminal into two main portions.

The layout of the existing Storage Terminal is shown in Figure 3. The existing Storage Terminal mainly consists of the following infrastructure and structures:

- five vertical aboveground storage tanks (of various sizes) allocated for the storage of Molasses;
- one smaller, unused vertical aboveground storage tank;
- one overhead storage tank;
- two underground storage tanks;
- two suspended walkways between three of the aboveground storage tanks;
- general access stairs on five of the aboveground storage tanks;
- fencing;
- gates (a total of eight);
- a road tanker loading gantry;
- three receiving trenches;
- four Pump Houses (three of which are currently in use);
- underground stormwater, sewer and electrical services;
- a workshop (including offices) in the vicinity of Johnstone Road;
- a site office building along Johnstone Road;
- an ablution and change room facility adjacent to aboveground storage tank (number 3);
- two below-ground pipelines extending between the terminal and the berths;
- a 100 kVA municipal substation (Number 2331); and
- OTGC's substation (11 kV) adjacent to the municipal substation.

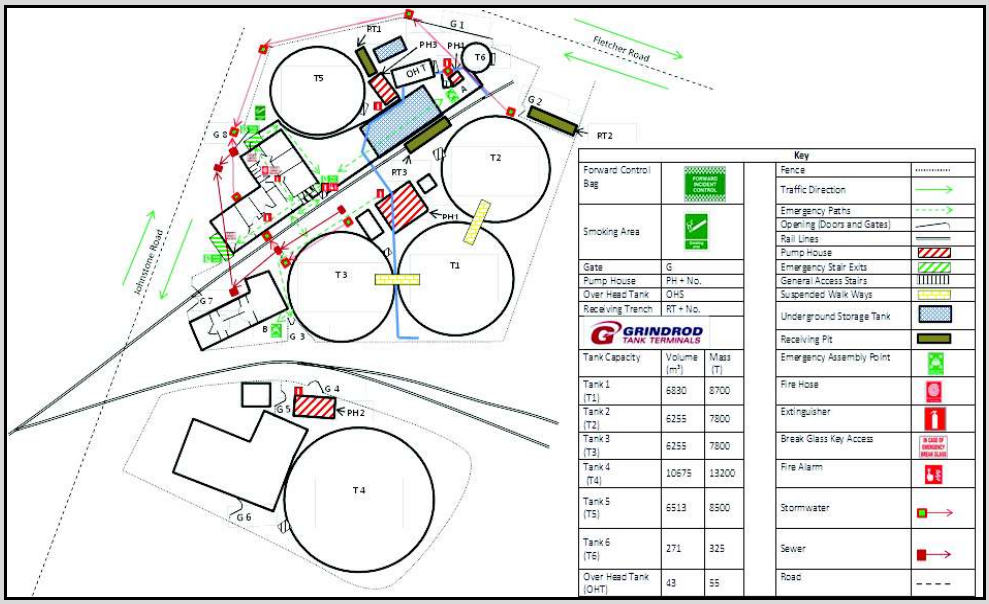

Figure 3: Layout of the Existing Storage Terminal.

Table 1 below shows the approximate specifications of the aboveground storage tanks at the existing terminal. The tanks are composed of steel.

Table 1: Approximate Specifications of the existing Aboveground Storage Tanks.

Tank Number	Diameter (m)	Height (m)	Capacity (m^3)
T1	24.38	14.53	6830
T2	22.86	15.24	6255
T3	22.86	15.24	6255
T4	30.48	14.63	10675
T5	21.34	18.29	6530
T6	6	9.6	271
Overhead Tank	2.69	7.3	41

As mentioned above, two existing pipelines extend between the Storage Terminal and the berths at Maydon Wharf in order to transfer Molasses from vessels to the storage tanks. The two (below ground) pipelines are located in the Fletcher Road servitude (north of the site), and the disused TFR servitude (that divides the site into two portions). The pipelines each extend 305 mm and 406 mm (i.e. respectively 12 and 16 inches) in diameter. Berth 8 and Berth 9 are used by OTGC for the above transfer process. However, it should be noted that these berths are common-user. Berth 8 is approximately 192 m long, with a maximum depth of 10.6 m (Transnet, 2010). On the other hand, Berth 9 extends approximately 149 m in length, with a maximum depth of 9.9 m (Transnet, 2010). Since the berths are common-user, hoses are used to link the pipelines to the vessels during the discharge of Molasses. The hoses extend between 152 mm and 254 mm (i.e. respectively 6 and 10 inches) in diameter. OTGC makes use of mobile spill kits and fire-fighting equipment at the berths in the event of any spillages or accidents. Currently, the Molasses is delivered to the Storage Terminal by ship and distributed to various Sugar Mills in KwaZulu-Natal by road tankers (that are owned by OTGC). Molasses is a seasonal product, and as such OTGC normally receives one shipment (via marine vessels) every four months (starting from September). In addition, the Molasses is also delivered to the terminal by road tankers and re-distributed to the Sugar Mills by road.

The road tanker loading gantry serves as an area to assist the transfer of Molasses between the storage tanks and road tankers. The gantry is top loading and contains 102 mm (i.e. 4 inch) diameter hoses. Figure 4 below shows the existing road loading gantry.

Figure 4: Existing Road Loading Gantry.

In addition, it is important to note that the Workshop Building, located at 57 Johnstone Road (adjacent to the aboveground storage tank (Number 4)) is included in the Operator Licence issued to OTGC by TNPA. This property is leased to OTGC by TNPA. OTGC has in turn leased this property to a third party, who currently utilises the workshop area. Figure 5 below shows the Workshop Building. Additional photographs of the existing Storage Terminal, and associated infrastructure, are included in Appendix B of this Draft BA Report. Appendix A.4 of this Draft BA Report includes a layout map showing the existing infrastructure linked to the Storage Terminal.

Figure 5: A) Workshop Building (Offices). B) Workshop Building.

The existing site office building includes two floors (i.e. ground floor and first floor) and all necessary safety equipment, as shown in Figure 6 below. The office building houses approximately 13 staff (i.e. 7 operational and 6 administration staff). Some of the buildings and structures at the existing terminal site contain asbestos roofing.

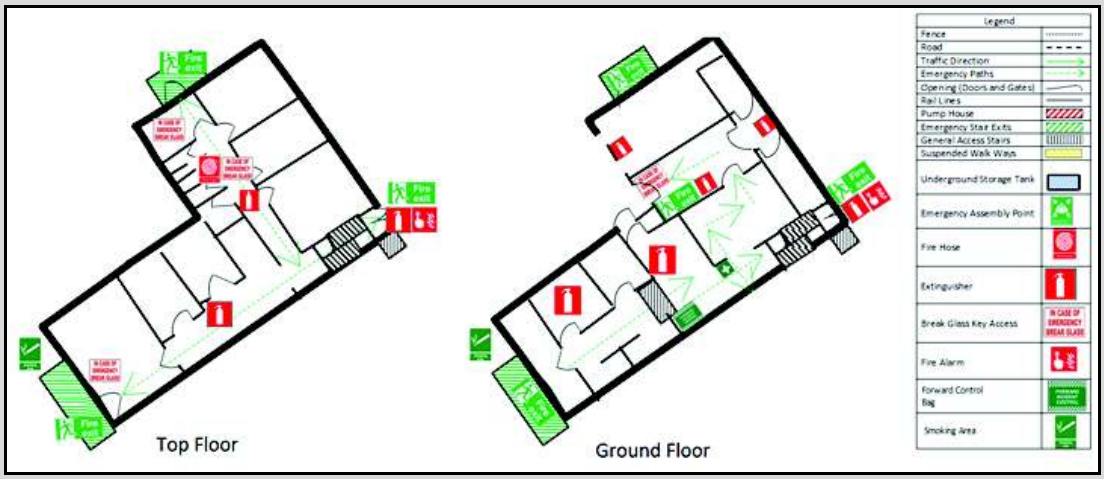

Figure 6: OTGC Office Building at the Existing Storage Terminal.

The existing terminal site is completely transformed and hard surfaced. No natural vegetation occurs on the site. However, a few plants and trees have been planted in certain areas by the terminal operator. These plants and trees include Frangipani (*Plumeria rubra*), Mango (*Mangifera indica*), Avocado (*Persea americana*), Moses-in-the-Cradle (*Rhoeo spathacea*), Red Aloe (*Aloe ferox*), and Yesterday Today Tomorrow (*Brunfelsia grandiflora*). The majority of the plants and trees planted inside the terminal area are exotic species (i.e. invasive alien plants), with the exception of the Red Aloe. There are other trees and shrubs that fall outside the boundary of the terminal area that will not be impacted on by the proposed project (i.e. these are not proposed to be relocated).

2.4. Proposed Upgraded Storage Terminal

2.4.1. Proposed Area of Expansion

A summary of the key components of the proposed project are described below. However, it is important to note that the project description provided within this section is based on the conceptual design phase. It is anticipated that some minor project description changes will be required as a result of the requirements of potential customers of the Storage Terminal, as well as further investigations during the detailed engineering phase.

OTGC intends to upgrade and expand the existing Storage Terminal in order to improve the operational capacity and to store additional Liquid Bulk products (in line with their Liquid Bulk Terminal Operator Licence). The proposed area of expansion is demarcated in green in Figure 1. The approximate centre point of the proposed upgraded terminal is 29° 52' 40.2"S and 31° 0' 9.67"E. The proposed project will take place on Portion 1 of ERF 10019, Durban (Main Property). However, it should be noted that TNPA has several leases within the Port of Durban and the details for the property on which the proposed project will take place, in terms of TNPA's sub-division planning, is indicated below:

- Lease 64 on ERF 10014, Durban;
- Lease of Portion of Lot 14 and Portion of Lot 15 of Block K on Rem. of Durban Bay Number 12783; and
- Lease of Lot 13 and Portion of Lot 14, Block K of Durban Bay Number 12783.

The area of expansion, as shown in Figure 1, includes the Unicorn Marine Training School, which is currently operational. The site was previously operated by African Coasters (PTY) Ltd. The training school is located at 14 Fletcher Road and consists of several buildings and warehouses (as well as a mini-substation). The main building consists of three floors, and the site is fenced off and contains parking areas. Some of the buildings and structures contain asbestos roofing. The site is completely hard surfaced and does not contain any natural, indigenous vegetation. A Wood Chipping Facility (i.e. NCT Durban Wood Chips (PTY) Ltd) is located in proximity to the proposed upgraded Storage Terminal, and a Transnet Port Terminals property is located directly adjacent to the training school (as shown in Appendix A.3 of this Draft BA Report). This training school property is included in OTGC's Liquid Bulk Terminal

Operator Licence. OTGC has leased this land to the Unicorn Marine Training School in the interim, however it is understood that the Marine Training School is scheduled to relocate to an alternate location.

The area of expansion also includes the section of the existing Storage Terminal, which includes the municipal substation (Number 2331), OTGC's substation, a Pump House (Number 2) and the Workshop.

The proposed upgraded terminal covers a total area of approximately 1.32 Ha. Appendix A of this Draft BA Report shows the proposed locality of the upgraded terminal (i.e. area of expansion), the location of existing and proposed infrastructure, as well as surrounding and adjacent land uses.

2.4.2. Proposed Demolition and Construction Work

At the existing Storage Terminal, OTGC intends to decommission and demolish all structures and infrastructure as described in Section 2.3 above (such as three of the aboveground storage tanks, the unused smaller aboveground storage tank and all ancillary structures and infrastructure), except for the following:

- the existing aboveground storage tank (Number 1), which is allocated for the storage of Molasses;
- the existing aboveground storage tank (Number 4), which is allocated for the storage of Molasses; and
- the existing two pipelines extending between the berths and the Storage Terminal (for the transfer of Molasses).

The two remaining aboveground storage tanks and pipelines will not be decommissioned and will be kept on site for the respective storage and transfer of Molasses. The two retained pipelines will be inspected and will continue to be used if they are found to be in a good working condition or they will be upgraded if required. The intention is to continue the Molasses operations when the demolition process is underway. In addition, the existing municipal substation (Number 2331) and OTGC's substation will be relocated to another position within the upgraded facility. The position of the substations will be confirmed during the detailed engineering phase. The Workshop Building will also be demolished. Subsequent to the demolition and decommissioning, the area will be prepared for further development.

At the training school site, it is planned to demolish all existing buildings and infrastructure, including the mini-substation. The area will be prepared for further development.

During the demolition and construction phase, temporary (mobile) offices will be established for the construction staff.

Once the abovementioned infrastructure and structures are demolished at the existing terminal and from the proposed area of expansion (Figure 1), additional (new) tanks for the storage of Vegetable Oils, Caustic Soda (Sodium Hydroxide) and MEG (Ethylene Glycol) will be installed. The additional (new) tanks will have a total combined storage capacity of approximately 68 500 m^3. The estimated height of the storage tanks will range from 14.33 m to 24 m, and the diameter will vary between 10 m and 23.60 m. The tanks will be constructed of steel and will be open vented at the top i.e. with no vacuum pressure relief devices. The storage tanks will be designed in line with the American Petroleum Institute (API) 650 specification.

At this point, fire protection measures on the actual aboveground storage tanks are not proposed as the products planned to be stored are not volatile (i.e. are safe).

It is proposed at the conceptual design phase, that the aboveground storage tanks will be equipped with a Radar Tank Gauging (RTG) system, which will control the amount of material being stored in each tank in order to prevent tank and bund overfilling. The aboveground storage tanks will also be equipped with a leak detection system and a high level alarm, which will be linked to the body tank valve. The body tank valve will automatically shut down if the alarm is triggered.

Overall, the proposed Storage Terminal will consist of the storage tanks indicated in Table 2 below and it will have a total combined storage capacity of approximately 85 600 m^3. It should be noted that the tank capacity reported in this section is based on the requirements of potential customers of the Storage Terminal. The actual capacity may vary approximately ± 5 % after construction.

Table 2: Proposed products to be stored at the upgraded OTGC Maydon Wharf Terminal

Product	Number of Tanks	New or Existing	Capacity (m^3)	Total (m^3)
Molasses	2	Existing	8 550	17 100
Caustic Soda	2	New	10 000	20 000
MEG	2	New	6 250	12 500
Vegetable Oils (Hard and Soft Oils)	2	New	1 500	3 000
	4	New	2 000	8 000
	2	New	7 500	15 000
	4	New	2 500	10 000
Total	**18**			**85 600**

Bunding will be constructed around the aboveground storage tanks at the upgraded Storage Terminal. The bunding will be designed to comply with or exceed the requirements of the most recent South African National Standards (SANS) specifications with a view to minimizing any risks associated with product spills. The bunding will also be designed in line with Oiltanking and/or API standards and specifications. It is anticipated that the bund walls will be constructed of reinforced concrete and will extend 3 m in height (based on the worst-case scenario).

The floors of the bund areas will be sealed with impervious material. OTGC is planning to install a dedicated, closed system for the drainage of the storage tanks and bund areas. Pits for stormwater drainage will be installed outside and inside each bund area. These stormwater pits will be linked with valves. Each valve will be kept closed in the event of potential tank failure. If the stormwater is clean, it will be discharged to the existing municipal stormwater system. On the other hand, if the stormwater is not clean (as a result of a potential spillage), it will be transferred to the oily-water separator system and will thereafter only be discharged to the stormwater system once it is ascertained that the water is clean. The waste water system will also be linked to the separator system. If the waste water is not deemed clean after passing through the separator, the resulting material will be handled by an approved Contractor for disposal at a registered/licenced waste facility. However, it is envisaged that the amount of material planned for disposal will be minimal. Due to the type of products planned to be stored at the Storage Terminal, OTGC will, as far as possible, try to recycle any oil or products recovered from the oily-water system (i.e. return it to the storage tanks). Details of the separator system will be finalised during the detailing engineering phase.

It should be noted that OTGC was granted a Trade Effluent Permit by the eThekwini Municipality in August 2013, in terms of Chapter 4/1 of the Municipal Sewage Disposal Bylaws. This permit allows OTGC to discharge trade effluent resulting from the storage of Molasses into the Municipal Sewer at a total monthly discharge volume not exceeding 100 kl.

Piling and surfacing will also be undertaken for the construction of the aboveground storage tanks. The details of the piling will be determined during the detailed engineering phase and subsequent to the geotechnical soil investigation.

In addition, a road tanker loading gantry will be constructed as part of the proposed project. The gantry will serve as an area to assist the transfer of the Bulk Liquids from the storage tanks into the road tankers. The gantry will be top loading and fall protection measures (i.e. to prevent personnel from falling when working at height) will be implemented to ensure the safety of all personnel during all phases of the project lifecycle. The gantry will be approximately 6 m high, and will consist of three lanes and approximately 102 mm (i.e. 4 inch) diameter loading hoses. The loading rates of the hoses are expected to be 90 m^3/hour. The capacity of the road tankers is estimated to be 30 MT. The loading gantry will be equipped with weigh bridges and batch meters to avoid road tanker overfilling. Transfer of the products will depend on the weigh bridge ticket generated. The gantry will also be equipped with a Terminal Automation System (TAS), which will automatically schedule the road tanker loading operations. Strict access control will be implemented by OTGC during the operational phase. It is estimated that during the operational phase, 85 road tankers a day (i.e. over 24 hours) are expected to visit the upgraded Storage Terminal. However, this is based on the worst-case scenario, based on peak conditions. Additional information is provided in the Traffic Impact Assessment specialist study (Appendix D.1 of this Draft BA Report).

A boiler room will also be constructed at the Storage Terminal. The boiler will be a hot water 100 KW unit for circulating water. The boiler room is estimated to extend 5 m in height. It is important to note that current technology allows for boilers to be operated by a variety of fuels. However as part of this project, it has been assumed that the boiler will be powered and operated by Fuel Oil, however this could potentially change. If Fuel Oil will be used to power the on-site

hot water boiler, a volume of not more than 10 m^3 will be required on site. This has been addressed in the Risk Assessment specialist study (Appendix D.2 of this Draft BA Report).

Furthermore, an office building will be constructed at the Storage Terminal to house all existing and new operational staff. The office building will extend approximately 8 m in height and will include offices, boardroom, ablution facilities, storage areas, change room, training room and a generator.

The entire upgraded Storage Terminal will be fenced in compliance with the British Standard (BS) 1722. The height of the fencing and entrance gate will be approximately 3 m.

Additional pipelines will also be installed between the upgraded terminal and the existing berths (i.e. Berth 8 and Berth 9 within the Port of Durban). A total of six pipelines are planned to be installed and each pipeline will be approximately 500 m long. The pipelines will be installed within the existing 2 m wide pipeline servitude along Fletcher Road (i.e. where the existing Molasses pipelines run). The routing of the proposed pipelines is shown in Appendix A of this Draft BA Report. It is important to note that the routing of the proposed pipelines is based on the worst-case scenario in terms of length and point of entry to the upgraded Storage Terminal. Appendix A of this Draft BA Report shows that the proposed pipelines will enter the existing Storage Terminal area; however it is likely that the pipelines will enter the upgraded Storage Terminal area at the training school site (thereby reducing the length of the pipelines).

The approximate specifications of the pipelines are shown in Table 3.

Table 3: Approximate Specifications of the proposed Pipelines.

Proposed Pipeline Number	Product	Diameter (mm)
1	Molasses	350
2	Caustic Soda	250
3	MEG	250
4	Vegetable Oils (Hard Oils)	250
5	Vegetable Oils (Soft Oils)	200
6	Vegetable Oils (Soft Oils)	200

The proposed pipelines will contain an estimated average throughput or flow rate of 41 m^3/day. However, the pipelines will be designed to discharge a vessel in maximum 24 to 32 hours.

At this conceptual stage, it is proposed that the new pipelines will be installed 2 m aboveground within the boundary of the proposed terminal, and thereafter once it enters Port owned land (i.e. at point 29° 52' 39.30" S and 31° 0' 13.01" E), it will be installed below ground to a depth ranging between 1.6 m and 2 m.

It is estimated that a length of 310 m of the pipelines will be installed below ground at a depth of up to 2 m. Based on this, it is estimated that approximately 1 240 m^3 (310 m long x 2 m wide x 2 m deep) of material will be excavated in the road reserve and on the berth in order to install the new pipelines. It is important to note that the proposed project (including the excavation work for the proposed pipelines) will not entail any dredging or construction activities within the port/bay itself (i.e. below the water mark).

At the berths, hoses will be used to link the pipelines to the vessels during the discharge of products, in line with the existing operations. The hoses will extend between 152 mm and 254 mm (i.e. 6 to 10 inches) in diameter. The maximum pressure of the ship offload hoses will be approximately 7.0 Bar. Approximately one shipment of Caustic Soda, Vegetable Oils and MEG will each be delivered to the Storage Terminal monthly via marine vessels. As mentioned above, OTGC currently receives one shipment of Molasses (via marine vessels) every four months. However, for purposes of assessing the worst-case scenario it is assumed that one shipment of Molasses will be delivered to the Storage Terminal monthly. Therefore, in terms of full operations for the upgraded terminal, the vessel traffic will increase to four per month. In terms of the ship capacity, depending on the product, vessels with parcels ranging from 7000 MT to 20000 MT are expected during the operational phase. In line with the existing operations, mobile spill kits and fire-fighting equipment will be placed at the berths during vessel discharge as a preventive measure in terms of potential spillages or accidents. It is important to note that during the operational phase, if any spills occur on site or in the Port, the Port of Durban Oil Spill Contingency Plan will need to be adhered to. In addition, an Emergency Response Action Plan (ERAP) will be compiled and implemented by OTGC, prior to the commissioning of the proposed project. The ERAP will tie into the Response Plan of the Port of Durban.

A future pump bay for back loading (i.e. reloading) of products to the marine vessel is also envisaged as part of the proposed project. The pumps, however, will be installed once the customer(s) require loading of the marine vessel. This will enhance the operational flexibility of the terminal. This will not have any influence on the road based traffic generated as part of the proposed project.

Once operational, the Storage Terminal will operate on a 24 hour basis, seven days a week. The proposed products will be imported via ship, piped to and stored at the Storage Terminal, and distributed within South Africa by road tankers. As mentioned above, the road tankers transporting Molasses to and from the Storage Terminal are owned by OTGC. The road tankers transporting Caustic Soda, Vegetable Oils and MEG from the Storage Terminal will belong to the potential customers of the tank farm.

In terms of accidents and hazards, OTGC will conduct a Hazard and Operability Analysis (HAZOP) Study in parallel with the BA Process, prior to construction. This is in line with OTGC's design principles, regardless of whether or not the project is considered a Major Hazard Installation (MHI). The findings of the HAZOP Study will be incorporated into the Final BA Report, as well as the Risk Assessment.

As described above, the proposed upgraded Storage Terminal will be developed in line with relevant international and national standards and legislation, and it will mainly comprise of the following:

- Storage tanks;
- Bunding;
- Site office;
- Parking area;
- Workshop;
- Fencing and entrance gate;
- Road tanker loading gantry;
- Security kiosk;
- Oil/Water separator;
- Pump bays/houses (it should be noted that modern (advanced) pumps will be used during the operational phase);
- Drainage channels;
- Boiler room;
- Pipelines; and
- Associated service infrastructure.

In summary, the proposed project will include the following main construction activities:

- Decommissioning and demolition of ancillary infrastructure, including three of the Molasses storage tanks at the existing terminal site.
- Operation of the two remaining tanks for the storage of Molasses at the existing terminal site.
- Operation of the two existing pipelines at the existing terminal site. These two existing pipelines first need to be inspected and tested before being upgraded or substituted.
- Decommissioning all existing structures and infrastructure at the Marine Training School site.
- Site clearing and levelling.
- Construction of new tanks for the storage of Caustic Soda, Vegetable Oils and MEG, as well as ancillary infrastructure.
- Installation of six pipelines between the upgraded terminal and the existing Berths 8 and 9.
- Installation of the road tanker loading gantry.
- Establishment of a future marine vessel loading pump area if the customers opt for reloading of a vessel.

2.4.3. Employment Opportunities

During the construction phase it is expected that both skilled and unskilled temporary employment opportunities will be created. It is difficult to specify the actual number of employment opportunities that will be created at this stage; however it is anticipated that approximately 350 employment opportunities will be created during the construction phase.

The operational phase of the project is expected to create skilled employment opportunities. It is anticipated that approximately 12 employment opportunities will be created during the operational phase. Apart from creating job

opportunities, the project will create various added economic spin off activities towards the shipping, trading and trucking industries. The operational staff will mostly work three shifts over a 24 hour period.

2.4.4. Construction Phasing

OTGC has been approached by potential customers that are planned to store Caustic Soda at the upgraded Storage Terminal. These customers need to commence with the storage as soon as possible. As a result, various layout alternatives have been proposed by OTGC (in terms of construction phasing) in order to ensure the earliest operation of the Caustic Soda tanks, subsequent to the issuing of an Environmental Authorisation (should such authorisation be granted by the KZN DEDTEA). These alternatives are described below, as well as in Section B (4) of this Draft BA Report. Note that all specifications for the project components are as described above. All conceptual layout drawings of the alternatives described within this section are included in Appendix C of this Draft BA Report.

It is important to note that the alternatives mentioned below are in terms of the construction phasing and layouts. These alternatives do not change the overall total storage capacity of the Storage Terminal or the specifications of the infrastructure as detailed in Section 2.4.2 above. Each layout alternative described below occurs within the boundaries of the proposed area of expansion, as well as the existing terminal, which is in line with the Liquid Bulk Terminal Operator Licence. All alternatives cover the same total area of development (i.e. 1.32 Ha) and take place within the same footprint. The differences between the alternatives are based on the layout or placement of infrastructure within the Storage Terminal.

- **Alternative 1 – Phase 1 (Preferred Alternative)**

During Phase 1 of Alternative 1 (preferred alternative), the road tanker loading gantry at the existing Storage Terminal site, as well as the remaining (existing) two aboveground storage tanks (i.e. Tank Numbers 1 and 4) and pipelines will continue to operate for the storage, handling and distribution of Molasses. The two existing pipelines could possibly be upgraded if they are not in a good working condition.

The infrastructure and structures at the adjacent Marine Training School site will be demolished and the site will be prepared for construction. At the Marine Training School site, two aboveground storage tanks will be constructed for the storage of Caustic Soda. Remote bunding and a temporary pump bay will be constructed for the Caustic Soda tanks and fencing (including two temporary gates) will be installed around the training school property. The proposed 250 mm diameter pipeline will also be installed to transfer Caustic Soda between the Storage Terminal and the berths. A three lane road loading gantry will be temporarily constructed at the Marine Training School site for the distribution of Caustic Soda. The entrance to the Caustic Soda loading gantry will be positioned along Fletcher Road. A temporary office block will be constructed adjacent to the Caustic Soda loading gantry to facilitate operations.

In addition, at the existing Storage Terminal site, the office building (as described in Section 2.4.2 above) will be constructed adjacent to the existing aboveground storage tank (Tank Number 4) to ensure that the staff can continue to operate the storage, handling and distribution of Molasses and Caustic Soda even when Phase 2 is initiated. This will ensure a smooth transaction in the construction and operation of the facility, as the terminal will be operational for the storage, handling and distribution of Caustic Soda and Molasses. The workshop (adjacent to Tank Number 4) at the existing terminal site will be demolished and the substations will be relocated within the facility.

In summary, the following activities will take place for Alternative 1 – Phase 1:

- Demolition of all structures at the adjacent training school site;
- Demolition of the workshop and relocation of the substations at the existing terminal site;
- Construction and operation of two aboveground storage tanks (with bunding) for the storage of Caustic Soda;
- Construction and operation of one 250 mm diameter pipeline between the terminal and the berths for the transfer of Caustic Soda;
- Construction and operation of a temporary road loading gantry (and pump bay) at the training school site for the distribution of Caustic Soda;
- Installation of fencing and two gates around the perimeter of the training school site;
- Construction and operation of the temporary office block adjacent to the road loading gantry (for Caustic Soda) at the adjacent training school site;
- Operation of the two existing above ground tanks for the storage of Molasses at the existing terminal site;
- Operation of the road loading gantry (for Molasses) at the existing terminal site;

- Operation or upgrade of two pipelines (for Molasses) at the existing terminal site; and
- Construction of the office building adjacent to the existing aboveground storage tank (i.e. Tank Number 4).

- **Alternative 1 – Phase 2 – Option 1 (Preferred Alternative)**

Phase 2 of Alternative 1 has been divided into two options. Option 1 (the preferred alternative) will entail the storage, handling and distribution of Molasses and Caustic Soda, as well as the construction of the 14 aboveground storage tanks for Vegetable Oils and MEG. Bunding will be constructed for the Vegetable Oil and MEG storage tanks. The four pipelines will be constructed to transfer the Vegetable Oils and MEG between the berths and the upgraded Storage Terminal. The office building and ablution facility at the existing terminal site will be demolished.

Furthermore, the road loading gantry at the existing terminal site (for the distribution of Molasses) will be demolished. In addition, the road loading gantry temporarily constructed at the training school site for the distribution of Caustic Soda will be demolished, together with the associated temporary gantry offices, gates, and pump bay. Instead, a road loading gantry will be constructed (as described in Section 2.4.2) at the existing terminal site (parallel to Johnstone Road) for the distribution of all products planned to be stored at the upgraded terminal. Fencing will be installed around the perimeter of the upgraded terminal and two gates will be installed along Johnstone Road, in the vicinity of the road loading gantry. The separator system, security kiosk and an operations office will also be constructed in the vicinity of the road loading gantry.

In summary, the following activities will take place for Alternative 1 – Phase 2 – Option 1:

- Construction of the remainder of the infrastructure as described in Section 2.4.2, such as the aboveground storage tanks and pipelines for Vegetable Oils and MEG;
- Demolition of the temporary road loading gantry (as well as the temporary pump bay, gantry offices and gates) at the training school site for the distribution of Caustic Soda;
- Demolition of the road loading gantry at the existing terminal site for the distribution of Molasses;
- Demolition of remaining infrastructure on the existing terminal site as described in Section 2.4.2 above (i.e. site offices, aboveground storage tanks, ablution facility etc.);
- Construction of the road loading gantry at the existing terminal site parallel to Johnstone Road (as well as the operations office, security kiosk, separator system, and gates);
- Operation of all aboveground storage tanks and pipelines; and
- Construction of the remaining infrastructure as described in Section 2.4.2 above.

- **Alternative 1 – Phase 2 – Option 2**

Option 2 of Phase 2 will entail the storage, handling and distribution of Molasses and Caustic Soda, as well as the construction of the 14 aboveground storage tanks for Vegetable Oils and MEG. Bunding will be constructed for the Vegetable Oil and MEG storage tanks. The four pipelines will be constructed to transfer the Vegetable Oils and MEG between the berths and the upgraded Storage Terminal. The office building, ablution facility and other remaining infrastructure at the existing terminal site will be demolished.

Furthermore, the road loading gantry at the existing terminal site (for the distribution of Molasses) will be demolished. The road loading gantry temporarily constructed at the training school site for the distribution of Caustic Soda (as described above for Alternative 1 – Phase 1) will be retained, along with the two gates along Fletcher Road. This gantry will be used for the distribution of all products planned to be stored at the upgraded terminal. The associated temporary gantry offices and pump bay temporarily constructed for the distribution of Caustic Soda at the training school site will also be demolished. Fencing will be installed around the perimeter of the upgraded terminal. The separator system will also be constructed in the vicinity of the road loading gantry at the training school site.

In addition, at the existing Storage Terminal site, the office building constructed adjacent to the existing aboveground storage tank (Tank Number 4) will be demolished. Instead, the site offices (as per the description in Section 2.4.2) will be constructed adjacent to the road loading gantry at the training school site.

In summary, the following activities will take place for Alternative 1 – Phase 2 – Option 2:

- Construction of the remainder of the infrastructure as described in Section 2.4.2, such as the aboveground storage tanks and pipelines for Vegetable Oils and MEG;

- Retention of the temporary road loading gantry (as well as the gates) at the training school site (for the distribution of Caustic Soda);
- Construction of the office block adjacent to the road loading gantry at the training school site;
- Demolition of the temporary pump bay and gantry offices at the training school site for the distribution of Caustic Soda;
- Demolition of the road loading gantry at the existing terminal site for the distribution of Molasses;
- Demolition of the office building adjacent to the existing aboveground storage tank (i.e. Tank Number 4) as per Alternative 1 – Phase 1;
- Demolition of remaining infrastructure on the existing terminal site as described in Section 2.4.2 above (i.e. site offices, aboveground storage tanks, ablution facility etc.);
- Operation of all aboveground storage tanks and pipelines; and
- Construction of the remaining infrastructure as described in Section 2.4.2 above.

- **Alternative 2 – No construction phasing:**

Alternative 2 entails no phasing of the construction, and will be carried out as described above in Section 2.4.2. The terminal will continue to store, handle and distribute Molasses during the demolition and construction process. The demolition of infrastructure will commence at the training school site and the existing terminal site. Thereafter the construction of the aboveground storage tanks for Caustic Soda, Vegetable Oils and MEG and associated infrastructure (i.e. bunding, office buildings, pipelines etc.) will take place as described in Section 2.4.2 above.

2.4.5. Construction Timeframes:

The following construction timeframes are proposed for the above layout alternatives:

Alternative 1 – Phase 1 (Preferred Alternative):
- 3 months for demolition
- 16 months for construction

Alternative 1 – Phase 2 – Option 1 and Option 2:
- 3 months for demolition
- Between 26 and 32 months for construction (depending on the date of commencement).

Alternative 2 – No construction phasing:
- 3 months for demolition
- 16 months for construction

3. ACTIVITY DESCRIPTION

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June 2010), Listing Notice 3 (GNR 546, 18 June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

Note from the CSIR: As mentioned in Section B (1) above, the Application for Environmental Authorisation for this BA Process was submitted to the KZN DEDTEA on 25 September 2014. The Application for Environmental Authorisation was acknowledged and accepted by the KZN DEDTEA on 15 October 2014. Thus, the BA Process was initiated under the 2010 EIA Regulations (as amended) (i.e. GN R543, R544, R545 and R546), before the promulgation of the 2014 EIA Regulations on 8 December 2014 in GN R982, R983, R984 and R985.

In line with Section 53 (1) of the Transitional Arrangements included in the 2014 EIA Regulations, applications submitted in terms of the 2010 EIA Regulations and which are pending at the time at which the 2014 EIA Regulations were enforced, must continue in terms of 2010 EIA Regulations. **Therefore, the listed activities included below are in terms of the 2010 EIA Regulations.**

However, for the purpose of completeness and relevance, the relevant listed activities of the 2014 EIA Regulations that apply to the proposed project and correspond to the listed activities included in the Application for

Environmental Authorisation (in accordance with the 2010 EIA Regulations) have been included and assessed in this Draft BA Report (as specified in the Transitional Arrangements of the 2014 EIA Regulations).

Note that there are no "new" listed activities in the 2014 EIA Regulations that apply to the proposed project that were not included in the 2010 EIA Regulations.

The applicable activities in terms of the 2010 and 2014 EIA Regulations are provided below.

Activity Number (in terms of the relevant or notice):	**Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice):**
GN R544, 18 June 2010 (as amended)	
Activity 14: The construction of structures in the coastal public property where the development footprint is bigger than 50 square metres, excluding (i) the construction of structures within existing ports or harbours that will not increase the development footprint or throughput capacity of the port or harbour; (ii) the construction of a port or harbour, in which case activity 24 of Notice 545 of 2010 applies; (iii) the construction of temporary structures within the beach zone where such structures will be demolished or disassembled after a period not exceeding 6 weeks.	The proposed project will entail the installation of pipelines, storage tanks and associated infrastructure at Maydon Wharf, within the Port of Durban, which will exceed 50 m^2 in area. The proposed project will increase the throughput capacity of the Port of Durban.
Activity 16 (vi): Construction or earth-moving activities in the sea, an estuary, or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater, in respect of: ▪ (vi) infrastructure covering 50 square metres or more but excluding: a. if such construction or earth moving activities will occur behind a development setback line; or b. where such construction or earth moving activities will occur within existing ports or harbours and the construction or earth moving activities will not increase the development footprint or throughput capacity of the port or harbour; c. where such construction or earth moving activities is undertaken for the purposes of maintenance of the facilities mentioned in (i)-(vi) above; or d. where such construction or earth moving activities is related to the construction of a port or harbour, in which case activity 24 of Notice 545 of 2010 applies. *Note from the CSIR: Refer to the explanation below, as this listed activity is no longer applicable in terms*	The proposed project will entail earth moving and construction activities within a distance of 100 m inland of the high-water mark of the Durban Bay Estuary (i.e. within the floodplain) for the proposed installation of pipelines extending between the berths and the tank farm. A total of six pipelines are planned to be installed and each pipeline will be approximately 500 m long with an estimated average throughput of 41 m^3/day. Furthermore, the two existing pipelines extending between the tank farm and the berths could possibly be upgraded if required. It is estimated that the pipelines (including its servitude) will cover an area of more than 50 m^2. The proposed construction and earth moving activities will take place in the existing Port of Durban. The throughput capacity of the port itself will increase as a result of the proposed project. The proposed installation of the pipelines will not be undertaken for maintenance purposes.

Activity Number (in terms of the relevant or notice):	**Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice):**
of the 2014 EIA Regulations.	
Activity 18 (iv): The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from: ▪ (iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater – but excluding where such infilling, depositing, dredging, excavation, removal or moving: a. is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or b. occurs behind the development setback line.	The proposed project will entail the installation of six pipelines between the tank farm and the berths. Furthermore, the two existing pipelines extending between the tank farm and the berths could possibly be upgraded if required. This may result in the infilling, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 m^3 from a distance of 100 m inland of the high-water mark of the Durban Bay Estuary (i.e. within the floodplain). The proposed installation of the pipelines will not be undertaken for maintenance purposes.
Activity 43: The expansion of structures in the coastal public property where the development footprint will be increased by more than 50 square metres, excluding such expansions within existing ports or harbours where there would be no increase in the development footprint or throughput capacity of the port or harbour.	The proposed project will entail the installation of pipelines, storage tanks and associated infrastructure at Maydon Wharf, within the Port of Durban, which will exceed 50 m^2 in area. The proposed development is considered as both an "expansion" and "construction" activity. The proposed project will increase the throughput capacity of the Port of Durban.
Activity 45 (vi) and (vii): The expansion of facilities in the sea, an estuary, or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater, for – ▪ (vi) infrastructure by more than 50 square metres; ▪ (vii) facilities associated with the arrival and departure of vessels and the handling of cargo. where such expansion will result in an increase in the development footprint of such facilities but excluding where such expansion occurs: a. behind a development setback line; or b. within existing ports or harbours where there will be no increase in the development footprint or throughput capacity of the port or harbour.	The proposed project will entail the installation of pipelines within a distance of 100 m inland of the high-water mark of the Durban Bay Estuary (i.e. within the floodplain), which is also considered as expansion. A total of six pipelines are planned to be installed and each pipeline will be approximately 500 m long with an estimated average throughput of 41 m^3/day. Furthermore, the two existing pipelines extending between the tank farm and the berths could possibly be upgraded if required. It is estimated that the pipelines (including its servitude) will cover an area of more than 50 m^2. In addition, the pipelines are associated with the arrival and departure of vessels and the handling of cargo (i.e. Bulk Liquids). The proposed activities will take place in the existing Port of Durban. The throughput capacity of the port itself will increase as a result of the proposed project.
GN R545, 18 June 2010 (as amended)	
Activity 3: The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with	The proposed project will entail the installation of Caustic Soda aboveground tanks with a total combined storage capacity of approximately 20 000 m^3 (as shown in Table 2 above). Caustic Soda is defined as a dangerous good in terms of the 2010 EIA Regulations. This is regarded as a

Activity Number (in terms of the relevant or notice):	Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice):
a combined capacity of more than 500 cubic metres.	"construction" activity as dangerous goods were not stored on site previously.
Activity 24 (i): Construction or earth moving activities in the sea, an estuary, or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater, in respect of: ▪ (i) facilities associated with the arrival and departure of vessels and the handling of cargo. but excluding - a. activities listed in activity 16 in Notice 544 of 2010, b. construction or earth moving activities if such construction or earth moving activities will occur behind a development setback line; c. where such construction or earth moving activities will occur in existing ports or harbours where there will be no increase of the development footprint or throughput capacity of the port or harbour; or d. where such construction or earth moving activities takes place for maintenance purposes.	The proposed project will entail construction and earth moving activities within a distance of 100 m inland of the high-water mark of the Durban Bay Estuary (i.e. within the floodplain) for the proposed installation of pipelines extending between the berths and the tank farm. A total of six pipelines are planned to be installed and each pipeline will be approximately 500 m long with an estimated average throughput of 41 m^3/day. Furthermore, the two existing pipelines extending between the tank farm and the berths could possibly be upgraded if required. In addition, the pipelines are associated with the arrival and departure of vessels and the handling of cargo (i.e. Bulk Liquids). The proposed construction and earth moving activities will take place in the existing Port of Durban. The throughput capacity of the port itself will increase as a result of the proposed project. The proposed installation of the pipelines will not be undertaken for maintenance purposes.

Activity Number (in terms of the relevant or notice):	Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice):
GN R983, 8 December 2014	
Activity 15: The development of structures in the coastal public property where the development footprint is bigger than 50 square metres, excluding: (i) the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (ii) the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (iii) the development of temporary structures within the beach zone where such structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared; or (iv) activities listed in activity 14 in Listing Notice 2 of 2014, in which case that activity applies. *Note from the CSIR: In terms of the 2014 EIA Regulations, "development footprint" is defined as*	The proposed project will entail the installation of pipelines, storage tanks and associated infrastructure at Maydon Wharf, within the Port of Durban, which will exceed 50 m^2 in area. The proposed project will increase the development footprint of the Port of Durban.

Activity Number (in terms of the relevant or notice):	**Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice):**
any evidence of physical alteration as a result of the undertaking of any activity.	
Activity 19 (iii): The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from – ▪ (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-watermark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving – a) will occur behind a development setback; b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.	The proposed project will entail the installation of six pipelines between the tank farm and the berths. Furthermore, the two existing pipelines extending between the tank farm and the berths could possibly be upgraded if required. This may result in the infilling, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 m^3 from a distance of 100 m inland of the high-water mark of the Durban Bay Estuary (i.e. within the floodplain). The proposed installation of the pipelines will not be undertaken for maintenance purposes.
Activity 52: The expansion of structures in the coastal public property where the development footprint will be increased by more than 50 square metres, excluding such expansions within existing ports or harbours where there will be no increase in the development footprint of the port or harbour and excluding activities listed in activity 23 in Listing Notice 3 of 2014, in which case that activity applies. *Note from the CSIR: In terms of the 2014 EIA Regulations, "development footprint" is defined as any evidence of physical alteration as a result of the undertaking of any activity.*	The proposed project will entail the installation of pipelines, storage tanks and associated infrastructure at Maydon Wharf, within the Port of Durban, which will exceed 50 m^2 in area. The proposed development is considered as both an "expansion" and "construction" activity. The proposed project will increase the development footprint of the Port of Durban.
Activity 55 (v) (a): Expansion - ▪ (v) if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of – a. facilities associated with the arrival and departure of vessels and the handling of cargo; but excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	The proposed project will entail the installation of pipelines within a distance of 100 m inland of the high-water mark of the Durban Bay Estuary (i.e. within the floodplain), which is also considered as expansion. A total of six pipelines are planned to be installed and each pipeline will be approximately 500 m long with an estimated average throughput of 41 m^3/day. Furthermore, the two existing pipelines extending between the tank farm and the berths could possibly be upgraded if required. It is estimated that the pipelines (including its servitude) will cover an area of more than 50 m^2. In addition, the pipelines are associated with the arrival and departure of vessels and the handling of cargo (i.e. Bulk Liquids). The proposed activities will take place in the existing Port of Durban. The proposed project will increase the development footprint of the Port of Durban.

Activity Number (in terms of the relevant or notice):	**Describe each listed activity as per the project description (and not as per wording of the relevant Government Notice):**
Note from the CSIR: In terms of the 2014 EIA Regulations, "development footprint" is defined as any evidence of physical alteration as a result of the undertaking of any activity.	
GN R984, 8 December 2014	
Activity 4: The development of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.	The proposed project will entail the installation of Caustic Soda aboveground tanks with a total combined storage capacity of approximately 20 000 m^3 (as shown in Table 2 above). Caustic Soda is defined as a dangerous good in terms of the 2010 EIA Regulations. This is regarded as a "construction" activity as dangerous goods were not stored on site previously.
Activity 26 (v) (a) Development - (v) if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of – (a) facilities associated with the arrival and departure of vessels and the handling of cargo; but excluding the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour. *Note from the CSIR: In terms of the 2014 EIA Regulations, "development footprint" is defined as any evidence of physical alteration as a result of the undertaking of any activity.*	The proposed project will entail development, construction and earth moving activities within a distance of 100 m inland of the high-water mark of the Durban Bay Estuary (i.e. within the floodplain) for the proposed installation of pipelines extending between the berths and the tank farm. A total of six pipelines are planned to be installed and each pipeline will be approximately 500 m long with an estimated average throughput of 41 m^3/day. Furthermore, the two existing pipelines extending between the tank farm and the berths could possibly be upgraded if required. In addition, the pipelines are associated with the arrival and departure of vessels and the handling of cargo (i.e. Bulk Liquids). The proposed construction and earth moving activities will take place in the existing Port of Durban. The proposed project will increase the development footprint of the Port of Durban.

Note from the CSIR regarding the Environmental Assessment Process and Activity Description provided above:

As mentioned in Section B (1), approval was obtained from the KZN DEDTEA to conduct a BA Process instead of a Scoping and EIA Process for the proposed project. A copy of the motivation letter that was submitted by the CSIR to the KZN DEDTEA on 26 August 2014 is included in Appendix G.2 of this Draft BA Report. The letter, dated 8 September 2014, from the KZN DEDTEA approving the downscale is included in Appendix G.3 of this Draft BA Report.

The precautionary approach has been followed in completing the above Table of Listed Activities, in that if there is any doubt at this stage of the project planning whether or not an activity is included in the project design, then the activity is listed. This list may be refined during the course of the BA.

Furthermore, the above listed activities have been identified in line with the following (as agreed to with the KZN DEDTEA):

- "Coastal Public Property" is outlined in Section 7 of the National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008) (NEM: ICMA). Discussions are being held at a government level to confirm whether "Coastal Public Property" includes the port environment. Until these discussions are concluded, certain areas of port environments have been excluded from "Coastal Public Property".

Furthermore, this section of the NEM: ICMA has been put on hold. However, in order to assess all possible impacts associated with the proposed project and for purposes of inclusivity, the relevant listed activities relating to coastal public property (i.e. Activities 14 and 43 of GN R544 and Activities 15 and 52 of GN R983) have been identified (and included above) based on the precautionary approach.

- The proposed project is not located within 32 m of any watercourses. The Port of Durban is not considered to be a watercourse. According to the Situation Assessment (dated 2011) compiled (as part of the Bay of Natal Estuarine Management Plan) by Marine and Estuarine Research (MER) and ERM for the eThekwini Municipality, TNPA and KZN DEDTEA, the Port of Durban is classed as an "Estuarine Bay" which is one of five types of estuaries in South Africa. In addition, the proposed project is located a significant distance (i.e. more than 32 m) from the uMbilo/uMhlatuzana and aManzimnyama Canals which supply freshwater to the Durban Bay Estuary. Therefore, all relevant listed activities relating to construction or expansion activities within 32 m of a watercourse do not apply to the proposed project, and have thus been excluded from the above Table of Listed Activities.

- According to the GN R545 of the 2010 EIA Regulations (as amended), dangerous goods are "*goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards*". Caustic Soda (Sodium Hydroxide) is listed in the SANS 10234 Supplement 2008 and accordingly has one or more of the characteristics listed in the Hazard Statements in Section 4.2.3. Caustic Soda triggers Hazard Codes H314 and H318, and therefore is considered a "dangerous good".

Furthermore, Section 53 (2) of the Transitional Arrangements of the 2014 EIA Regulations states:

- "If a situation arises where an activity or activities, identified under the previous NEMA Notices, no longer requires environmental authorisation in terms of the current activities and competent authorities identified in terms of section 24(2) and 24D of the National Environmental Management Act, 1998 (Act No. 107 of 1998) or in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), and where a decision on an application submitted under the previous NEMA regulations is still pending, the competent authority will consider such application to be withdrawn".

Therefore, based on the above, it is understood that Activity 16 (vi) of GN R544 of the 2010 EIA Regulations (as amended), as contained in the Application for Environmental Authorisation on 25 September 2014, is no longer applicable based on the exclusion clause contained in the corresponding listed activity in the 2014 EIA Regulations (i.e. Activity 17 [(iv) (f)] of GN R983).

Activity 17 [(iv) (f)] of GN R983 states:

Development –

(iv) in front of a development setback; or if no development setback exists, within a distance of 100 metres inland of the high- water mark of the sea or an estuary, whichever is the greater;

in respect of –

(f) infrastructure with a development footprint of 50 square metres or more -

but excluding -

(aa) the development of infrastructure and structures within existing ports or harbours that will not increase the development footprint of the port or harbour;
(bb) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;
(cc) the development of temporary infrastructure or structures where such structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared; or

(dd) where such development occurs within an urban area.

The above exclusion clause in Activity 17 [(iv) (f)] of GN R983 applies to the proposed project as it will take place within an urban area. Therefore, Activity 17 [(iv) (f)] of GN R983 does not apply to the proposed project and as such the Competent Authority shall consider such an activity (i.e. Activity 16 (vi) of GN R544 of the 2010 EIA Regulations) to be withdrawn. An amended Application Form will be submitted to the KZN DEDTEA with this Draft BA Report.

4. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to -

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this report. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Sections B 5 – 15 below should be completed for each alternative.

Note from the CSIR:

- ***Property or Location Alternatives***

No feasible property or location alternatives could be identified for undertaking the proposed project. The property and location of the proposed project is directly linked to and dependent on the location of the existing Storage Terminal, which is planned to be upgraded as a result of the proposed project (i.e. the proposed project is fixed due to the positioning of the existing Storage Terminal). Furthermore, the property and location of the proposed project is governed by the Liquid Bulk Terminal Operator Licence that was issued to OTGC by TNPA. The licence specifies the location of the upgraded Storage Terminal (and proposed area of expansion). The location of the proposed project is also dependent on the proximity of the berths (in the Port of Durban), which will ensure reduced pipeline lengths, pumping requirements and amounts of excavations. In addition, the existing location in the Port of Durban will allow optimal functioning of the upgraded Storage Terminal.

Considering the above, as well as information presented in this section of the Draft BA Report, it is clear that the location of the proposed upgraded Storage Terminal is indeed governed by the proximity to the Port of Durban. This substantiates why site alternatives were not identified as part of this BA Process. It is important to note that OTGC will undertake the necessary geotechnical assessments to verify the land stability and subsurface conditions of the site.

- ***Activity Alternatives***

The type of activity for the proposed project is also governed by the Liquid Bulk Terminal Operator Licence that was issued to OTGC by TNPA. The licence specifies the type of activity that needs to take place (i.e. storage and handling of Bulk Liquids), as well as the type of products to be stored at the upgraded Storage Terminal. The licence is in line with the market demand for the type of products that will be stored. Furthermore, the proposed upgraded Storage Terminal is located in an area designated for Bulk Liquid Storage in terms of the Port Development Framework Plan. Therefore, no alternatives were identified in terms of the type of proposed activity.

- ***Design or Layout Alternatives***

It is important to note that the Consulting Engineers appointed by OTGC have assessed various layout options for the proposed upgraded Storage Terminal. However, these were deemed technically unfeasible as they do not align with OTGC's building specifications. Based on this, these options have not been considered further in the BA Process.

The layout alternatives considered as part of this BA Process are described above in Section 2.4.4 of the Project Description section. All conceptual layout drawings of the layout alternatives are included in Appendix C of this Draft BA Report. Each layout alternative contains the same total storage capacity, the same total area of development (i.e. 1.32 Ha), as well as the same location and footprint. These alternatives mainly involve the different placement of infrastructure within the boundaries of the proposed Storage Terminal in order to ensure that certain areas of the Storage Terminal become operational earlier.

The following layout alternatives are considered in this BA Process:

- **Alternative 1 – Phase 1 (Preferred Alternative):**

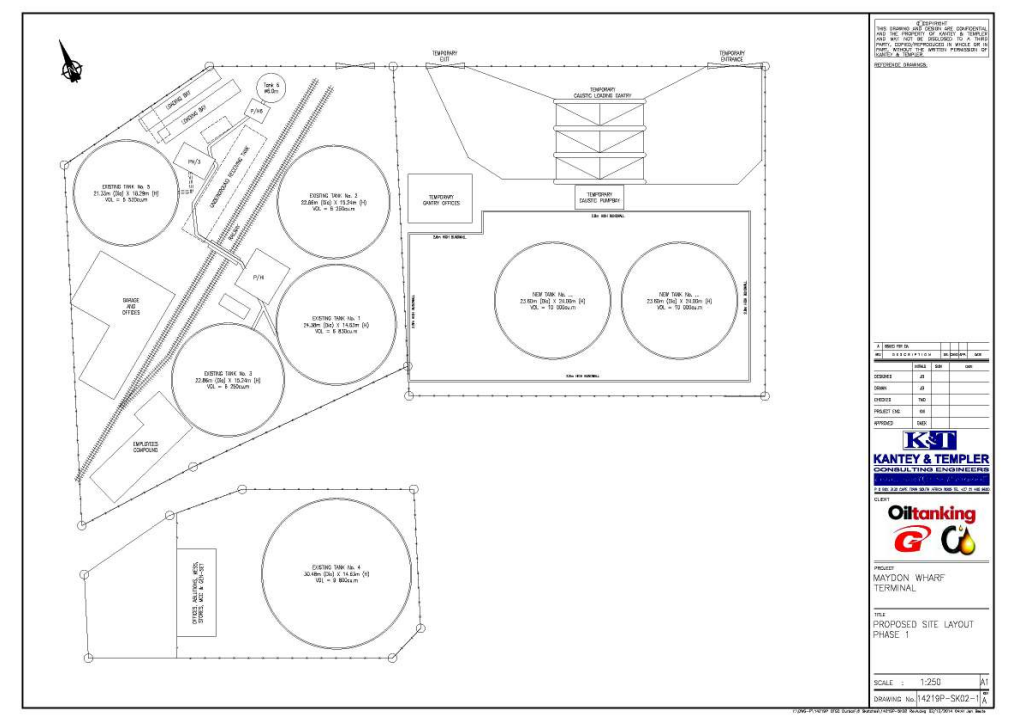

Figure 7: Alternative 1 – Phase 1 (Preferred Alternative).

- **Alternative 1 – Phase 2 – Option 1 (Preferred Alternative):**

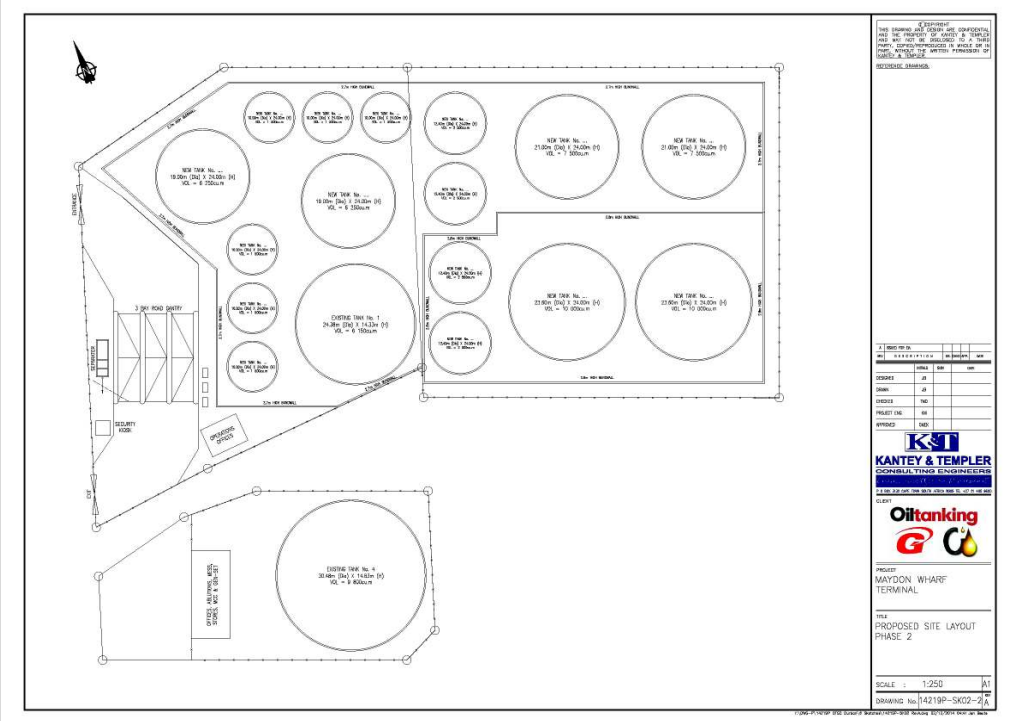

Figure 8: Alternative 1 – Phase 2 – Option 1 (Preferred Alternative).

- **Alternative 1 – Phase 2 – Option 2:**

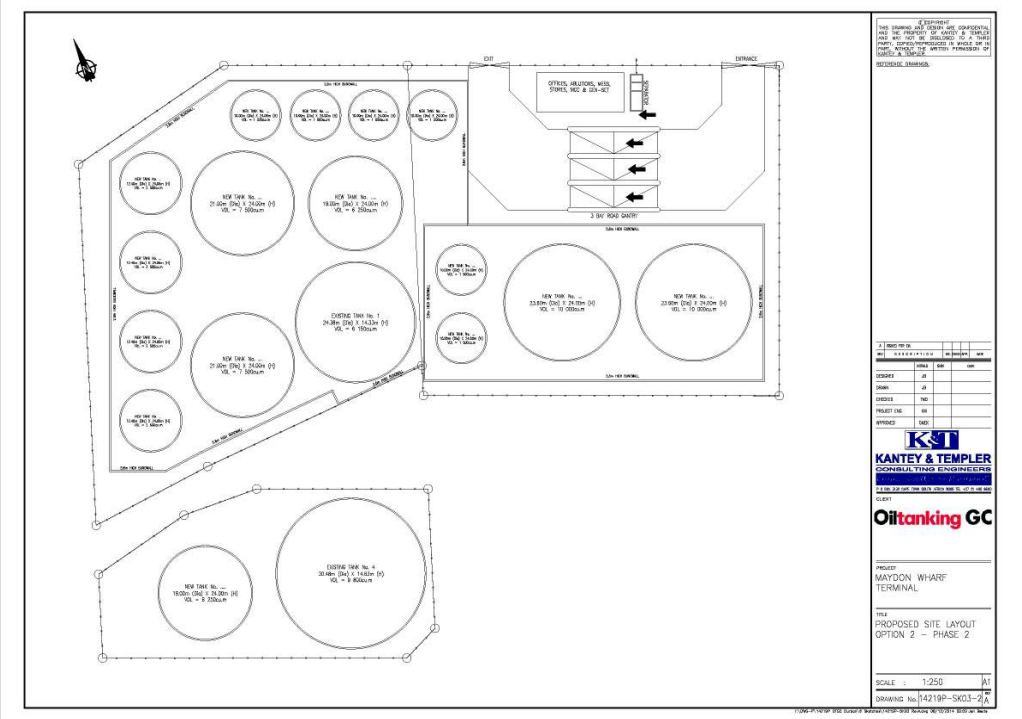

Figure 9: Alternative 1 – Phase 2 – Option 2.

- **Alternative 2 – No construction phasing:**

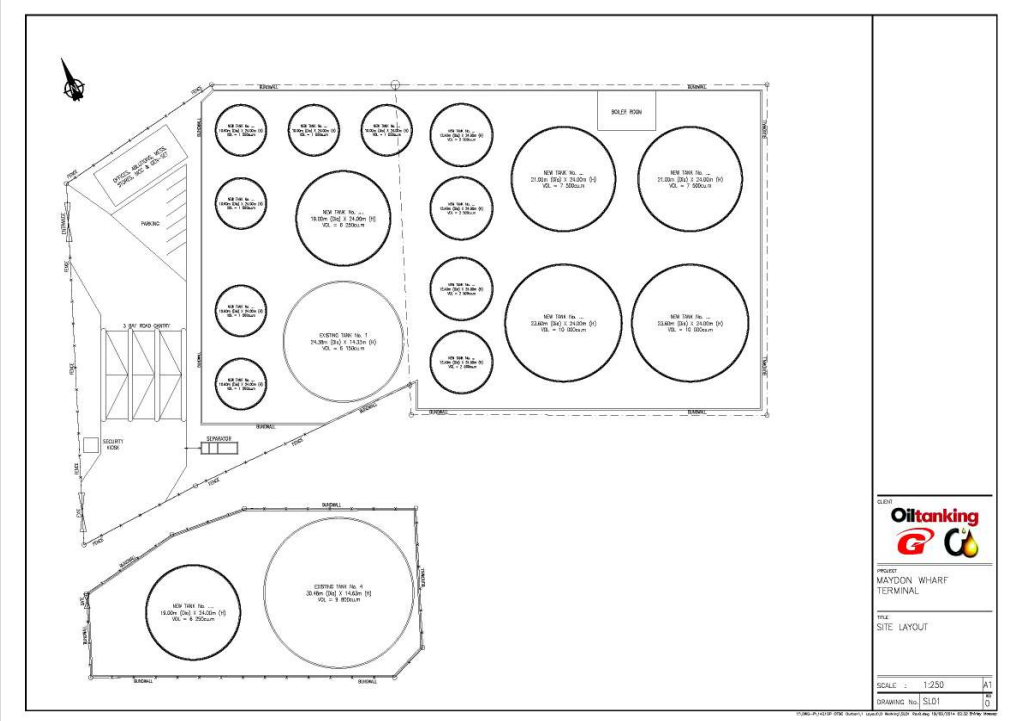

Figure 10: Alternative 2 – No construction phasing.

- ***Technology and Operational Alternatives:***

The technology that is proposed for the construction and operation of the proposed Storage Terminal will be guided by national standards and global best practice in the tank storage industry. The technology options and operational aspects are also governed by OTGC's building specifications. This therefore limits the amount of variability in terms of the technology and operational processes. The type of technology used will relate to the infrastructure being installed and constructed, such as the type of roofing system fitted on the tanks, spill contingency, pipeline construction and the installation of loading hoses.

- ***No-go Alternative (i.e. if the proposed project is not implemented):***

The main implication of the no-go alternative is the lack of secure supply of necessary Bulk Liquids such as Caustic Soda, MEG and Vegetable Oils for storage and distribution to the domestic market. This in turn will influence the economic potential of this industrial sector and the eThekwini Municipality (i.e. by limiting the importing potential of these Bulk Liquids). Furthermore, it will also create negative local socio-economic implications as approximately 350 new employment opportunities will not be generated during the construction phase of the proposed project. Moreover, added economic spin off activities will not be realised for the shipping, trading and trucking industries. The no-go alternative would halt a potential of 68 500 m^3 of Bulk Liquids being made available to the domestic market.

If the no-go alternative is adopted, the existing terminal will continue to operate for the storage, handling and distribution of Molasses only, which is a seasonal procedure with limited growth potential. However, based on the current infrastructure and technologies present at the Storage Terminal, together with the fact that the terminal was constructed in the 1960s, a complete maintenance programme will therefore need to be implemented for the pipelines and storage tanks. If the proposed project is not implemented, the Storage Terminal will not be upgraded with newer technologies and equipment, which are planned to optimise the terminal operations. If the proposed project is implemented, larger tank storage capacities will be achieved and enhanced equipment (such as actuated valves, weigh bridges and batch meters at the road tanker loading gantry etc.) will be installed at the proposed upgraded terminal.

Furthermore, if the no-go alternative is adopted, the Marine Training School property will eventually become dilapidated and unmaintained. It is understood that regardless of whether the proposed project goes ahead or not, the existing Marine Training School is scheduled to re-locate to an alternate location.

In addition, the no-go alternative will prevent additional ships from calling in the port, which will not supplement the economic activity in the port and the surrounding areas. If the proposed project does not proceed, the potential to attract future investment in the Port could be reduced.

Furthermore, the proposed project is a key development project upon which several other activities are directly dependent on, such as the customers of the proposed upgraded Storage Terminal and their uses for the stored products. Without the proposed project, these potential customers will not benefit from having a dedicated terminal to store their products.

Conversely, if the proposed project does not proceed, the negative environmental impacts identified in Section E of this Draft BA Report will be avoided.

Taking the above into consideration, it is important to point out that the site is zoned for industrial use, and it is already transformed and impacted on. The implementation of the proposed project is therefore not expected to generate significant environmental impacts.

5. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. List alternative sites were applicable.

Note from the CSIR: The co-ordinates provided within this report are estimates and reflect the approximate location of the components of the project. The co-ordinates will be finalised upon completion of detailed engineering (subject to the issuing of an Environmental Authorisation), however it is anticipated that changes to the location will not be substantial.

	Latitude (S):			Longitude (E):		
Alternative:						
Alternative S1[1] (preferred or only site alternative)	29°	52‘	40.2“	31°	0‘	9.67“
Alternative S2 (if any)						
Alternative S3 (if any)						

In the case of linear activities:

	Latitude (S):			Longitude (E):		
Alternative:						
Alternative S1 (preferred or only route alternative)						
Note from the CSIR: Proposed pipelines from the upgraded Storage Terminal to Berth 8						
• Starting point of the activity	29°	52‘	38.00“	31°	00‘	10.00“
• Middle point of the activity	29°	52‘	39.93“	31°	00‘	14.87“
• End point of the activity	29°	52‘	42.00“	31°	00‘	21.00“
Note from the CSIR: Proposed pipelines from the upgraded Storage Terminal to Berth 9						
• Starting point of the activity	29°	52‘	38.00“	31°	00‘	10.00“
• Middle point of the activity	29°	52‘	39.93“	31°	00‘	14.87“
• End point of the activity	29°	52‘	44.00“	31°	00‘	20.00“
Alternative S2 (if any)						
• Starting point of the activity						
• Middle point of the activity						

[1] “Alternative S..” refer to site alternatives.

- End point of the activity

Alternative S3 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 500m along the route for each alternative alignment.

Note from the CSIR: Refer to Appendix A.8 of this Draft BA Report for the complete list of co-ordinates of the corner points the upgraded Storage Terminal site. Appendix A.8 also includes the co-ordinates of the start-point, mid-point and end-point of the pipeline routing to Berth 8 and Berth 9 in the Port of Durban. It should be noted that the route of pipelines **do not** exceed 500 m in length.

6. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
Alternative A1[2] (preferred activity alternative)	13 235 m²
Alternative A2 (if any)	
Alternative A3 (if any)	

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	500 m
Note from the CSIR: Pipeline to Berth 8 and Berth 9	
Alternative A2 (if any)	
Alternative A3 (if any)	

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	13 235 m²

7. SITE ACCESS

Does ready access to the site exist?	**YES** X
If NO, what is the distance over which a new access road will be built	
Describe the type of access road planned:	

Not applicable, as access to the upgraded Storage Terminal currently exists. The site can be accessed via Rick Turner Road, travelling over the M4 Southern Freeway (via a steel bridge) and onto Shadwell Road and thereafter turning left into Johnstone Road. The existing Storage Terminal is located at 55 Johnstone Road and the Marine Training School (i.e. the proposed area of expansion) is located at 14 Fletcher Road. The existing Storage Terminal is located at the intersection of Johnstone Road and Fletcher Road. The Maydon Wharf South African Police Station is located directly adjacent to the OTGC Storage Terminal site.

[2] "Alternative A.." refer to activity, process, technology or other alternatives.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

Note from the CSIR: Refer to Appendix A.6 of this Draft BA Report for a road infrastructure map illustrating the existing road network and access to the site. Appendix D.1 of this Draft BA Report (Traffic Impact Assessment) includes additional information on the existing road network and a description of the affected area.

8. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this report.

The site or route plans must indicate the following:

8.1. the scale of the plan which must be at least a scale of 1:500;
8.2. the property boundaries and numbers/erf/farm numbers of all adjoining properties of the site;
8.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
8.4. the exact position of each element of the application as well as any other structures on the site;
8.5. the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
8.6. walls and fencing including details of the height and construction material;
8.7. servitudes indicating the purpose of the servitude;
8.8. sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- rivers, streams, drainage lines or wetlands;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);

8.9. for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
8.10. the positions from where photographs of the site were taken.

Note from the CSIR: Refer to Appendix A of this Draft BA Report for layout maps and site plans showing the layout of the proposed project, the adjacent properties, adjacent land uses, existing and proposed infrastructure, existing road infrastructure and environmental features.

9. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

Note from the CSIR: Three photograph points which best represent the proposed project area were selected. The locations of each photograph point are shown in Appendix A of this Draft BA Report. Photographs were taken in the eight major compass directions at each photograph point. The co-ordinates of the photograph points are shown below:

- Photograph Point 1 - 29° 52' 40.54"S and 31° 0' 9.15"E

- Photograph Point 2 - 29° 52' 38.92"S and 31° 0' 8.79"E
- Photograph Point 3 - 29° 52' 39.87"S and 31° 0' 10.86"E

Additional photographs were also taken. All photographs are included in Appendix B of this Draft BA Report.

10. FACILITY ILLUSTRATION

A detailed illustration of the facility must be provided at a scale of 1:200 and attached to this report as Appendix C. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

Note from the CSIR: As mentioned previously, the proposed project is in the design phase, and as a result, proposed conceptual layouts have been provided. Final layouts will be determined upon detailed engineering. The conceptual layouts for all alternatives are provided in Appendix C of this Draft BA Report.

11. ACTIVITY MOTIVATION

11.1. Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 430 000 000	
What is the expected yearly income that will be generated by or as a result of the activity?	Minimum 16 % returns (i.e. R 68 800 000)	
Will the activity contribute to service infrastructure?		**NO X**
Is the activity a public amenity?		**NO X**
How many new employment opportunities will be created in the development phase of the activity?	Approximately 350	
What is the expected value of the employment opportunities during the development phase?	Approximately R350 Million. To be confirmed during detailed engineering.	
What percentage of this will accrue to previously disadvantaged individuals?	To be confirmed during detailed engineering.	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Approximately 12 full time personnel and economic spin offs.	
What is the expected current value of the employment opportunities during the first 10 years?	R 2.9 million/year (salaries only)	
What percentage of this will accrue to previously disadvantaged individuals?	To be confirmed during detailed engineering.	

11.2. Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

The proposed project was conceptualised based on the need to enhance service delivery in the Bulk Liquid Storage and Handling Industrial Sector and it will play a key role in the importation and redistribution of Molasses, Vegetable Oils and other chemical products within the domestic market. The upgraded terminal will be able to store, handle and distribute Caustic Soda, Vegetable Oils and MEG, in addition to Molasses. This will enhance the operational income of the terminal as the current operations are focused on the redistribution of Molasses only, which is seasonally sustainable. As mentioned above, OTGC currently receives one shipment of Molasses (via marine vessels) every four months. The project upgrade, in terms of full operations, will increase shipment of the additional Bulk Liquid products to four vessels per month. This will allow the facility to be operational throughout the year, thereby also enhancing economic activity within the port.

The proposed project will entail the upgrading of OTGC's existing Storage Terminal, with the aim of installing newer technologies and equipment in order to optimise the terminal operations. The upgraded Storage Terminal will achieve larger tank storage capacities and the installation of enhanced equipment (such as actuated valves, weigh bridges and batch meters at the road tanker loading gantry etc.).

Furthermore, the proposed project is driven by the requests for storage from OTGC's existing and potential customers. Several other activities are directly dependent on the proposed upgrade, such as the customers of the proposed upgraded Storage Terminal, as well their resultant uses of the stored products.

The proposed Bulk Liquids that will be imported have many important uses, as described below:

- Caustic Soda (solution) is used for many purposes, such as in the manufacture of sodium salts, plastics, soaps, and detergents. It is also used in petroleum refining and the processing of aluminium (NCP Chlorochem, 2012).
- Vegetable Oils are imported for many purposes, such as cooking, food production and industrial consumption (i.e. recycled vegetable oils are used for industrial consumption) (van Zyl, 2010). Certain vegetable oils are also used in the production of biodiesel (van Zyl, 2010). There is a significant demand for vegetable oils in South Africa, and research indicates that South Africa is considered as a major importer of Sunflower Oil (van Zyl, 2010).
- MEG is used for the production of coolants, brake fluids and heat-transfer fluids.
- Molasses is a by-product of the sugar manufacturing process. In South Africa, Molasses is generally used in the production of animal feeds (as a constituent) (Cleasby, 1963; Illovo Sugar, 2013), as well as for the production of ethanol and yeast in the fermentation industry (Illovo Sugar Limited, 2013; Department of Agriculture, Forestry and Fisheries, 2013). Illovo Sugar Limited use Molasses for the production of ethanol, at two of their plants in KwaZulu-Natal (Illovo Sugar Limited, 2013).

According to Transnet (2014), despite the Port of Durban experiencing congestion, the throughput capacity of the port could still be improved by undertaking reconfiguration and rationalisation of the existing areas in the port, such as the Durban Container Terminal, Point, Maydon Wharf and Island View. Major short-term projects include the deepening and reconfiguration of berths at Maydon Wharf (Transnet, 2014a). To this end, Transnet has commenced with the reconstruction and deepening of seven berths at Maydon Wharf (Transnet, 2014b). Reconstruction of Berth 12 has been completed, and work on the remaining six berths, valued at R 1.6 billion, is likely to commence in the near future (Transnet, 2014b). Based on the above, the proposed project is expected to benefit from the above proposed upgrades to Maydon Wharf.

Indicate any benefits that the activity will have for society in general:

The proposed project will ensure that the industries requiring supply of Molasses, Caustic Soda, Vegetable Oils and MEG will have a secure, efficient terminal for storage and handling purposes. This will in turn promote economic stability of these industries.

The proposed project will also enhance potential investment in the Port of Durban, which will in turn result in positive economic spin-offs.

The proposed project will create skilled and unskilled temporary employment opportunities during the construction phase. The operational phase will create various added economic spin off activities towards the shipping, trading and trucking industries.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The proposed project will create skilled and unskilled temporary employment opportunities during the construction phase. The operational phase will create various added economic spin off activities towards the shipping, trading and trucking industries.

12. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are relevant to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (Act 107 of 1998), as amended	National Department of Environmental Affairs	19 November 1998
NEMA EIA Regulations published in Government Notice R543, R544 and R545	National Department of Environmental Affairs	18 June 2010
NEMA EIA Regulations published in Government Notice R982, R983, R984 and R985	National Department of Environmental Affairs	8 December 2014
National Environmental Management: Waste Act (Act 59 of 2008)	National Department of Environmental Affairs	6 March 2009
National Environmental Management: Waste Amendment Act (Act 26 of 2014)	National Department of Environmental Affairs	2 June 2014
National Environmental Management: Air Quality Act (Act 39 of 2004)	National Department of Environmental Affairs	19 February 2005
Hazardous Substances Act (Act 15 of 1973)	Department of Health (National and Provincial)	1973
National Water Act (NWA) (Act 36 of 1998)	Department of Water Affairs (National and Provincial)	1998
National Ports Act (Act 12 of 2005)	National Ports Authority	2005
National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)	National Department of Environmental Affairs	11 February 2009
National Heritage Resources Act (Act 25 of 1999)	National Department of Arts and Culture (National and Provincial)	1999
KwaZulu-Natal Heritage Act (Act 4 of 2008)	Province of KwaZulu-Natal	2008
Occupational Health and Safety Act (Act 85 of 1973)	National Government	1973
Conservation of Agricultural Resources Act (Act 43 of 1983)	National Department of Agriculture	1983
Natal Nature Conservation Ordinance (Ordinance 15 of 1974)	Provincial	12 September 1974
Municipal Regulations and By-laws	eThekwini Municipality	Various
Integrated Environmental Management (IEM) guideline series published by Department of Environmental Affairs (DEA) (various documents dated from 2002 to present)	National Department of Environmental Affairs	2002 - present
Constitution of the Republic of South Africa (Act No.108 of 1996)	National, Provincial and Local Government	1996

13. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

13.1. Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	
X	

If yes, what estimated quantity will be produced per month? 25 m^3

How will the construction solid waste be disposed of? (describe)

The quantity of waste generated during the construction (and demolition) phase will depend on the duration of the construction phase, which is estimated to range between 26 and 32 months, if the construction is phased. An additional three months also needs to be allocated for the demolition process.

During the construction phase, the following waste materials are expected:

- Packaging material from construction processes, such as the cardboard, plastic and wooden packaging and off-cuts;
- Domestic waste generated by construction personnel;
- Hazardous waste can be generated during the construction phase from empty tins, paint and paint cleaning liquids, oils, fuel spillages, asbestos roofing material (from the buildings) and chemicals;
- Building and demolition waste (i.e. rubble, discarded concrete, bricks, tiles, wood, glass, plastic, metals, soil, stones and other waste emanating from the demolition process);
- Waste generated from concrete mixing and pouring operations; and
- Excavated material from earthworks and foundations will also be generated.

Construction solid waste will be managed via the Environmental Management Programme (EMPr). All construction wastes will be collected and temporarily stored in waste collection bins and skips (or similar containers) on site. The skips will be emptied into trucks by the appointed waste removal contractor and it will then be taken to a licenced/registered landfill site.

All domestic waste generated during the construction phase will be disposed at a registered/licenced facility by an appointed contractor.

The Contractor shall remove refuse collected from the construction site at regular intervals. Records, such as waste disposal slips and waybills, will be obtained for the collection and disposal of the general and hazardous waste. These disposal slips should be kept on file for auditing purposes as proof of disposal.

Where will the construction solid waste be disposed of? (provide details of landfill site)

Construction solid waste will be disposed of at a registered/licenced waste disposal facility. The details of the disposal facility will be finalised during the contracting process, prior to the commencement of construction. However, it is expected that general waste will be disposed of at a municipal landfill site or the EnviroServ Shongweni Landfill Site. It is expected that hazardous waste will be disposed of at EnviroServ Shongweni Landfill Site, which is located at 1 Shongweni Dam, Shongweni.

Will the activity produce solid waste during its operational phase?	**YES** **X**	
If yes, what estimated quantity will be produced per month?	40 - 45 m^3	

How will the solid waste be disposed of? (provide details of landfill site)

During the operational phase, it is expected that general waste will be produced by the operational staff stationed at the office building. The general waste produced is expected to consist mainly of cardboard, paper, plastic, food containers, bottles etc. The waste will be stored in appropriately sealed and correctly labelled waste skips/containers at the upgraded Storage Terminal. The waste will then be collected from the site by municipal services (i.e. Durban Solid Waste) and accordingly disposed of at a registered municipal disposal facility.

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

It is anticipated that the solid waste will feed into the municipal waste stream, as per the current operations at the existing facility.

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine the further requirements of the application.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? ***Note from the CSIR: Refer to the explanation below.***	**YES** **X**	

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

Note from the CSIR: The proposed project will produce a small amount (i.e. 60 kg) of solid waste per month during the operational phase. The construction phase will produce demolition, building and domestic waste as explained above. During the construction phase, asbestos material will emanate from the roofing structures of the buildings that

will be demolished. In terms of the National Environmental Management: Waste Amendment Act (Act 26 of 2014), "asbestos-containing construction materials" are considered to be hazardous. However, OTGC is proposing to temporarily stockpile the asbestos material in a designated area on site and thereafter remove and dispose of this material at a registered hazardous waste disposal facility on a regular basis. The stockpiling of asbestos material on site will be temporary (i.e. less than 90 days). According to the List of Waste Management Activities that have, or are likely to have, a detrimental effect on the environment, which came into effect on 29 November 2013 under GN 921 in Government Gazette 37083, temporary storage is defined as "a once off storage of waste for a period not exceeding 90 days".

Furthermore, Activity 2 of Category C of GN 921 states the following: "*the storage of hazardous waste at a facility that has the capacity to store in excess of 80 m^3 of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste*". A Waste Licence, in terms of the National Environmental Management: Waste Act (Act 59 of 2008), is **not** required if any activities listed in Category C are triggered, however instead, compliance with the relevant National Norms and Standards must be achieved. If more than 80 m^3 of asbestos material emanates from the building demolition process, which needs to be stockpiled on site for longer than 90 days, the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) will be complied with by OTGC. The amount of asbestos material that is expected to be generated and stockpiled on site will be determined when issuing the tender for demolition during the construction process.

However, the asbestos material will be removed in accordance with Section 21 of the Asbestos Regulations, 2001 (under the Occupational Health and Safety Act).

Any other hazardous material generated during the construction phase, will be temporarily stored in designated sealed containers on impervious surfaces. The hazardous waste will be collected by an appointed waste removal contractor and disposed of at a licenced/registered hazardous landfill site. As mentioned above, waste disposal slips and waybills will be obtained for the collection and disposal of the hazardous waste. These disposal slips will be kept on file for auditing purposes as proof of disposal.

It is important to note that the proposed project does not trigger any activities listed in Categories A and B of the List of Waste Management Activities published in GN 921 and as such a Waste Licence is not required.

Is the activity that is being applied for a solid waste handling or treatment facility?		**NO** **X**

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

13.2. Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	**YES** **X**	
If yes, what estimated quantity will be produced per month?	100 m^3	

Note from the CSIR: As mentioned in Section B (2) of this Draft BA Report, OTGC were granted a Trade Effluent Permit by the eThekwini Municipality in August 2013, in terms of Chapter 4/1 of the Municipal Sewage Disposal Bylaws. This permit allows OTGC to discharge trade effluent, resulting from the storage of Molasses (at the existing Storage Terminal), into the Municipal Sewer at a total monthly discharge volume not exceeding 100 kl (or 100 m^3). This permit is valid from 1 August 2013 until the volume is re-assessed. It is anticipated the same volumes of effluent will be discharged to the municipal sewer system as a result of Molasses storage at the upgraded terminal.

Will the activity produce any effluent that will be treated and/or disposed of on-site?		**NO** **X**

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	
X	

If yes, provide the particulars of the facility:

Facility name:	EnviroServ Shongweni Landfill Site		
Contact person:	Not applicable at this stage.		
Postal address:	P. O. Box 15005, Westmead		
Postal code:	3608		
Telephone:	031 769 1134	Cell:	Not applicable at this stage.
E-mail:	Not applicable at this stage.	Fax:	(031) 769 1171

Note from the CSIR: As mentioned in Section B (2) of this Draft BA Report, a dedicated closed system will be implemented for the drainage of the storage tanks and bund areas, which will include stormwater pits installed outside and inside each bund area. If the stormwater is clean, it will be discharged to the existing municipal stormwater system. If the stormwater is not clean, it will be transferred to the oily-water separator system and will thereafter only be discharged to the existing stormwater system once the water is clean. The waste water system will also be linked to the separator system. If the waste water is not deemed clean after passing through the separator, the resulting material will be disposed and/or treated at a registered/licenced waste facility by an approved Contractor. It should be noted that the details provided above are for the waste facility that is anticipated to be used during the construction phase. However, this may change and will only be finalised subsequent to the detailed engineering phase and prior to the commencement of construction, should an Environmental Authorisation be granted. **Nevertheless, in all cases, a registered/licenced waste disposal facility will be used for disposal and/or treatment of effluent.** In addition, due to the type of products planned to be stored at the Storage Terminal, OTGC will try to recycle any oil or products recovered from the oily-water system (i.e. return it to the storage tanks).

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

OTGC's energy saving measures will be adopted during the operational phase of the proposed project. The main objective of these energy saving measures is to reduce the amount of waste water. Any material resulting from the oily-water system will be recycled and returned to the storage tanks. However, the storage tanks will be designed and equipped with the necessary measures to reduce potential spillages and wastage. OTGC will be storing the planned products on behalf of their customers (i.e. chemical companies, sugar refineries etc.). OTGC will therefore not own any products stored at the terminal. OTGC's sole source of income will be focused on the storage and handling of product. Therefore, OTGC will focus on ensuring no loss of their customers' products via spillages.

13.3. Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	
X	

If yes, is it controlled by any legislation of any sphere of government?
Note from the CSIR: Refer to the explanation below.

	NO
	X

If yes, contact the KZN Department of Economic Development, Tourism & Environmental Affairs to obtain clarity regarding the process requirements for your application.

If no, describe the emissions in terms of type and concentration:

During the construction phase, dust will be generated from the demolition, earthworks, and construction activities. Dust could possibly be generated by the movement of construction vehicles accessing and leaving the site, however **the dust levels resulting from this activity are expected to be minimal as the site is currently hard surfaced and no large-scale vegetation clearing is required**. Appropriate mitigation measures will be implemented during the construction phase to reduce the dust levels. Dust generation during the construction phase will be of a temporary nature. The construction vehicles and equipment will also generate exhaust emissions on a temporary basis.

During the operational phase, road tankers and vehicles will enter the upgraded Storage Terminal via tarred

existing roads. Based on this, it is expected that the generation of dust is likely to be negligible. The predicted future traffic volumes are included in the Traffic Impact Assessment specialist study (Appendix D.1 of this Draft BA Report). The vehicle exhaust emissions generated during the operational phase is not expected to be significantly greater than the current levels of emissions experienced as a result of the traffic travelling on the surrounding road network. The Traffic Impact Assessment (Appendix D.1 of this Draft BA Report) states that the estimated 85 heavy vehicles will in all likelihood have very little effect on the existing traffic network.

In addition, during the operational phase, the products planned to be stored at the upgraded terminal will **not release any vapours or emissions**. Moreover, the products that are planned to be stored are not classed as Petroleum Products, and as such do not trigger a Listed Activity in terms of the National Environmental Management: Air Quality Act (Act 39 of 2004), GN 893 of 22 November 2013, Sub-category 2.4 (Storage and Handling of Petroleum Products). As a result, an Atmospheric Emissions Licence in terms of GN 893 published on 22 November 2013 is not required.

Furthermore, the boiler that will be installed at the upgraded Storage Terminal is not defined as a "small boiler" in terms of GN 831 ("Declaration of a small boiler as a controlled emitter and establishment of emissions standards") of 1 November 2013, in terms of the National Environmental Management: Air Quality Act (Act 39 of 2004). A small boiler is defined (in terms of GN 831) as "any boiler with a design capacity equal to 10 MW but less than 50 MW net heat input per unit, based on the lower calorific value used". As such the proposed boiler that OTGC is planning to install at the upgraded Storage Terminal is of a smaller capacity (i.e. 100 KW) and is therefore not classed as a controlled emitter.

13.4. Generation of noise

Will the activity generate noise?	**YES** **X**
If yes, is it controlled by any legislation of any sphere of government?	**YES** **X**

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the noise in terms of type and level:

The Noise Impact Assessment (Appendix D.3 of this Draft BA Report) contains detailed information regarding the predicted noise levels that will be generated by the proposed upgraded Storage Terminal.

During the construction phase, noise will be generated by the construction activities, personnel, equipment and vehicles on the site. The levels of noise are not expected to be excessive. Furthermore the proposed project will take place in the Port of Durban, an area designated for industrial activity. Furthermore, noise generation during the construction phase is considered to be localised and short-term.

Noise during the operational phase is likely to be generated by operational equipment (such as pump houses, sumps, separator, workshop, office building etc.) and vehicles entering and exiting the upgraded Storage Terminal, which is expected as the Port of Durban serves as a significant transport gateway. Noise generation during the operational phase is considered to be of low significance based on the locality of the proposed project and the associated land-use of the site and surrounding areas. Based on this, the noise created by the vehicles entering and exiting the upgraded Storage Terminal is not expected to cause any significant disturbance to receptors. Furthermore, the proposed project will cover a small area in comparison to the entire Port of Durban.

14. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal ✓ ***(Please see explanation below)***	water board	groundwater	river, stream, dam or lake	other	the activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	N/A
Does the activity require a water use permit from the Department of Water Affairs?	**NO X**

If YES, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this report.

Note from the CSIR: During the construction phase, water will be used mainly for earthworks and domestic purposes. During the operational phase of the project, water will be required mainly domestic purposes to meet the needs of security and operational staff on site.

In terms of a Water Use Licence, the proposed project will take place in proximity to the Durban Bay Estuary; however no construction activities will take place below the water mark (or within the estuary itself). An estuary is not defined in the National Water Act (Act 36 of 1998) as a "watercourse". An estuary is instead considered a "water resource". Furthermore, water uses under Section 21 (c) and (i) of the National Water Act (Act 36 of 1998) regulate activities within a watercourse. The proposed project is located a significant distance from the uMbilo/uMhlatuzana and aManzimnyama Canals which supply freshwater to the Durban Bay Estuary. No construction work will take place within these watercourses. As such activities in proximity to the estuary do not fall within the jurisdiction of the Department of Water Affairs and as such a Water Use Licence is not required in terms of the National Water Act (Act 36 of 1998).

It is also not envisaged that any discharging or abstraction to and from the port will be required for the proposed project.

15. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The following measures will be considered during the detailed engineering phase of the project in order to promote energy efficiency:

- Monitoring water usage and electricity consumption during the construction and operational phase.
- Adopt waste recycling procedures during the construction and operational phase.
- Install energy efficient equipment where possible, such as energy-saving lighting during the operational phase. It is worthy to note that the Oiltanking Energy Saving Measures will be adopted.
- During the construction phase, encourage that approved waste Contractors make as few trips as possible between the site and the landfill site for the disposal of rubble emanating from the demolition process.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

At this stage, no alternative energy sources are anticipated to be considered for the design of the Storage Terminal.

SECTION C: SITE/ AREA/ PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc.) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):	**1**

- Subsections 1 - 6 below must be completed for each alternative.

Note from the CSIR: The proposed project area is not large and does not have varying environmental features within the site. The site is located in a completely transformed industrial area within Maydon Wharf, in the Port of Durban.

The layout alternatives, as described in Section B of this Draft BA Report, each have the same total footprint, as well as the same location and environment.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat X	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S2 (if any):

Alternative S3 (if any):

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site **(Please cross the appropriate box)**.

Alternative S1 (preferred site):

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	**Sea-front X**

Alternative S2 (if any):

Alternative S3 (if any):

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Note from the CSIR: In 2012, OTGC commissioned a specialist to conduct a baseline study of the soil and groundwater conditions at the existing terminal site. The information below has been sourced from this study (ERM, 2012).

The study entailed a site visit and sampling programme. The sampling programme included the installation of seven groundwater monitoring wells and one auger hole point within the site. These wells were installed with the aid of a hand-auger, as well as drilling. The depths of the wells ranged to approximately 4 m. Soil samples were collected from each monitoring well/auger hole. The samples were analysed at an international laboratory for Petroleum Hydrocarbons (PH), Volatile Organic Compounds (VOC) and Benzene, Toluene, Ethylbenzene, and Toluene (BTEX). Two soil samples were also analysed for heavy metal contamination. Groundwater samples were collected from the seven monitoring wells and were also analysed for TPH, VOC and BTEX.

The results of the soil analysis showed low concentrations of heavy metals, which were below the Dutch Intervention Values (DIVs). Furthermore, the VOC and PH concentrations for the soil samples were below detection limits. Low concentrations of Gasoline Range Organics (GRO) (i.e. C6-C10) were established in soil samples collected from two monitoring wells. The remaining samples had GRO concentrations that were below detection limits.

With regards to the groundwater samples, only a few heavy metals (i.e. Barium, Boron, Nickel, and Zinc) were detected. These concentrations, however, were below the DIVs. Furthermore, no VOCs, GRO or EPH concentrations were detected in the groundwater samples (i.e. these were below detection limits). Therefore, the potential contaminants in the groundwater were established to be below detection limits.

Therefore, based on the sampling and analysis, the soil and groundwater quality on site does not present a risk to human health and the environment. Furthermore, the site is hard-surfaced, which reduces the exposure pathways.

The study carried out by ERM (2012), also provided background to the geology of the study area. According to this study, the site is underlain by Quaternary alluvium and sediments of the Berea formation. As mentioned in Section B of this Draft BA Report, the proposed project site is located on reclaimed land and the soil sampling concluded that gravel fill (up to 0.5 m below ground level) underlies the proposed project area. Light yellow beach sand in turn underlies this fill material. The beach sand was found to occur at a maximum depth of approximately 3 m. This is then underlain by soft grey sandy clay with frequent shell gravels (to the depth of the wells/auger hole). In terms of the geohydrology, the proposed project site is contains groundwater that is tidal and saline. From the installed monitoring wells, the depths at which the groundwater was encountered ranged between 1.4 m and 1.6 m below ground level. A geotechnical soil investigation will be undertaken during the detailed engineering phase.

Has a specialist been consulted for the completion of this section?		**NO X**

If YES, please complete the following:

Name of the specialist:	
Qualification(s) of the specialist:	
Postal address:	
Postal code:	
Telephone:	Cell:
E-mail:	Fax:

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?		**NO X**
If YES, specify and explain:	**Note from the CSIR: Refer to the explanation below**.	
Are their any special or sensitive habitats or other natural features present on any of the alternative sites?		**NO X**

If YES, specify and explain:	**Note from the CSIR: Refer to the explanation below**.	
Are any further specialist studies recommended by the specialist?		**NO X**
If YES, specify:		
If YES, is such a report(s) attached in Appendix D?		**NO X**

Signature of specialist: [redacted] Date: [redacted]

Is the site(s) located on any of the following (cross the appropriate boxes)?

	Alternative S1:		Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)	**YES X**		[redacted]	[redacted]
Dolomite, sinkhole or doline areas		**NO X**		
Seasonally wet soils (often close to water bodies)	**YES X**			
Unstable rocky slopes or steep slopes with loose soil		**NO X**		
Dispersive soils (soils that dissolve in water)		**NO X**		
Soils with high clay content (clay fraction more than 40%)		**NO X**		
Any other unstable soil or geological feature		**NO X**		
An area sensitive to erosion		**NO X**		

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUNDCOVER

Has a specialist been consulted for the completion of this section?		**NO X**

If YES, please complete the following:

Name of the specialist: [redacted]
Qualification(s) of the specialist:
Postal address:
Postal code:
Telephone: [redacted] Cell: [redacted]

E-mail: [redacted]	Fax: [redacted]	
Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?	[redacted]	**NO X**
If YES, specify and explain:	**Note from the CSIR: Refer to the explanation below**.	
Are there any special or sensitive habitats or other natural features present on any of the alternative sites?	[redacted]	**NO X**
If YES, specify and explain:	**Note from the CSIR: Refer to the explanation below**.	
Are any further specialist studies recommended by the specialist?	[redacted]	**NO X**
If YES, specify:		
If YES, is such a report(s) attached in Appendix D?	[redacted]	**NO X**

Signature of specialist: [redacted] Date: [redacted]

Note from the CSIR: In terms of the affected environment, Appendix A.7 of this Draft BA Report includes a map showing the environmental features surrounding the site. As mentioned above, the existing Storage Terminal is located approximately 315 m to the west of the Port of Durban, on reclaimed land. As mentioned previously, the proposed project will not entail any dredging or construction activities within the port/bay itself (i.e. below the water mark). Furthermore, there are no environmentally sensitive features that occur on the actual proposed site. The site is completely transformed and does not contain any natural vegetation. As mentioned in Section B of this Draft BA Report, the vegetation at the existing Storage Terminal has been planted by the operator. According to the National Biodiversity Assessment (2011), the spatial data that intersects with the area surrounding the proposed project is the "remaining extent of threatened ecosystems" i.e. remaining Critically Endangered vegetation type (Northern Coastal Grasslands). However, it is important to note that the area located towards the east of the proposed project site, which is classed as "remaining extent of threatened ecosystems" in terms of the spatial data, is completely transformed and industrialised.

In terms of conservation planning, the proposed terminal is situated in a Critical Biodiversity Area according to the KwaZulu-Natal Terrestrial Systematic Conservation Plan. However, it needs to be re-iterated that the proposed site includes concrete surfaces, and is therefore transformed. This is substantiated by the Bay of Natal Estuarine Management Plan, which includes a Zonation Plan for the Durban Bay (MER and ERM, 2012). According to the Zonation Plan, as provided in Figure 11 and in Appendix G.2 of this Draft BA Report, the proposed project site is located within an area zoned for "Industrial Use" (MER and ERM, 2012). The land zoned for "Industrial Use" includes the areas for break bulk cargo handling around the Point, Pier 1 and Maydon Wharf, as well as the areas for bulk cargo handling along the Bluff, Island View, Maydon Wharf and Piers 1 and 2 (MER and ERM, 2012). The proposed project site does not fall within the areas zoned as "Conservation" or "Recreation" in terms of the Zonation Plan (MER and ERM, 2012).

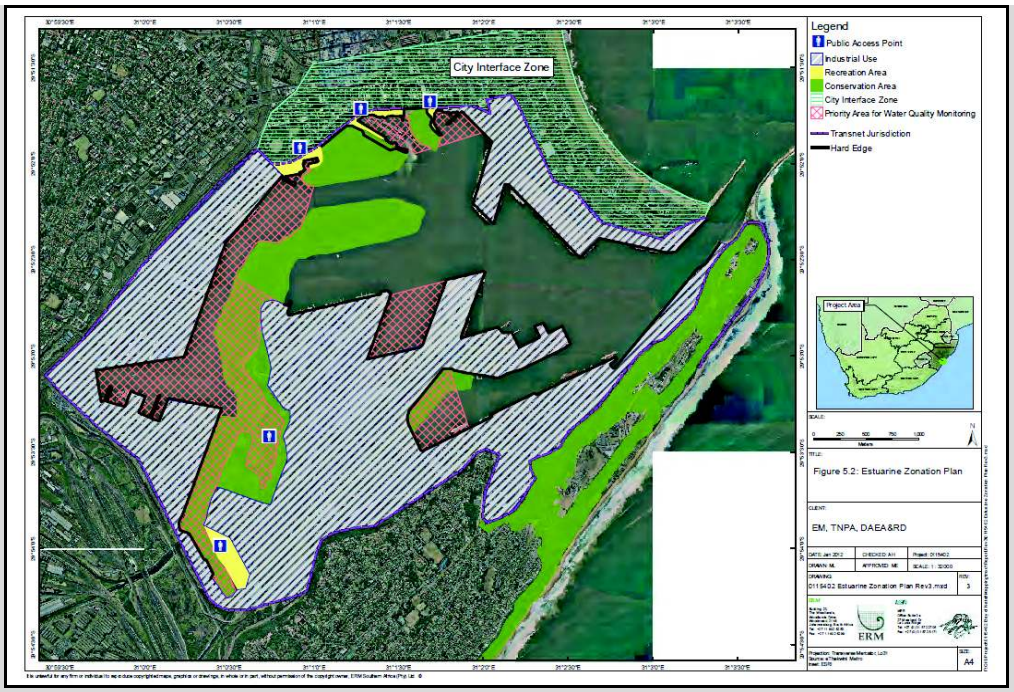

Figure 11: Estuarine Zonation Plan for the Bay of Natal (MER and ERM, 2012).

The proposed terminal is located within the floodplain of the Durban Bay Estuary; which is already largely developed and dominated by industrial activity (i.e. National Freshwater Ecosystem Priority Areas (NFEPA) wetland floodplain).

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	**Paved surface X**	**Building or other structure X**	Bare soil

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. LAND USE CHARACTER OF SURROUNDING AREA

Cross the land uses and/or prominent features that currently occur within a 500 m radius of the site and give a description of how this influences the application or may be impacted upon by the application:

Land use character			Description
Natural area	**YES X**		The Durban Bay Estuary falls within a 500 m radius of the proposed project area. The impact of the proposed project on the estuary will not be significant as no construction work or dredging will take place below the water mark. All construction work will occur on the berths and at the Storage Terminal. In terms of potential spillages and accidents during the operational phase, stringent spill contingency measures will be adopted. Furthermore, the number of marine vessels entering the Port of Durban on a monthly basis for the proposed project is not considered to be significant in relation to the greater port operations.
Low density residential		**NO X**	No low-density residential areas occur within a 500 m radius of the proposed project area.
Medium density residential		**NO X**	No medium-density residential areas occur within a 500 m radius of the proposed project area.
High density residential		**NO X**	No high-density residential areas occur within a 500 m radius of the proposed project area.
Informal residential		**NO X**	No informal residential areas occur within a 500 m radius of the proposed project area.
Retail commercial & warehousing	**YES X**		Warehouses (for freight handling and storage) occur within a 500 m radius of the proposed project area. The traffic, visual and noise impacts as a result of the proposed project are considered to be of low significance.
Light industrial	**YES X**		The proposed project is located within the Port of Durban. The proposed project will supplement the capacity of the Port of Durban. The Port of Durban also provides necessary infrastructure to allow the proposed project to function.
Medium industrial	**YES X**		The proposed project is located within the Port of Durban. The proposed project will supplement the capacity of the Port of Durban. The Port of Durban also provides necessary infrastructure to allow the proposed project to function.
Heavy industrial	**YES X**		The proposed project is located within the Port of Durban. The proposed project will supplement the capacity of the Port of Durban. The Port of Durban also provides necessary infrastructure to allow the proposed project to function.
Power station		**NO X**	Mini-substations and a municipal substation (100 kVA and 11 kV) are located on the proposed project site.
Office/consulting room	**YES X**		Offices of the surrounding warehouses and industries are located within the 500 m radius.
Military or police base/station/compound	**YES X**		The Maydon Wharf South African Police Station occurs at 61 Johnstone Road, directly adjacent to existing Storage Terminal (i.e. within a 500 m radius

Land use character			Description
			of the proposed project area). The traffic, visual and noise impacts as a result of the proposed project are considered to be of low significance.
Spoil heap or slimes dam		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Quarry, sand or borrow pit		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Dam or reservoir		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Hospital/medical centre		NO X	Not applicable or present within a 500 m radius of the proposed project area.
School/ creche		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Tertiary education facility		NO X	The Marine Training School is planned to be demolished as part of the proposed project.
Church		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Old age home		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Sewage treatment plant		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Train station or shunting yard	YES X		The Congella Train Station and shunting yards occur within a 500 m radius of the proposed project. These will not be significantly affected by the proposed project.
Railway line	YES X		Disused railway sidings/tracks exist with a 500 m radius of the proposed project area. As mentioned in Section B of this Draft BA Report, one disused rail siding (which belongs to TFR) runs through the existing main terminal area. An additional disused rail siding (which belongs to TFR) runs between the Storage Tank 4 and the remaining terminal (i.e. dividing the terminal into two portions). The siding running through the main terminal area will be removed as a result of the proposed project.
Major road (4 lanes or more)	YES X		The M4 Southern Freeway (Ruth First Highway) occurs within a 500 m radius of the proposed project area. The impact of the proposed project on the surrounding road network is addressed in the Traffic Impact Assessment (Appendix D.1 of this Draft BA Report).
Airport		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Harbour	YES X		The proposed project is located within the Port of Durban. The proposed project will supplement the capacity of the Port of Durban. The Port of Durban also provides necessary infrastructure to allow the proposed project to function.
Sport facilities		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Golf course		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Polo fields		NO X	Not applicable or present within a 500 m radius of the proposed project area.
Filling station		NO X	Not applicable or present within a 500 m radius of the proposed project area. However, the port

Land use character			Description
			operations may entail fuel transfer and storage.
Landfill or waste treatment site		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.
Plantation		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.
Agriculture		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.
River, stream or wetland	**YES X**		According to the NFEPA, the site is within a NFEPA wetland (i.e. estuary) floodplain. The impact of the proposed project on the estuary will not be significant as no construction work or dredging will take place below the water mark. All construction work will occur on the berths and at the Storage Terminal. In terms of potential spillages and accidents during the operational phase, stringent spill contingency measures will be adopted. Furthermore, the number of marine vessels entering the Port of Durban on a monthly basis for the proposed project is not considered to be significant in relation to the greater port operations.
Nature conservation area		**NO X**	As mentioned above, the proposed terminal is situated in a Critical Biodiversity Area according to the KwaZulu-Natal Terrestrial Systematic Conservation Plan. However, it needs to be re-iterated that the proposed site includes concrete surfaces, and is therefore transformed. However, the proposed project site does not fall within the areas zoned as “Conservation” or “Recreation” in terms of the Bay of Natal Zonation Plan (MER and ERM, 2012).
Mountain, hill or ridge		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.
Museum		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.
Historical building		**NO X**	Not applicable or present within a 500 m radius of the proposed project area. According to Amafa AKwaZulu-Natali (no-date), the Congella Battlefield is located at 29° 52.922 S and 30° 59.740 E, which falls outside the 500 m radius of the proposed project.
Protected Area		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.
Graveyard		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.
Archaeological site		**NO X**	Not applicable or present within a 500 m radius of the proposed project area. According to Amafa/Heritage KwaZulu-Natali (no-date), the Congella Battlefield is located at 29° 52.922 S and 30° 59.740 E, which falls outside the 500 m radius of the proposed project.
Other land uses (describe)		**NO X**	Not applicable or present within a 500 m radius of the proposed project area.

6. CULTURAL/ HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or within 20m of the site?		**NO X**
If YES, contact a specialist recommended by AMAFA to conduct a heritage impact assessment. The heritage impact assessment must be attached as an appendix to this report.		
Briefly explain the recommendations of the specialist:	**Note from the CSIR: Not Applicable.**	
Will any building or structure older than 60 years be affected in any way?		**NO X**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		**NO X**
If YES, please submit the necessary application to AMAFA and attach proof thereof to this report.		

Note from the CSIR: The proposed project was loaded onto the South African Heritage Resources Information System (SAHRIS) on 10 November 2014. The following Case Reference Number: 6747 was allocated to the proposed project. The Amafa/Heritage KwaZulu-Natali was informed of the Case Reference Number and uploading process on 10 November 2014, via email. Refer to Appendix H.4 of this Draft BA Report for a copy of this email correspondence to the Amafa/Heritage KwaZulu-Natali.

In addition, the Need and Desirability Form (i.e. Form J) was downloaded from the Amafa/Heritage KwaZulu-Natali website, completed and accordingly submitted via SAHRIS. The completed form was also sent to Amafa/Heritage KwaZulu-Natali via email on 10 November 2014. Refer to Appendix H.6 of this Draft BA Report for feedback and approval from the Amafa/Heritage KwaZulu-Natali regarding the proposed project.

Furthermore, at this point in the process and based on the dates that building plans were passed, the structures that are planned to be demolished are not older than 60 years. However, if during detailed engineering, it becomes evident that any of the structures earmarked for demolition are older than 60 years, an application will be lodged by the Applicant with the Built Environment Section of Amafa/Heritage KwaZulu-Natal (in terms of Clause 33 of the KwaZulu Natal Heritage Act (Act 4 of 2008)). The application, if required, will be lodged before any demolition or alteration is carried out.

SECTION D: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—

  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;

(b) giving written notice to—

  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the local and district municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
  (vii) any other party as required by the competent authority;

(c) placing an advertisement in—

  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—

  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

Note from the CSIR: Refer to Appendix H.1 of this Draft BA Report for a detailed description of the Public Participation Process (PPP) undertaken thus far for the proposed project. Appendix H of this Draft BA Report also includes proof of placement of the site notice boards (Appendix H.2) and newspaper advertisements (Appendix H.3). Appendix H.4 includes copies (and proof) of the correspondence sent to I&APs, Stakeholders and Organs of State during the 30-day review of the Background Information Document (BID). Appendix H.5 includes the current database of I&APs, Stakeholders and Organs of State, whilst Appendix H.6 includes copies of comments received from I&APs and Stakeholders during the 30-day review of the BID.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and
(b) state—

(i) that an application for environmental authorization has been submitted to the KZN Department of Economic Development, Tourism & Environmental Affairs in terms of the EIA Regulations, 2010;(ii)
(iii) a brief project description that includes the nature and location of the activity to which the application relates;
(iv) where further information on the application can be obtained; and
(iv) the manner in which and the person to whom representations in respect of the application may be made.

Note from the CSIR: Appendix H.1 of this Draft BA Report includes a description of the content of the advertisements and site notices placed, as well as the correspondence sent to I&APs, Stakeholders and Organs of State during the 30-day review of the BID. Appendices H.2, H.3 and H.4 of this Draft BA Report, respectively include copies of the site notice, newspaper advertisements and correspondence sent to I&APs, Stakeholders and Organs of State as part of the PPP undertaken thus far.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

Note from the CSIR: Appendix H.1 of this Draft BA Report includes a description of the placement of the advertisements and site notices placed, as well as the details of the distribution of the correspondence to I&APs, Stakeholders and Organs of State during the 30-day review of the BID.

4. DETERMINATION OF APPROPRIATE PROCESS

The EAP must ensure that the public participation process is according to that prescribed in regulation 54 of the EIA Regulations, 2010, but may deviate from the requirements of subregulation 54(2) in the manner agreed by the KZN Department of Economic Development, Tourism & Environmental Affairs as appropriate for this application. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate.

Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before this application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA Regulations (Regulation 57 in the EIA Regulations, 2010) and be attached as Appendix E to this report.

Note from the CSIR: Appendix E of this Draft BA Report includes all comments/correspondence received from I&APs, Stakeholders and Organs of State during the 30-day review of the BID. In addition, responses from the BA Project Team and the Applicant have been included in Appendix E of this Draft BA Report.

6. PARTICIPATION BY DISTRICT, LOCAL AND TRADITIONAL AUTHORITIES

District, local and traditional authorities (where applicable) are all key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of this application and provided with an opportunity to comment.

Has any comment been received from the district municipality?	YES	
	X	

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

The proposed project falls within the eThekwini Municipality. The eThekwini Municipality is a Metropolitan Municipality, which constitutes both the Local and District Municipality. Comments were received from the eThekwini Municipality during the 30 day review period for the BID. This correspondence is included in Appendix E and Appendix H.6 of this Draft BA Report. Appendix H.4 also notes all correspondence sent to the eThekwini Municipality during the 30-day review of the BID. Responses to the issues raised by the eThekwini Municipality are also provided in Appendix E of this Draft BA Report.

The issued raised by the eThekwini Municipality are briefly described below:

- Impacts of the proposed project on existing electrical infrastructure;
- Impacts on the Durban Bay Estuary;
- Impacts resulting from the storage of Caustic Soda at the upgraded terminal;
- Concerns regarding the downgrade to a BA Process;
- Land use and planning comments; and
- Compliance with relevant legislation (in terms of health impacts, and fire safety and risks).

Has any comment been received from the local municipality?	YES X	[redacted]

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

The proposed project falls within the eThekwini Municipality. The eThekwini Municipality is a Metropolitan Municipality, which constitutes both the Local and District Municipality. Comments were received from the eThekwini Municipality during the 30 day review period for the BID. Refer to the information provided above regarding the correspondence from the eThekwini Municipality.

Has any comment been received from a traditional authority?	[redacted]	NO X

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

[redacted]

7. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	YES X	[redacted]

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Appendix E and Appendix H.6 of this Draft BA Report includes all comments/correspondence received from I&APs, Stakeholders and Organs of State during the 30-day review of the BID. In addition, responses from the BA Project Team and the Applicant have been included in Appendix E of this Draft BA Report.

It is important to note that no comments have been received from the parties directly affected by the proposed project (such as the Unicorn Marine Training School). No comments have been received from TFR, whose disused rail siding will be removed as a result of the proposed project. No comments have been received from the landowner, i.e. TNPA, who have issued OTGC with the Liquid Bulk Operator Licence. These stakeholders have been informed of the proposed project (as indicated in Appendix H.5 of this Draft BA Report).

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

The following main issues have been raised by I&APs, Stakeholders and Organs of State during the 30-day review of the BID (which extended from 31 October 2014 to 1 December 2014).

- Potential impacts on indigenous vegetation;
- Management of waste and hazardous materials;
- Comments regarding the BA Process (and associated downscale);
- Queries relating to the Public Participation Process;
- Potential impacts on bulk infrastructure;
- Stormwater management;
- Impacts occurring as a result of potential spillages and pollution;
- Impacts of the proposed project on the Durban Bay Estuary;
- Potential impacts resulting from marine and vehicle traffic;
- Potential impacts on heritage;
- Comments regarding land use and planning; and
- Potential health impacts and fire risks.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached as Appendix E to this report):

Appendix E of this Draft BA Report includes all comments/correspondence received from I&APs, Stakeholders and Organs of State during the 30-day review of the BID. In addition, detailed responses from the BA Project Team and the Applicant have been included in Appendix E of this Draft BA Report.

Brief responses to the issues raised by I&APs, Stakeholders and Organs of State are provided below.

Main Issue Raised	Summary Response
▪ Potential impacts on indigenous vegetation	▪ As mentioned previously, the proposed project is located in a transformed area, zoned for industrial activity within the Port of Durban. The adjacent Marine Training School property does not contain any natural, indigenous vegetation. The existing OTGC Storage Terminal area includes trees, grasses and shrubs that were planted by the operator (i.e. these are not natural vegetation). Of the trees planted by the operator, only one is indigenous (i.e. Red Aloe). If required, this Aloe will be rescued and relocated before any demolition and clearing occurs. Permission will be obtained from the provincial authorities to remove this species, if required. Based on the completely transformed nature of the proposed project area, the presence of predominantly alien invasive plants, and the lack

	of indigenous vegetation, a Vegetation Assessment Study is not warranted as part of the BA Process.
▪ Management of waste and hazardous materials	▪ Waste management and waste related impacts are addressed in this Draft BA Report. Waste management for the construction, operational and decommissioning phases of the proposed project is addressed in the Draft EMPr (Appendix F of this Draft BA Report). Best practice will be followed with regards to waste management (including domestic waste) and the handling of hazardous materials and potential spillages. These measures include the containment and immediate clean-up of any spillages, as well as the collection of chemical/oil wastes and disposal at an appropriate, licensed hazardous waste facility.
▪ Comments regarding the BA Process (and associated downgrade)	▪ The motivation letter submitted to the KZN DEDTEA to apply for a downgrade of the application to a BA Process is included in Appendix G.2 of this Draft BA Report. The motivation to downgrade to a BA Process was based on the fact that the proposed operations (i.e. storage and handling of Bulk Liquids) will not change as a result of the proposed project. In addition, the proposed project is located in a completely transformed area, with no sensitive environmental features found on site. As a result of this, the impacts resulting from the proposed project do not have a high significance without the implementation of mitigation measures. Furthermore, the specialist studies conducted as part of the BA Process have been subjected to the same level of impact assessment rigour as that of a Scoping and EIA. Additional impacts have also been identified by the EAP.
▪ Queries relating to the Public Participation Process	▪ Electronic copies of the Draft BA Report will be provided to key stakeholders and Organs of State. Furthermore, copies of the Draft BA Report can be downloaded from the project website, and can also be accessed at the Durban Central Reference Library and Umbilo Library. ▪ An Open House Session will be held during the 40-day review period of the Draft BA Report. Details of the session will be provided in newspaper adverts that will be published at the commencement of the 40-day comment period for the Draft BA Report. Details will also be provided in Letter 2, which will be sent to all I&APs on the project database.
▪ Potential impacts on bulk infrastructure	▪ Impacts of the proposed project on the surrounding existing infrastructure have been addressed in the relevant specialist studies.

	▪ OTGC will contact the eThekwini Electricity Department to confirm and verify the presence of underground electrical services. OTGC will timeously obtain permission from the eThekwini Electricity Department should any electrical servitudes be affected by the proposed project.
▪ Stormwater management	▪ OTGC will incorporate stormwater management into the design of the upgraded Storage Terminal. A closed system will be developed for the drainage of storage tanks and bund areas. The quality of water drained from the bund areas will first be ascertained, before being discharged to the stormwater system.
▪ Impacts occurring as a result of potential spillages and pollution	▪ Recommendations for spill control during the construction and operational phases are included in the Draft EMPr (Appendix F of this Draft BA Report). If any spills occur on site or in the Port during the operational phase, the Port of Durban Oil Spill Contingency Plan will need to be adhered to. An ERAP will be compiled and implemented by OTGC, prior to the commissioning of the proposed project. The ERAP will tie into the Response Plan of the Port of Durban. The Contractor will also be required to prepare an ERAP for the construction phase, which will be approved by OTGC. In terms of accidents and hazards, OTGC will also conduct a HAZOP Study in parallel with the BA Process, prior to construction. The findings of the HAZOP Study will be incorporated into the Final BA Report, as well as the Risk Assessment.
▪ Impacts of the proposed project on the Durban Bay Estuary	▪ The impact of the proposed project on the Durban Bay Estuary is not predicted to be significant as no construction work or dredging will take place below the water mark. All construction work will occur on the berths and at the Storage Terminal. In terms of potential spillages and accidents during the operational phase, stringent spill contingency measures will be adopted.
▪ Potential impacts resulting from marine and vehicle traffic	▪ The number of marine vessels entering the Port of Durban on a monthly basis to make use of the upgraded Storage Terminal (i.e. 4 vessels per month based on the worst-case scenario) is not considered to be significant in relation to the greater port operations. The frequency of the risk of potential spillages due to the minor increase in vessels may increase, however the overall significance of this risk is considered to be medium-low with the implementation of mitigation measures. ▪ The Traffic Impact Assessment (Appendix D.1 of this Draft BA Report) includes an assessment of the increased traffic volumes during the operational phase. It is estimated that during the

	operational phase, 85 road tankers a day (i.e. over 24 hours) are expected to visit the upgraded Storage Terminal. However, this is based on the worst-case scenario, based on peak conditions. It is estimated that this will in all likelihood have very little effect on the existing traffic network.
▪ Potential impacts on heritage	▪ The proposed project was loaded onto the SAHRIS on 10 November 2014, with the following Case Reference Number: 6747. The South African Heritage Resources Agency (SAHRA) and the Amafa/Heritage KwaZulu-Natali were informed of the Case Reference Number on 10 November 2014, via email (Appendix H.4 of this Draft BA Report). ▪ The proposed project will not entail any dredging or construction activities within the port/bay itself (i.e. below the water mark). Based on this, the proposed project will not impact on any marine archaeology/heritage features below the water mark. As a result, Amafa/Heritage KwaZulu-Natali is the relevant authority that will need to provide comment on the proposed project. ▪ Approval from both SAHRA and Amafa/Heritage KwaZulu-Natali will is included in Appendix H.6 of this Draft BA Report.
▪ Comments regarding land use and planning	▪ The proposed project is located in an area zoned for industrial activity.
▪ Potential health impacts and fire risks	▪ Impacts relating to safety and risks are addressed in the Risk Assessment specialist study (Appendix D.2 of this Draft BA Report). Compliance with relevant regulations and legislation relating to fire prevention will be complied with and finalised during the detailed engineering phase.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

APPROACH TO THE BASIC ASSESSMENT

1) METHODOLOGY OF IMPACT ASSESSMENT

According to the DEA IEM Series guideline on "Impact Significance" (2002), there are a number of quantitative and qualitative methods that can be used to identify the significance of impacts resulting from a development. The process of determining impact significance should ideally involve a process of determining the acceptability of a predicted impact to society. Making this process explicit and open to public comment and input would be an improvement of the EIA/BA process. The CSIR's approach to determining significance is generally as follows:

- Use of expert opinion by the specialists ("professional judgement"), based on their experience, a site visit and analysis, and use of existing guidelines and strategic planning documents and conservation mapping (e.g. SANBI biodiversity databases);
- Review of specialist assessment by all stakeholders including authorities such as nature conservation officials, as part of the report review process (i.e. if a nature conservation official disagreed with the significance rating, then we could negotiate the rating); and
- Our approach is more a qualitative approach - we do not have a formal matrix calculation of significance as is sometimes done.

2) SPECIALIST CRITERIA FOR IMPACT ASSESSMENT

The following methodology has been provided by the CSIR to all specialists, for incorporation into specialist assessments:

Assessment of Potential Impacts

The assessment of impact significance is based on the following conventions:

Nature of Impact - this reviews the type of effect that a proposed activity will have on the environment and should include "what will be affected and how?"

Spatial Extent - this should indicate whether the impact will be:
- Site specific;
- Local (<2 km from site);
- Regional (within 30 km of site); or
- National.

Duration - The timeframe during which (lifetime of) the impact will be experienced:
- Temporary (less than 1 year);
- Short term (1 to 6 years);
- Medium term (6 to 15 years);
- Long term (the impact will cease after the operational life of the activity); or
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient).

Intensity - it should be established whether the impact is destructive or innocuous and should be described as either:
- High (severe alteration of natural systems, patterns or processes such that they temporarily or permanently cease);
- Medium (notable alteration of natural systems, patterns or processes; where the environment continues to function but in a modified manner); or
- Low (negligible or no alteration of natural systems, patterns or processes); can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making.

Probability - this considers the likelihood of the impact occurring and should be described as:
- Improbable (little or no chance of occurring);
- Probable (<50% chance of occurring);
- Highly probable (50 – 90% chance of occurring); or
- Definite (>90% chance of occurring).

Reversibility - this considers the degree to which the adverse environmental impacts are reversible or irreversible. For example, an impact will be described as low should the impact have little chance of being rectified to correct environmental impacts. On the other hand, an impact such as the nuisance factor caused by noise impacts from wind turbines can be considered to be highly reversible at the end of the project lifespan. The assessment of the reversibility of potential impacts is based on the following terms:
- High - impacts on the environment at the end of the operational life cycle are highly reversible;
- Moderate - impacts on the environment at the end of the operational life cycle are reasonably reversible;
- Low - impacts on the environment at the end of the operational life cycle are slightly reversible; or
- Non-reversible - impacts on the environment at the end of the operational life cycle are not reversible and are consequently permanent.

Irreplaceability - this reviews the extent to which an environmental resource is replaceable or irreplaceable. For example, if the proposed project will be undertaken on land that is already transformed and degraded, this will yield a low irreplaceability score; however, should a proposed development destroy unique wetland systems for example, these may be considered irreplaceable and thus be described as high. The assessment of the degree to which the impact causes irreplaceable loss of resources is based on the following terms:
- High irreplaceability of resources (this is the least favourable assessment for the environment);
- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (this is the most favourable assessment for the environment).

The status of the impacts and degree of confidence with respect to the assessment of the significance is stated as follows:

Status of the impact: A description as to whether the impact will be:
- Positive (environment overall benefits from impact);
- Negative (environment overall adversely affected); or
- Neutral (environment overall not affected).

Degree of confidence in predictions: The degree of confidence in the predictions, based on the availability of information and specialist knowledge. This should be assessed as:
- High;
- Medium; or
- Low.

Based on the above considerations, the specialist provides an overall evaluation of the significance of the potential impact, which should be described as follows:
- **Low to very low:** the impact may result in minor alterations of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated;
- **Medium:** the impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated; or
- **High:** Where it could have a "no-go" implication for the project unless mitigation or re-design is practically achievable.

Furthermore, the following must be considered:
- Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
- All impacts should be evaluated for the construction, operation and decommissioning phases of the project, where relevant.

- The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region, if relevant.

Management Actions:

- Where negative impacts are identified, mitigatory measures will be identified to avoid or reduce negative impacts. Where no mitigatory measures are possible this will be stated.
- Where positive impacts are identified, augmentation measures will be identified to potentially enhance these.
- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.

Monitoring:

Specialists should recommend monitoring requirements to assess the effectiveness of mitigation actions, indicating what actions are required, by whom, and the timing and frequency thereof.

Cumulative Impact:

Consideration is given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts are evaluated with an assessment of similar developments already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

Mitigation:

The objective of mitigation is to firstly avoid and minimise impacts where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on the receiving environment and to maximise re-vegetation and rehabilitation of disturbed areas. For each impact identified, appropriate mitigation measures to reduce or otherwise avoid the potentially negative impacts are suggested. All impacts are assessed without mitigation and with the mitigation measures as suggested.

2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the planning and design phase:

Note from the CSIR: As mentioned in Section B (4) of this Draft BA Report, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. The location of the proposed project is dependent on and strongly linked to the positioning of the existing Storage Terminal, as well as the proximity to the Port of Durban. The location of the proposed project is also governed by the Liquid Bulk Terminal Operator Licence that was issued to OTGC by TNPA, which specifies the land leased to OTGC. Therefore, this section is not applicable. However, Section 2.1 (b) is applicable and has been completed below.

Note from the CSIR: The complete impact assessment tables are included in Appendix G.8 of this Draft BA Report.

Note from the CSIR: In the following sections (i.e. Sections 2.1, 2.2, 2.3, and 2.4); the status of the impacts are provided in brackets adjacent to the significance ratings, both before and after mitigation. Where impacts are rated with a "neutral" or "positive" status, this is also included in the description of the impacts.

Alternative S1 (preferred alternative): ***Not Applicable – Refer to the note above.***

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

Alternative S2 (if any)

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

No-go alternative (compulsory)

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	**Alternative S2**
Not Applicable – Refer to the note above.	Not Applicable – Refer to the note above.

b. Process, technology, layout or other alternatives

List the impacts associated with any process, technology, layout or other alternatives that are likely to occur during the planning and design phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative) – Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)

Direct impacts:

- Impact on existing infrastructure (roads, stormwater pipelines, railway sidings, and electricity cables).
- Improved efficiency for existing operations (e.g. prevention of spillages at the road loading gantry due to improved technologies and design). This impact is rated as positive.
- Increased temporary employment opportunities. This impact is rated as positive.

Indirect impacts:

- Provision of secure facilities for the storage of Molasses, Caustic Soda, MEG and Vegetable Oils. This impact is rated as positive.
- Potential increased investment in the Port of Durban. This impact is rated as positive.

Cumulative impacts:

- There are no cumulative impacts for planning and design phase.

Alternative A2 (if any) – Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2

Direct impacts:

- Impact on existing infrastructure (roads, stormwater pipelines, railway sidings, and electricity cables).
- Improved efficiency for existing operations (e.g. prevention of spillages at the road loading gantry due to improved technologies and design). This impact is rated as positive.
- Increased temporary employment opportunities. This impact is rated as positive.

Indirect impacts:

- Provision of secure facilities for the storage of Molasses, Caustic Soda, MEG and Vegetable Oils. This impact is rated as positive.
- Potential increased investment in the Port of Durban. This impact is rated as positive.

Cumulative impacts:

- There are no cumulative impacts for planning and design phase.

No-go alternative (compulsory)

Direct impacts:

- None of the impacts mentioned above will occur. However, the proposed project site is already transformed and developed on.
- The existing Storage Terminal will operate only for the storage, handling and distribution of Molasses. However, considering the age of the existing Storage Terminal, a complete maintenance programme will be required to prevent potential negative impacts associated with the use of aging infrastructure.
- If the proposed project does not proceed, increased income and economic spin-off activities will not be realised.
- Customers of the proposed upgraded terminal will not be provided with the necessary structures and infrastructure to ensure storage of Bulk Liquids, other than Molasses.
- If the proposed project does not proceed, the industries that rely on the supply of Caustic Soda, Vegetable Oils and MEG via import, could experience hindered economic growth potential.
- The capacity of the Port of Durban to attract new investors and to accommodate and handle additional cargo will be reduced as only one ship will call to the Port every four months to service the needs of the existing terminal.

Indirect impacts:

- There are no indirect impacts during the planning and design phase for the No-go Option.

Cumulative impacts:

- There are no cumulative impacts during the planning and design phase for the No-go Option.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:	**Alternative A2:**
Refer to the table below. Note that there is no difference in the significance of the impacts identified for the planning and design phase. The impacts are the same for all alternative layouts (i.e.	Refer to the table below. Note that there is no difference in the significance of the impacts identified for the planning and design phase. The impacts are the same for all alternative layouts (i.e.

Alternative 1 - Phase 1, Alternative 1 - Phase 2 – Option 1, Alternative 1 - Phase 2 – Option 2 and Alternative 2). As a result, the impacts, significance and mitigation measures for the various layout alternatives have been combined to avoid repetition and for ease of reference and review.	Alternative 1 - Phase 1, Alternative 1 - Phase 2 – Option 1, Alternative 1 - Phase 2 – Option 2 and Alternative 2). As a result, the impacts, significance and mitigation measures for the various layout alternatives have been combined to avoid repetition and for ease of reference and review.

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
• **ALTERNATIVE A1 (PREFERRED ALTERNATIVE) - Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)** • **ALTERNATIVE A2 (IF ANY) - Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2**			
Direct impacts:			
• Impact on existing infrastructure (roads, stormwater pipelines, railway sidings, and electricity cables).	• Medium (Negative)	• Consultation should be undertaken with the relevant municipal departments during the detailed engineering phase to discuss the impact of the proposed project on existing infrastructure. OTGC should ensure that all relevant approvals have been obtained from the eThekwini Municipality (with regards to Building Plans, relocation of the Municipal Substation etc.). • The Port Development Framework Plan, as well as other relevant documents and specifications (such as the Operator Licence), need to be taken into consideration in order to avoid potential planning impacts. • The risks of excavations must be assessed by reviewing cable and pipe routings, and make provision for safe excavation.	• Low (Negative)
• Improved efficiency for existing operations (e.g. prevention of spillages at the road loading gantry due to improved technologies and design). This impact is rated as positive.	• Medium (Positive)	• The design must comply with relevant national standards. • The project design must make provision of fencing around the entire site (i.e. BS1722) with a security gate (once the project is completed) to prevent unauthorised access.	• High (Positive)
• Increased temporary employment opportunities. This impact is rated as positive.	• Low (Positive)	• Enhance the use of local labour and local skills as far as reasonably possible.	• Medium (Positive)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
Indirect impacts:			
• Provision of secure facilities for the storage of Molasses, Caustic Soda, MEG and Vegetable Oils. This impact is rated as positive.	• Medium (Positive)	• The design must comply with relevant national standards.	• High (Positive)
• Potential increased investment in the Port of Durban. This impact is rated as positive.	• Medium (Positive)	• Not applicable.	• Medium (Positive)
Cumulative impacts:			

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the construction phase:

Note from the CSIR: As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. Therefore, this section is not applicable. However, Section 2.2 (b) is applicable and has been completed below.

Alternative S1 (preferred site) - *Not Applicable – Refer to the note above.*

Direct impacts:

Indirect impacts:

Cumulative impacts:

Alternative S2 (if any)

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)
Direct impacts: ***Indirect impacts:*** ***Cumulative impacts:***

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	**Alternative S2**
Not Applicable – Refer to the note above.	Not Applicable – Refer to the note above.

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the construction phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative) – Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)

Direct impacts:

- Removal of planted alien invasive vegetation from the proposed project area. This impact is rated as positive.
- Increased risk of the spread of alien invasive species.
- Removal of planted indigenous vegetation species from the proposed project area.
- Possible disturbance to existing infrastructure as a result of the relocation of the municipal substation and electrical infrastructure during construction.
- Impact on the regional water balance as a result of increased water usage.
- Potential spillage of effluent (from portable sanitation facilities for construction personnel).
- Pollution caused by spillage or discharge of construction waste water into the surrounding environment.
- Pollution of the surrounding environment as a result of the contamination of stormwater. Contamination could result from chemicals, oils, fuels, sewage, solid waste, litter etc.
- Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste.
- Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillages of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during construction.
- Sedimentation and impact on the water quality of the Durban Bay Estuary as a result of stockpiling of excavated material during the construction phase. The excavated material could potentially be washed into the estuary via stormwater.
- Air Quality Impact: Emissions from construction vehicles and generation of dust as a result of earthworks, demolition, as well as the delivery and mixing of construction materials.

- Socio-economic Impact: Employment creation and skills development opportunities during the construction phase, which is expected to give rise to approximately 350 jobs. This impact is rated as positive.
- Potential visual intrusion of construction/demolition activities on the views of sensitive visual receptors.
- Potential noise impact from the use of construction equipment (for the construction of the proposed infrastructure and demolition of existing infrastructure).
- Potential noise impact from piling operations during the construction phase.
- Molasses washing (due to pigging of pipelines) and ingress of potential spillages into stormwater drains and the harbour, resulting in pollution of seawater. This impact is rated as neutral.
- Noise generation from demolition and construction work (e.g. grinding and use of angle grinders), as well as from the removal of waste material (e.g. crane and truck engines). This impact is rated as neutral.
- Potential health injuries to construction personnel as a result of construction work (i.e. welding fumes, dust and smoke from burning of organic materials). Note from the CSIR: No burning of materials will be permitted on site. This impact is rated as neutral.
- Heavy traffic, congestion and potential for collisions during the construction phase. This impact is rated as neutral.
- Construction safety injuries: potential impact on the safety of construction workers due to construction activities (such as welding, cutting, use of hot metals, working at heights, lifting of heavy items etc.). This impact is rated as neutral.
- Pollution of the surrounding water and ground as a result of spillages, generation of building rubble and waste scrap material. This impact is rated as neutral.
- Pollution of water and the ground as a result of potential Caustic Soda solution spills and the generation of building rubble. Pollution of water as a result of potential spillages from the demolition of the caustic soda gantry and piping (Note: this impact only applies to Alternative 1 – Phase 2 (Option 1)). This impact is rated as neutral.
- Impact of construction vehicles on the Maydon Wharf road network and parking of construction vehicles on public roads when not in use.

Indirect impacts:

- Socio-economic impact: Secondary industries may benefit from the proposed project in the form of the provision of support services such as concrete suppliers.

Cumulative impacts:

- No cumulative impacts have been identified for the construction phase.

Alternative A2– Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2

Direct impacts:

- Removal of planted alien invasive vegetation from the proposed project area. This impact is rated as positive.
- Increased risk of the spread of alien invasive species.
- Removal of planted indigenous vegetation species from the proposed project area.
- Possible disturbance to existing infrastructure as a result of the relocation of the municipal substation and electrical infrastructure during construction.
- Impact on the regional water balance as a result of increased water usage.

- Potential spillage of effluent (from portable sanitation facilities for construction personnel).
- Pollution caused by spillage or discharge of construction waste water into the surrounding environment.
- Pollution of the surrounding environment as a result of the contamination of stormwater. Contamination could result from chemicals, oils, fuels, sewage, solid waste, litter etc.
- Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste.
- Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillages of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during construction.
- Sedimentation and impact on the water quality of the Durban Bay Estuary as a result of stockpiling of excavated material during the construction phase. The excavated material could potentially be washed into the estuary via stormwater.
- Air Quality Impact: Emissions from construction vehicles and generation of dust as a result of earthworks, demolition, as well as the delivery and mixing of construction materials.
- Socio-economic Impact: Employment creation and skills development opportunities during the construction phase, which is expected to give rise to approximately 350 jobs. This impact is rated as positive.
- Potential visual intrusion of construction/demolition activities on the views of sensitive visual receptors.
- Potential noise impact from the use of construction equipment (for the construction of the proposed infrastructure and demolition of existing infrastructure).
- Potential noise impact from piling operations during the construction phase.
- Molasses washing (due to pigging of pipelines) and ingress of potential spillages into stormwater drains and the harbour, resulting in pollution of seawater. This impact is rated as neutral.
- Noise generation from demolition and construction work (e.g. grinding and use of angle grinders), as well as from the removal of waste material (e.g. crane and truck engines). This impact is rated as neutral.
- Potential health injuries to construction personnel as a result of construction work (i.e. welding fumes, dust and smoke from burning of organic materials). Note from the CSIR: No burning of materials will be permitted on site. This impact is rated as neutral.
- Heavy traffic, congestion and potential for collisions during the construction phase. This impact is rated as neutral.
- Construction safety injuries: potential impact on the safety of construction workers due to construction activities (such as welding, cutting, use of hot metals, working at heights, lifting of heavy items etc.). This impact is rated as neutral.
- Pollution of the surrounding water and ground as a result of spillages, generation of building rubble and waste scrap material. This impact is rated as neutral.
- Pollution of water and the ground as a result of potential Caustic Soda solution spillages and the generation of building rubble. Note: this impact only applies to Alternative 1 – Phase 2 (Option 2). This impact is rated as neutral.
- Impact of construction vehicles on the Maydon Wharf road network and parking of construction vehicles on public roads when not in use.

Indirect impacts:

- Socio-economic impact: Secondary industries may benefit from the proposed project in the form of the provision of support services such as concrete suppliers.

Cumulative impacts:

- No cumulative impacts have been identified for the construction phase.

No-go alternative (compulsory)

Direct impacts:

- None of the impacts mentioned above will occur. However, the proposed project site is already transformed and developed on.
- The existing Storage Terminal will operate only for the storage, handling and distribution of Molasses. However, considering the age of the existing Storage Terminal, a complete maintenance programme will be required to prevent potential negative impacts associated with the use of aging infrastructure.
- If the proposed project does not proceed, increased income and economic spin-off activities will not be realised.
- Approximately 350 direct jobs will not be created during the construction phase.
- Customers of the proposed upgraded terminal will not be provided with the necessary structures and infrastructure to ensure storage of Bulk Liquids, other than Molasses.
- If the proposed project does not proceed, the industries that rely on the supply of Caustic Soda, Vegetable Oils and MEG via import, could experience hindered economic growth potential.
- The capacity of the Port of Durban to attract new investors and to accommodate and handle additional cargo will be reduced as only one ship will call to the Port every four months to service the needs of the existing terminal.

Indirect impacts:

- There are no indirect impacts during the construction phase for the No-go Option.

Cumulative impacts:

- There are no cumulative impacts during the construction phase for the No-go Option.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1:	**Alternative A2:**
Refer to the table below.	Refer to the table below.

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
ALTERNATIVE A1 (PREFERRED ALTERNATIVE) - Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)			
Direct impacts:			
• Removal of alien invasive vegetation from the proposed project area. This impact is rated as positive.	• Medium (Positive)	• Ensure that all alien invasive vegetation that has been planted on site is removed promptly, in a scheduled manner prior to the demolition process. The removal of these species must be carried out in line with relevant municipal and provincial procedures, guidelines and recommendations (such as the eThekwini Municipality Generic Environmental Management Plan for Construction Activities, 2002; as well as those published by the Wildlife and Environment Society of South Africa). • The removed alien invasive vegetation should be immediately disposed of correctly and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species.	• High (Positive)
• Increased risk of the spread of alien invasive species.	• Medium (Negative)	• All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods. • The removed alien invasive vegetation should be immediately disposed of correctly and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species.	• Low (Negative)
• Removal of planted indigenous vegetation species from the proposed project area.	• Low (Negative)	• Ensure the necessary permits are obtained for the removal of the Red Aloe (*Aloe ferox*) that was planted by the terminal operator. • If possible, the Red Aloe (*Aloe ferox*) should be kept in a nursery for use at a later stage or relocation purposes.	• Very Low (Negative)
• Possible disturbance to existing infrastructure as a result of the relocation of	• Medium (Negative)	• Ensure that the eThekwini Municipality: Electricity Department is contacted prior to the initiation of the	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
the municipal substation and electrical infrastructure during construction.		construction phase in order to plan and discuss the relocation of the substation. • Ensure that the necessary approvals are timeously obtained from the eThekwini Municipality: Electricity Department. • The risks of excavations must be assessed by reviewing cable and pipe routings, and make provision for safe excavation.	
• Impact on the regional water balance as a result of increased water usage.	• Low (Negative)	• Water is required during the construction phase for various purposes, such as earthworks, as well as to fulfil the requirements of construction personnel on-site. Where possible, water conservation should be practiced. Water conservation techniques include making construction personnel aware of the importance of limiting water wastage, as well as reducing water use during the cleaning of the site (such as sweeping the site before it is being washed). OTGC should also ensure that the water infrastructure on site is monitored for leakages on a regular basis to prevent wastage.	• Very Low (Negative)
• Potential spillage of effluent (from portable sanitation facilities for construction personnel).	• Medium (Negative)	• Normal sewage management practises should be implemented. These include ensuring that portable sanitation facilities are regularly emptied and the resulting sewage is transported safely (by an appointed (suitable) service provider) for correct disposal at an appropriate, licenced facility. Proof of disposal (in the form of waste disposal slips or waybills) should be retained on file for auditing purposes. • As part of the Environmental Awareness Training, all construction personnel should be made aware of the sewage management practises. • The construction camp and necessary ablution	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		facilities meant for construction workers must be located beyond 32 m of the estuary.	
• Pollution caused by spillage or discharge of construction waste water into the surrounding environment.	• Medium (Negative)	• Ensure that adequate containment structures are provided for the storage of dangerous goods and hazardous materials on site. Appropriate bund areas must be provided for the storage of these materials. Bund areas should contain an impervious surface in order to prevent spillages from entering the ground and stormwater system. • As far as possible and in line with current procedures at the existing Storage Terminal, servicing and refuelling of construction equipment must be undertaken off site. If on site servicing and refuelling is required in emergency situations, a designated area must be established at the construction site camp for this purpose. Drip trays or similar impervious materials must be used during these procedures. • A Spill Response Plan must be compiled (by OTGC and the Contractor) for the construction phase in order to manage potential spill events. The Port of Durban Oil Spill Contingency Plan must be considered during the compilation of the Spill Response Plan.	• Low (Negative)
• Pollution of the surrounding environment as a result of contamination of stormwater. Contamination could result from chemicals, oils, fuels, sewage, solid waste, litter etc.	• Medium (Negative)	• The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase. • Provide secure storage for oil, chemicals and other waste materials to prevent contamination of stormwater runoff. • Regular inspections of stormwater infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds.	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		• Monitoring programmes should be implemented to ensure that no materials enter the surface water drainage system.	
• Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste (general and hazardous).	• Medium (Negative)	• General waste (i.e. building rubble, demolition waste, discarded concrete, bricks, tiles, wood, glass, plastic, metal, excavated material, packaging material, paper and domestic waste etc.) and hazardous waste (i.e. empty tins, paint and paint cleaning liquids, oils, fuel spillages, asbestos roofing material and chemicals etc.) generated during the construction phase should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Waste separation should take place during the construction phase. • Should the on-site storage of general waste and hazardous waste exceed 100 m^3 and 80 m^3 respectively, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to. • Ensure that general waste and hazardous waste generated during the construction phase are removed from the site on a regular basis and disposed of at an appropriate, licensed waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal. • Ensure that the construction site is kept clean at all times and that construction personnel are made	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		aware of correct waste disposal methods. • Ensure that sufficient general waste disposal bins are provided for all construction personnel throughout the site. These bins must be emptied on a regular basis.	
• Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillage of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during construction.	• High (Negative)	• Hazardous waste (i.e. empty tins, paint and paint cleaning liquids, oils, fuel spillages, asbestos roofing material and chemicals etc.) generated during the construction phase should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Hazardous waste should be stored separately from general waste during the construction phase. • Ensure that hazardous waste generated during the construction phase is removed from the site on a regular basis and disposed of at an appropriate, licensed waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal. • Ensure that the construction site is kept clean at all times and that construction personnel are made aware of correct waste disposal methods. • Littering and contamination of the Durban Bay Estuary during construction must be prevented by effective construction camp management. • Ensure that adequate containment structures are provided for the storage of dangerous goods and hazardous materials on site. Appropriate bund areas must be provided for the storage of these materials. Bund areas should contain an impervious surface in	• Medium (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION

		order to prevent spillages from entering the ground and stormwater system.
		• As far as possible and in line with current procedures at the existing Storage Terminal, servicing and refuelling of construction equipment must be undertaken off site. If on site servicing and refuelling is required in emergency situations, a designated area must be established at the construction site camp for this purpose. Drip trays or similar impervious materials must be used during these procedures.
		• A Spill Response Plan must be compiled (by OTGC and the Contractor) for the construction phase of the proposed project in order to manage potential spill events. The Port of Durban Oil Spill Contingency Plan must be considered during the compilation of the Spill Response Plan.
		• If any spilled hazardous material reaches the Durban Bay Estuary, the TNPA must be informed immediately and the Port of Durban Oil Spill Contingency Plan must be followed. The following procedures should be followed:
		  • Take immediate action to stop or reduce the spill and contain it.
		  • Implement actions necessary to prevent the spread of the contamination.
		  • Recover the spilled product.
		  • Ensure proper disposal of spilled material.	

• Sedimentation and impact on the water quality of the Durban Bay Estuary as a result of stockpiling of excavated material during the construction phase. The	• High (Negative)	• All material that is excavated during the construction phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts on the estuary.	• Medium (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
excavated material could potentially be washed into the estuary via stormwater.		• Stockpiles must be located at least 10 m away from stormwater channels and drains, and at least 32 m away from the estuary, on flat areas where run-off will be minimised. • Stockpiles should not exceed 2 m in height. • During periods of strong winds and heavy rain (in line with relevant rainfall patterns), the stockpiles should be covered with appropriate material (e.g. cloth, tarpaulin etc.). • Where possible, sandbags (or similar) should be placed at the bases of the stockpiled material in order to prevent erosion of the material.	
• Air Quality Impact: Emissions from construction vehicles and generation of dust as a result of earthworks, demolition, as well as the delivery and mixing of construction materials.	• Medium (Negative)	• Ensure that cleared (excavated) areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. • Approved soil stabilisers may be utilised to limit dust generation. • Ensure that construction vehicles travelling on unpaved roads do not exceed a speed limit of 40 km/hour.	• Low (Negative)
• Socio-economic Impact: Employment creation and skills development opportunities during the construction phase, which is expected to give rise to approximately 350 jobs. This impact is rated as positive.	• Medium (Positive)	• Liaise with TNPA to maximise job creation opportunities during the construction phase. • Enhance the use of local labour and local skills as far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. • Ensure that an equitable percentage allocation is provided for local labour employment as well as specify the use of small-to-medium enterprises and training specifications in the Contractors contract. • Ensure that goods and services are sourced from	• High (Positive)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		the local and regional economy as far as reasonably possible.	

• Potential visual intrusion of construction/demolition activities on the views of sensitive visual receptors.	• Low (Negative)	• No specific mitigation measures are required other than standard construction site housekeeping and dust suppression. These are included below:
		  • The contractor(s) should maintain good housekeeping on site to avoid litter and minimise waste.
		  • Litter and rubble should be timeously removed from the construction site and disposed at a licenced waste disposal facility.
		  • The project developer should demarcate construction boundaries and minimise areas of surface disturbance.
		  • Appropriate plans should be in place to minimise fire hazards and dust generation.
		  • Night lighting of the construction site should be minimised within requirements of safety and efficiency.
			• Low (Negative)

• Potential noise impact from the use of construction equipment (for the construction of the proposed infrastructure and demolition of existing infrastructure).	• Low (Negative)	• No mitigation measures are recommended.	• Low (Negative)
• Potential noise impact from piling operations during the construction phase.	• Low (Negative)	• It is recommended that piling operations be conducted during the day extending from 06:00 to 22:00 (i.e. daylight hours as defined in SANS 10103). The existing traffic noise around the terminal will provide a masking effect to the noise generated during piling.	• Low (Negative)
• Molasses washing (due to pigging of pipelines) and ingress of potential spillages	• Medium (Neutral)	• The spilled, undiluted Molasses should be recycled by returning it to the storage tanks during the initial	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
into stormwater drains and the harbour, resulting in pollution of seawater. This impact is rated as neutral.		demolition process. • The material resulting from the washing of the storage tanks should be pumped into tankers and correctly disposed by an approved hazardous waste disposal Contractor (as per the OTGC decommissioning procedures).	
• Noise generation from demolition and construction work (e.g. grinding and use of angle grinders), as well as from the removal of waste material (e.g. crane and truck engines). This impact is rated as neutral.	• Medium (Neutral)	• Construction personnel must wear proper hearing protection, which should be specified as part of the Construction Phase Risk Assessment carried out by the Contractor. • The Contractor must ensure that all construction personnel are provided with adequate Personal Protective Equipment (PPE), where appropriate. • The Contractor must prescribe, to construction personnel, what is required by the OTGC permit to work system.	• Low (Neutral)
• Potential health injuries to construction personnel as a result of construction work (i.e. welding fumes, dust and smoke from burning of organic materials). Note from the CSIR: No burning of materials will be permitted on site. This impact is rated as neutral.	• Medium (Neutral)	• The Contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate. • The Contractor must prescribe, to construction personnel, what is required by the OTGC permit to work system.	• Low (Neutral)
• Heavy traffic, congestion and potential for collisions during the construction phase. This impact is rated as neutral.	• High (Neutral)	• During the construction phase, suitable parking areas should be created and designated for construction trucks and vehicles. • A construction supervisor should be appointed to co-ordinate construction traffic during the construction phase (by drawing up a traffic plan prior to construction). • Road barricading should be undertaken where required and road safety signs should be adequately	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		installed at strategic points within the construction site.	
• Construction safety injuries: potential impact on the safety of construction workers due to construction activities (such as welding, cutting, use of hot metals, working at heights, lifting of heavy items etc.). This impact is rated as neutral.	• High (Neutral)	• Ensure that a skilled and competent Contractor is appointed during the construction phase. The Contractor must be evaluated during the tender/appointment process in terms of safety standards. • The Contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate. • The Contractor must prescribe, to construction personnel, what is required by the OTGC permit to work system. • The Contractor must undertake a Construction Phase Risk Assessment. • A Construction Site Manager or Safety Supervisor should be appointed, in conjunction with the project manager, to monitor all safety aspects during the construction phase. This could be the same person that is assigned to co-ordinate the construction traffic. • Ensure that roads are not closed during construction, which may restrict access for emergency services.	• Medium (Neutral)
• Pollution of the surrounding water and ground as a result of spillages, generation of building rubble and waste scrap material. This impact is rated as neutral.	• High (Neutral)	• The amount of hazardous materials and liquids (such as cleaning materials) handled will be minimal. Fumes generated during welding will be minimal, within a well-ventilated area. • All construction waste (including rubble) should be frequently removed from site and correctly disposed by a suitable waste Contractor. • The construction site should be cleaned regularly.	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		• The Contractor should provide adequate waste skips (or similar) on site and the Construction Contract should specify that the Contractor must be responsible for the correct disposal of the contents of the waste skips.	
• Pollution of water and the ground as a result of potential Caustic Soda solution spills and the generation of building rubble. Pollution of water as a result of potential spillages from the demolition of the caustic soda gantry and piping (Note: this impact only applies to Alternative 1 – Phase 2 (Option 1)). This impact is rated as neutral.	• Medium (Neutral)	• The amount of hazardous materials and liquids (such as cleaning materials) handled will be minimal. Fumes generated during welding will be minimal, within a well-ventilated area. • All construction waste (including rubble) should be frequently removed from site and correctly disposed by a suitable waste Contractor. • The construction site should be cleaned regularly. • The Contractor should provide adequate waste skips (or similar) on site and the Construction Contract should specify that the Contractor must be responsible for the correct disposal of the contents of the waste skips. • The Caustic Soda tanks should be installed with a High Level Protection system, as well as adequate bunding, sumps and recovery pumps. • During the demolition of the Caustic Soda gantry, spillages may occur during the initial drainage and washing process. All substances resulting from the washing process must be contained and correctly disposed by an approved waste Contractor.	• Low (Neutral)
• Impact of construction vehicles on the Maydon Wharf road network and parking of construction vehicles on public roads when not in use.	• Low (Negative)	• Accommodate all construction vehicles on site during the construction phase. Construction vehicles should not be parked on Johnstone Road or on Fletcher Road.	• Low (Negative)
Indirect impacts:			
• Socio-economic impact: Secondary	• Low (Positive)	• Ensure that local industries are utilised as suppliers,	• Medium (Positive)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
industries may benefit from the proposed project in the form of the provision of support services such as concrete suppliers. This impact is rated as positive.		where applicable/practical.	
Cumulative impacts:			

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
ALTERNATIVE A2 (IF ANY) - Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2			
Direct impacts:			
• Removal of alien invasive vegetation from the proposed project area. This impact is rated as positive.	• Medium (Positive)	• Ensure that all alien invasive vegetation that has been planted on site is removed promptly, in a scheduled manner prior to the demolition process. The removal of these species must be carried out in line with relevant municipal and provincial procedures, guidelines and recommendations (such as the eThekwini Municipality Generic Environmental Management Plan for Construction Activities, 2002; as well as those published by the Wildlife and Environment Society of South Africa). • The removed alien invasive vegetation should be immediately disposed of correctly and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species.	• High (Positive)
• Increased risk of the spread of alien invasive species.	• Medium (Negative)	• All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods. • The removed alien invasive vegetation should be immediately disposed of correctly and should not be kept on site for prolonged periods of time, as this will	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		enhance the spread of these species.	
• Removal of planted indigenous vegetation species from the proposed project area.	• Low (Negative)	• Ensure the necessary permits are obtained for the removal of the Red Aloe (*Aloe ferox*) that was planted by the terminal operator. • If possible, the Red Aloe (*Aloe ferox*) should be kept in a nursery for use at a later stage or relocation purposes.	• Very Low (Negative)
• Possible disturbance to existing infrastructure as a result of the relocation of the municipal substation and electrical infrastructure during construction.	• Medium (Negative)	• Ensure that the eThekwini Municipality: Electricity Department is contacted prior to the initiation of the construction phase in order to plan and discuss the relocation of the substation. • Ensure that the necessary approvals are timeously obtained from the eThekwini Municipality: Electricity Department. • The risks of excavations must be assessed by reviewing cable and pipe routings, and make provision for safe excavation.	• Low (Negative)
• Impact on the regional water balance as a result of increased water usage.	• Low (Negative)	• Water is required during the construction phase for various purposes, such as earthworks, as well as to fulfil the requirements of construction personnel on-site. Where possible, water conservation should be practiced. Water conservation techniques include making construction personnel aware of the importance of limiting water wastage, as well as reducing water use during the cleaning of the site (such as sweeping the site before it is being washed). OTGC should also ensure that the water infrastructure on site is monitored for leakages on a regular basis to prevent wastage.	• Very Low (Negative)
• Potential spillage of effluent (from portable sanitation facilities for construction personnel).	• Medium (Negative)	• Normal sewage management practises should be implemented. These include ensuring that portable sanitation facilities are regularly emptied and the	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		resulting sewage is transported safely (by an appointed (suitable) service provider) for correct disposal at an appropriate, licenced facility. Proof of disposal (in the form of waste disposal slips or waybills) should be retained on file for auditing purposes. • As part of the Environmental Awareness Training, all construction personnel should be made aware of the sewage management practises. • The construction camp and necessary ablution facilities meant for construction workers must be located beyond 32 m of the estuary.	
• Pollution caused by spillage or discharge of construction waste water into the surrounding environment.	• Medium (Negative)	• Ensure that adequate containment structures are provided for the storage of dangerous goods and hazardous materials on site. Appropriate bund areas must be provided for the storage of these materials. Bund areas should contain an impervious surface in order to prevent spillages from entering the ground and stormwater system. • As far as possible and in line with current procedures at the existing Storage Terminal, servicing and refuelling of construction equipment must be undertaken off site. If on site servicing and refuelling is required in emergency situations, a designated area must be established at the construction site camp for this purpose. Drip trays or similar impervious materials must be used during these procedures. • A Spill Response Plan must be compiled (by OTGC and the Contractor) for the construction phase in order to manage potential spill events. The Port of Durban Oil Spill Contingency Plan must be considered during the compilation of the Spill	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		Response Plan.	
• Pollution of the surrounding environment as a result of contamination of stormwater. Contamination could result from chemicals, oils, fuels, sewage, solid waste, litter etc.	• Medium (Negative)	• The appointed Contractor should compile a Method Statement for Stormwater Management during the construction phase. • Provide secure storage for oil, chemicals and other waste materials to prevent contamination of stormwater runoff. • Regular inspections of stormwater infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds. • Monitoring programmes should be implemented to ensure that no materials enter the surface water drainage system.	• Low (Negative)
• Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste (general and hazardous).	• Medium (Negative)	• General waste (i.e. building rubble, demolition waste, discarded concrete, bricks, tiles, wood, glass, plastic, metal, excavated material, packaging material, paper and domestic waste etc.) and hazardous waste (i.e. empty tins, paint and paint cleaning liquids, oils, fuel spillages, asbestos roofing material and chemicals etc.) generated during the construction phase should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Waste separation should take place during the construction phase. • Should the on-site storage of general waste and hazardous waste exceed 100 m^3 and 80 m^3 respectively, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to.	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		• Ensure that general waste and hazardous waste generated during the construction phase are removed from the site on a regular basis and disposed of at an appropriate, licensed waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal. • Ensure that the construction site is kept clean at all times and that construction personnel are made aware of correct waste disposal methods. • Ensure that sufficient general waste disposal bins are provided for all construction personnel throughout the site. These bins must be emptied on a regular basis.	
• Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillage of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during construction.	• High (Negative)	• Hazardous waste (i.e. empty tins, paint and paint cleaning liquids, oils, fuel spillages, asbestos roofing material and chemicals etc.) generated during the construction phase should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. Hazardous waste should be stored separately from general waste during the construction phase. • Ensure that hazardous waste generated during the construction phase is removed from the site on a regular basis and disposed of at an appropriate, licensed waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal. • Ensure that the construction site is kept clean at all	• Medium (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		times and that construction personnel are made aware of correct waste disposal methods. • Littering and contamination of the Durban Bay Estuary during construction must be prevented by effective construction camp management. • Ensure that adequate containment structures are provided for the storage of dangerous goods and hazardous materials on site. Appropriate bund areas must be provided for the storage of these materials. Bund areas should contain an impervious surface in order to prevent spillages from entering the ground and stormwater system. • As far as possible and in line with current procedures at the existing Storage Terminal, servicing and refuelling of construction equipment must be undertaken off site. If on site servicing and refuelling is required in emergency situations, a designated area must be established at the construction site camp for this purpose. Drip trays or similar impervious materials must be used during these procedures. • A Spill Response Plan must be compiled (by OTGC and the Contractor) for the construction phase of the proposed project in order to manage potential spill events. The Port of Durban Oil Spill Contingency Plan must be considered during the compilation of the Spill Response Plan. • If any spilled hazardous material reaches the Durban Bay Estuary, the TNPA must be informed immediately and the Port of Durban Oil Spill Contingency Plan must be followed. The following procedures should be followed: • Take immediate action to stop or reduce	

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		the spill and contain it. • Implement actions necessary to prevent the spread of the contamination. • Recover the spilled product. • Ensure proper disposal of spilled material.	
• Sedimentation and impact on the water quality of the Durban Bay Estuary as a result of stockpiling of excavated material during the construction phase. The excavated material could potentially be washed into the estuary via stormwater.	• High (Negative)	• All material that is excavated during the construction phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts on the estuary. • Stockpiles must be located at least 10 m away from stormwater channels and drains, and at least 32 m away from the estuary, on flat areas where run-off will be minimised. • Stockpiles should not exceed 2 m in height. • During periods of strong winds and heavy rain (in line with relevant rainfall patterns), the stockpiles should be covered with appropriate material (e.g. cloth, tarpaulin etc.). • Where possible, sandbags (or similar) should be placed at the bases of the stockpiled material in order to prevent erosion of the material.	• Medium (Negative)
• Air Quality Impact: Emissions from construction vehicles and generation of dust as a result of earthworks, demolition, as well as the delivery and mixing of construction materials.	• Medium (Negative)	• Ensure that cleared (excavated) areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. • Approved soil stabilisers may be utilised to limit dust generation. • Ensure that construction vehicles travelling on unpaved roads do not exceed a speed limit of 40 km/hour.	• Low (Negative)
• Socio-economic Impact: Employment creation and skills development opportunities during the construction	• Medium (Positive)	• Liaise with TNPA to maximise job creation opportunities during the construction phase. • Enhance the use of local labour and local skills as	• High (Positive)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
phase, which is expected to give rise to approximately 350 jobs. This impact is rated as positive.		far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. • Ensure that an equitable percentage allocation is provided for local labour employment as well as specify the use of small-to-medium enterprises and training specifications in the Contractors contract. • Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	

• Potential visual intrusion of construction/demolition activities on the views of sensitive visual receptors.	• Low (Negative)	• No specific mitigation measures are required other than standard construction site housekeeping and dust suppression. These are included below:
		  • The contractor(s) should maintain good housekeeping on site to avoid litter and minimise waste.
		  • Litter and rubble should be timeously removed from the construction site and disposed at a licenced waste disposal facility.
		  • The project developer should demarcate construction boundaries and minimise areas of surface disturbance.
		  • Appropriate plans should be in place to minimise fire hazards and dust generation.
		  • Night lighting of the construction site should be minimised within requirements of safety and efficiency.
			• Low (Negative)

• Potential noise impact from the use of construction equipment (for the construction of the proposed infrastructure	• Low (Negative)	• No mitigation measures are recommended.	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
and demolition of existing infrastructure).			
• Potential noise impact from piling operations during the construction phase.	• Low (Negative)	• It is recommended that piling operations be conducted during the day extending from 06:00 to 22:00 (i.e. daylight hours as defined in SANS 10103). The existing traffic noise around the terminal will provide a masking effect to the noise generated during piling.	• Low (Negative)
• Molasses washing (due to pigging of pipelines) and ingress of potential spillages into stormwater drains and the harbour, resulting in pollution of seawater. This impact is rated as neutral.	• Medium (Neutral)	• The spilled, undiluted Molasses should be recycled by returning it to the storage tanks during the initial demolition process. • The material resulting from the washing of the storage tanks should be pumped into tankers and correctly disposed by an approved hazardous waste disposal Contractor (as per the OTGC decommissioning procedures).	• Low (Neutral)
• Noise generation from demolition and construction work (e.g. grinding and use of angle grinders), as well as from the removal of waste material (e.g. crane and truck engines). This impact is rated as neutral.	• Medium (Neutral)	• Construction personnel must wear proper hearing protection, which should be specified as part of the Construction Phase Risk Assessment carried out by the Contractor. • The Contractor must ensure that all construction personnel are provided with adequate PPE, where appropriate. • The Contractor must prescribe, to construction personnel, what is required by the OTGC permit to work system.	• Low (Neutral)
• Potential health injuries to construction personnel as a result of construction work (i.e. welding fumes, dust and smoke from burning of organic materials). Note from the CSIR: No burning of materials will be permitted on site. This impact is rated as neutral.	• Medium (Neutral)	• The Contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate. • The Contractor must prescribe, to construction personnel, what is required by the OTGC permit to work system.	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
• Heavy traffic, congestion and potential for collisions during the construction phase. This impact is rated as neutral.	• High (Neutral)	• During the construction phase, suitable parking areas should be created and designated for construction trucks and vehicles. • A construction supervisor should be appointed to co-ordinate construction traffic during the construction phase (by drawing up a traffic plan prior to construction). • Road barricading should be undertaken where required and road safety signs should be adequately installed at strategic points within the construction site.	• Low (Neutral)
• Construction safety injuries: potential impact on the safety of construction workers due to construction activities (such as welding, cutting, use of hot metals, working at heights, lifting of heavy items etc.). This impact is rated as neutral.	• High (Neutral)	• Ensure that a skilled and competent Contractor is appointed during the construction phase. The Contractor must be evaluated during the tender/appointment process in terms of safety standards. • The Contractor must ensure that all construction personnel are provided with adequate PPE for use where appropriate. • The Contractor must prescribe, to construction personnel, what is required by the OTGC permit to work system. • The Contractor must undertake a Construction Phase Risk Assessment. • A Construction Site Manager or Safety Supervisor should be appointed, in conjunction with the project manager, to monitor all safety aspects during the construction phase. This could be the same person that is assigned to co-ordinate the construction traffic. • Ensure that roads are not closed during construction, which may restrict access for	• Medium (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		emergency services.	
• Pollution of the surrounding water and ground as a result of spillages, generation of building rubble and waste scrap material. This impact is rated as neutral.	• High (Neutral)	• The amount of hazardous materials and liquids (such as cleaning materials) handled will be minimal. Fumes generated during welding will be minimal, within a well-ventilated area. • All construction waste (including rubble) should be frequently removed from site and correctly disposed by a suitable waste Contractor. • The construction site should be cleaned regularly. • The Contractor should provide adequate waste skips (or similar) on site and the Construction Contract should specify that the Contractor must be responsible for the correct disposal of the contents of the waste skips.	• Low (Neutral)
• Pollution of water and the ground as a result of potential Caustic Soda solution spills and the generation of building rubble. Note: this impact only applies to Alternative 1 – Phase 2 (Option 2). This impact is rated as neutral.	• High (Neutral)	• The amount of hazardous materials and liquids (such as cleaning materials) handled will be minimal. Fumes generated during welding will be minimal, within a well-ventilated area. • All construction waste (including rubble) should be frequently removed from site and correctly disposed by a suitable waste Contractor. • The construction site should be cleaned regularly. • The Contractor should provide adequate waste skips (or similar) on site and the Construction Contract should specify that the Contractor must be responsible for the correct disposal of the contents of the waste skips. • The Caustic Soda tanks should be installed with a High Level Protection system, as well as adequate bunding, sumps and recovery pumps.	• Low (Neutral)
• Impact of construction vehicles on the Maydon Wharf road network and parking of	• Low (Negative)	• Accommodate all construction vehicles on site during the construction phase. Construction vehicles	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
construction vehicles on public roads when not in use.		should not be parked on Johnstone Road or on Fletcher Road.	
Indirect impacts:			
• Socio-economic impact: Secondary industries may benefit from the proposed project in the form of the provision of support services such as concrete suppliers. This impact is rated as positive.	• Low (Positive)	• Ensure that local industries are utilised as suppliers, where applicable/practical.	• Medium (Positive)
Cumulative impacts:			

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the operational phase:

Note from the CSIR: As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. Therefore, this section is not applicable. However, Section 2.3 (b) is applicable and has been completed below.

Alternative S1 (preferred alternative) - *Not Applicable – Refer to the note above.*

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

Alternative S2 (if any)

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

No-go alternative (compulsory)

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	**Alternative S2**
Not Applicable – Refer to the note above.	Not Applicable – Refer to the note above.

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the operational phase (please list impacts associated with each alternative separately):

Alternative A1 (preferred alternative) - Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)

Direct impacts:

- Fuel/product spills as a result of potential collisions between vessels or a collision between a vessel and the berth, or fire and explosion during the arrival, berthing or departure of a vessel in the Port.
- Potential pipeline leak and poor housekeeping on the vessel deck and berth during the discharging process.
- Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste (general and hazardous).
- Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillages of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during the operational procedures (such as storage of product at the terminal and distribution of product via road tankers).
- Increased water usage as a result of the operation of the upgraded Storage Terminal.
- Increased stormwater discharge into the surrounding environment.
- Potential spillage of domestic effluent from the sewer as a result of the operation of the upgraded Storage Terminal.
- Socio-economic Impacts: The operational phase is expected to give rise to approximately 12 additional jobs due to the operation of the proposed Storage Terminal. Skills development opportunities and economic spin off activities will also occur during the operational phase. This impact is rated as positive.
- Potential re-establishment of alien plants on site.
- Air Quality Impact: Emissions from staff vehicles and road tankers that make use of the upgraded Storage Terminal.
- Improved service delivery and operational capacity of the Storage Terminal. This impact is rated as positive.
- Improved economic investment from attracting additional investors to the Port of Durban during the operational phase. This impact is rated as positive.
- Potential visual intrusion of structures and buildings associated with the proposed development on existing views of sensitive visual receptors.
- Potential impact of night lighting of the development on the nightscape of the surrounding landscape.
- Potential noise impact from road tanker filling during the operational phase.
- Potential noise impact from road transport of products during the operational phase (i.e. increased road traffic).
- Pollution of the ground and water due to a potential burst of a hose on a berthed ship, a pipe burst on the berth, overflowing or bursting of storage tanks or overfilling of road tankers. This impact is rated as neutral.
- Atmospheric pollution due to fumes, smoke from fires (involving plant and vegetable oils or MEG). This impact is rated as neutral.
- Potential impact on the health of operating personnel resulting in potential health injuries. This impact is rated as neutral.
- Potential impact on the safety of operating personnel due to splashing of corrosive Caustic Soda Solution during maintenance or filling operations. This impact is rated as neutral.
- Heavy traffic, congestion and potential for collisions during the operational phase. This impact is rated as neutral.
- Minor accidents to the public and moderate accidents to operational staff (e.g. fires). This impact is rated as neutral.

- Minor accidents to the public and moderate accidents to operational staff (e.g. corrosive spillages). This impact is rated as neutral.
- Impact of extra operational vehicles on the Maydon Wharf road network.
- Impact of extra parked vehicles waiting to be serviced on Johnstone Road (e.g. blocking access to the road).

Indirect impacts:

- Potential spills of fuel/products as a result of vessel collisions in the adjacent area outside the Port of Durban.

Cumulative impacts:

- Visual Impact: There are many development projects that are planned within the Port of Durban in line with relevant development framework plans. These proposed developments are all related to port activities and are not unexpected for a port in terms of visual impact (in other words the development types are consistent with port activities, structures and services). The cumulative visual impact for the OTGC Storage Terminal upgrade will be low since the proposed developments are similar in type and are congruent with existing developments in the Port of Durban.
- Noise Impact: The nature of the operations and the noise data calculated suggest that there will be no significant cumulative noise impacts from the proposed activities at the terminal. This is based on the low impact of the current and future noise emissions (irrespective of the chosen layout), the proposed mitigation measures that will reduce the noise impacts and the minimal increase in the hourly traffic volumes.
- Risk Assessment: In terms of the operational phase, the impacts of existing industries within the area, together with the impact of the proposed project, will not result in any cumulative impacts.

Alternative A2 - Alternative A2– Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2

Direct impacts:

- Fuel/product spills as a result of potential collisions between vessels or a collision between a vessel and the berth, or fire and explosion during the arrival, berthing or departure of a vessel in the Port.
- Potential pipeline leak and poor housekeeping on the vessel deck and berth during the discharging process.
- Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste (general and hazardous).
- Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillages of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during the operational procedures (such as storage of product at the terminal and distribution of product via road tankers).
- Increased water usage as a result of the operation of the upgraded Storage Terminal.
- Increased stormwater discharge into the surrounding environment.
- Potential spillage of domestic effluent from the sewer as a result of the operation of the upgraded Storage Terminal.
- Socio-economic Impacts: The operational phase is expected to give rise to approximately 12 additional jobs due to the operation of the proposed Storage Terminal. Skills development opportunities and economic spin off activities will also occur during the operational phase. This impact is rated as positive.
- Potential re-establishment of alien plants on site.
- Air Quality Impact: Emissions from staff vehicles and road tankers that make use of the upgraded Storage Terminal.

- Improved service delivery and operational capacity of the Storage Terminal. This impact is rated as positive.
- Improved economic investment from attracting additional investors to the Port of Durban during the operational phase. This impact is rated as positive.
- Potential visual intrusion of structures and buildings associated with the proposed development on existing views of sensitive visual receptors.
- Potential impact of night lighting of the development on the nightscape of the surrounding landscape.
- Potential noise impact from road tanker filling during the operational phase.
- Potential noise impact from road transport of products during the operational phase (i.e. increased road traffic).
- Pollution of the ground and water due to a potential burst of a hose on a berthed ship, a pipe burst on the berth, overflowing or bursting of storage tanks or overfilling of road tankers. This impact is rated as neutral.
- Atmospheric pollution due to fumes, smoke from fires (involving plant and vegetable oils or MEG). This impact is rated as neutral.
- Potential impact on the health of operating personnel resulting in potential health injuries. This impact is rated as neutral.
- Potential impact on the safety of operating personnel due to splashing of corrosive Caustic Soda Solution during maintenance or filling operations. This impact is rated as neutral.
- Heavy traffic, congestion and potential for collisions during the operational phase. This impact is rated as neutral.
- Minor accidents to the public and moderate accidents to operational staff (e.g. fires). This impact is rated as neutral.
- Minor accidents to the public and moderate accidents to operational staff (e.g. corrosive spillages). This impact is rated as neutral.
- Impact of extra operational vehicles on the Maydon Wharf road network.
- Impact of extra parked vehicles waiting to be serviced on Johnstone Road (e.g. blocking access to the road).

Indirect impacts:

- Potential spills of fuel/products as a result of vessel collisions in the adjacent area outside the Port of Durban.

Cumulative impacts:

- Visual Impact: There are many development projects that are planned within the Port of Durban in line with relevant development framework plans. These proposed developments are all related to port activities and are not unexpected for a port in terms of visual impact (in other words the development types are consistent with port activities, structures and services). The cumulative visual impact for the OTGC Storage Terminal upgrade will be low since the proposed developments are similar in type and are congruent with existing developments in the Port of Durban.
- Noise Impact: The nature of the operations and the noise data calculated suggest that there will be no significant cumulative noise impacts from the proposed activities at the terminal. This is based on the low impact of the current and future noise emissions (irrespective of the chosen layout), the proposed mitigation measures that will reduce the noise impacts and the minimal increase in the hourly traffic volumes.
- Risk Assessment: In terms of the operational phase, the impacts of existing industries within the area, together with the impact of the proposed project, will not result in any cumulative impacts.

No-go alternative (compulsory)

Direct impacts:

- None of the impacts mentioned above will occur. However, the proposed project site is already transformed and developed on.
- The existing Storage Terminal will operate only for the storage, handling and distribution of Molasses. However, considering the age of the existing Storage Terminal, a complete maintenance programme will be required to prevent potential negative impacts associated with the use of aging infrastructure.
- If the proposed project does not proceed, increased income and economic spin-off activities will not be realised.
- Approximately 12 additional jobs will not be created during the operational phase.
- Customers of the proposed upgraded terminal will not be provided with the necessary structures and infrastructure to ensure storage of Bulk Liquids, other than Molasses.
- If the proposed project does not proceed, the industries that rely on the supply of Caustic Soda, Vegetable Oils and MEG via import, could experience hindered economic growth potential.
- The capacity of the Port of Durban to attract new investors and to accommodate and handle additional cargo will be reduced as only one ship will call to the Port every four months to service the needs of the existing terminal.

Indirect impacts:

- There are no indirect impacts during the operational phase for the No-go Option.

Cumulative impacts:

- There are no cumulative impacts during the operational phase for the No-go Option.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1	**Alternative A2**
Refer to the table below. Note that there is no difference in the significance of the impacts identified for the operational phase. The impacts are the same for all alternative layouts (i.e. Alternative 1 - Phase 1, Alternative 1 - Phase 2 – Option 1, Alternative 1 - Phase 2 – Option 2 and Alternative 2). As a result, the impacts, significance and mitigation measures for the various layout alternatives have been combined to avoid repetition and for ease of reference and review.	Refer to the table below. Note that there is no difference in the significance of the impacts identified for the operational phase. The impacts are the same for all alternative layouts (i.e. Alternative 1 - Phase 1, Alternative 1 - Phase 2 – Option 1, Alternative 1 - Phase 2 – Option 2 and Alternative 2). As a result, the impacts, significance and mitigation measures for the various layout alternatives have been combined to avoid repetition and for ease of reference and review.

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
• **ALTERNATIVE A1 (PREFERRED ALTERNATIVE) - Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)** • **ALTERNATIVE A2 (IF ANY) - Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2**			
Direct impacts:			
• Fuel/product spills as a result of potential collisions between vessels or a collision between a vessel and the berth, or fire and explosion during the arrival, berthing or departure of a vessel in the Port. Note: The probability of this impact occurring and significantly influencing the estuarine system (in terms of abiotic and biotic processes) is **improbable**. In terms of the vessel traffic, a minimal increase is expected (i.e. up to four vessels per month based on the full operations). The significance of the impact (with the implementation of mitigation measures) is considered to be low. It is also important to point out that the risk of this impact is evident even without the implementation of the proposed project, as the port and Maydon Wharf are currently operational.	• High (Negative)	• Ensure that the protocols put forward by TNPA for the Port of Durban pertaining to expected vessels entering and exiting the harbour are followed. Ensure that the TNPA are kept well informed during the vessel discharge process. • OTGC should ensure that the Operations Manager (or personnel of similar designation) is present during all berthing and vessel discharge processes. The OTGC staff must be in attendance for the entire duration of offloading so that any leaks can be detected speedily. • The Port Authorities must implement their Vessel Traffic System (and experienced pilotage) rigorously to limit ecological risks from operational accidents. • Ensure that the Port of Durban Oil Spill Contingency Plan is implemented in the event of potential spillages. • Containment, recovery and clean-up operations must occur in the event of the spillages.	• Low (Negative)
• Potential pipeline leak and poor housekeeping on the vessel deck and the berths during the discharging process.	• Medium (Negative)	• Ensure that there is adherence to strict operational procedures during the discharging process. • OTGC should ensure that the Operations Manager (or personnel of similar designation) is present during all berthing and vessel discharge processes. The OTGC staff must be in attendance for the entire duration of offloading so that any leaks can be detected speedily.	• Low (Negative)
• Pollution of the surrounding environment as	• Medium (Negative)	• Waste should be stored in waste collection bins and	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
a result of the handling, temporary storage and disposal of solid waste (general and hazardous).		skips (or similar). Waste collection bins and skips should be covered with suitable material and correctly labelled. Waste separation should take place. • General waste (i.e. packaging material, paper and domestic waste etc.) and hazardous waste (i.e. spilled product, oils and fuel spillages etc.) should be removed from the site on a regular basis and disposed of at an appropriate, licensed waste disposal facility. Hazardous waste should be removed by an approved waste management Contractor. General solid waste could be removed from the site by municipal services (in line with current procedures at the existing terminal). Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal, as applicable. • Ensure that the terminal is kept clean at all times.	
• Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillage of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during the operational procedures (such as storage of product at the terminal and distribution of product via road tankers).	• High (Negative)	• Hazardous waste (i.e. spilled product, oils, and fuel spillages etc.) generated during the operational phase should be removed from the site on a regular basis and disposed of at an appropriate, licensed waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal. • Ensure that the terminal is kept clean at all times. • Littering and contamination of the Durban Bay Estuary during operations must be prevented by effective terminal site management. • Ensure that adequate containment structures (in line with Oiltanking and/or API standards and specifications) are provided for the storage of dangerous goods and hazardous materials on site. Appropriate bund areas must be provided for the storage of these materials. Bund areas should contain	• Medium (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		an impervious surface in order to prevent spillages from entering the ground and stormwater system. • Ensure that all products and hazardous materials are only stored in areas designated for storage. • Ensure that the road tanker loading process is monitored by OTGC staff so that overfilling and ultimately spillage is prevented. • Ensure that all infrastructure at the Storage Terminal (such as tank valves, couplings, loading hoses etc.) are checked and maintained on a regular basis in order to avoid product leakages. Maintenance must be undertaken in a demarcated, impervious area. • If the pollution containment system at the road tanker loading gantry becomes blocked or if leaks arise, suitable precautionary measures must be implemented (such as the use of a drip tray or similar) beneath the road tanker loading valve in order to contain the spillages. • A Spill Response Plan must be compiled for the operational phase of the proposed project in order to manage potential spill events. The Spill Response Plan for the existing Storage Terminal, as well as lessons learnt from previous spillages at the terminal, must be considered when compiling the operational phase Spill Response Plan (which will form an integral part of the ERAP). • If any spilled hazardous material reaches the Durban Bay Estuary, the TNPA must be informed immediately and the Port of Durban Oil Spill Contingency Plan must be followed. The following procedures should be followed: • Take immediate action to stop or reduce the spill and contain it.	

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		• Implement actions necessary to prevent the spread of the contamination. • Recover the spilled product. • Ensure proper disposal of spilled material.	
• Increased water usage as a result of the operation of the upgraded Storage Terminal.	• Medium (Negative)	• The amount of potable water required (for drinking purposes) is considered to be small and not very much higher than the water usage at the existing terminal (58 kl monthly average). Therefore, increased demand as a result of the proposed project is considered to be small. However, water conservation should still be practiced during the operational phase. • Water conservation techniques include making operational personnel aware of the importance of limiting water wastage, as well as reducing water use during the cleaning of the terminal (such as sweeping the site before it is being washed). OTGC should also ensure that the water infrastructure on site is monitored for leakages on a regular basis to prevent wastage. OTGC should consider installing water saving devices (e.g. dual flush toilets, automatic shut-off taps, etc.).	• Low (Negative)
• Increased stormwater discharge into the surrounding environment.	• Low (Negative)	• A suitable stormwater/surface water quality monitoring programme should be established and implemented. The programme should include inputs and feedback from the TNPA. • Regular inspections of stormwater infrastructure should be undertaken to ensure that it is kept clear of all debris and weeds. • Monitoring programmes should be implemented to ensure that no materials enter the surface water drainage system.	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
• Potential spillage of domestic effluent from the sewer as a result of the operation of the upgraded Storage Terminal.	• Low (Negative)	• The proposed upgraded Storage Terminal is expected to generate little domestic waste water (sewage). It is recommended that a maintenance plan and management of the sewer pipes in case of emergency should be developed.	• Low (Negative)
• Socio-economic Impact: The operational phase is expected to give rise to approximately 12 additional jobs due to the operation of the proposed Storage Terminal. Skills development opportunities and economic spin off activities will also occur during the operational phase. This impact is rated as positive.	• Medium (Positive)	• Enhance the use of local labour and local skills as far as reasonably possible. • Where the required skills do not occur locally, and where appropriate and applicable, ensure that relevant local individuals are trained. • Ensure that goods and services are sourced from the local and regional economy as far as reasonably possible.	• High (Positive)
• Potential re-establishment of alien plants on site.	• Low (Negative)	• Ensure that any alien invasive plants that become re-established on site are removed promptly. The removal of these species must be carried out in line with relevant municipal and provincial procedures, guidelines and recommendations. • The removed alien invasive vegetation should be immediately disposed of correctly and should not be kept on site for prolonged periods of time, as this will enhance the spread of these species.	• Low (Negative)
• Air Quality Impact: Emissions from staff vehicles and road tankers that make use of the upgraded Storage Terminal.	• Low (Negative)	• The design of the road loading gantry must ensure efficient movement of traffic through the entrance and exit in order to reduce congestion and vehicle emissions. • Ensure that the proposed Storage Terminal is operated in such a manner whereby potential odours are minimised.	• Low (Negative)
• Improved service delivery and operational capacity of the Storage Terminal. This impact is rated as positive.	• Medium (Positive)	• Ensure that the proposed infrastructure is maintained appropriately to ensure that all facilities and infrastructure operate within its design capacity to	• High (Positive)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		deliver as the market requires.	
• Improved economic investment from attracting additional investors to the Port of Durban during the operational phase. This impact is rated as positive.	• Medium (Positive)	• Ensure that the proposed infrastructure is maintained appropriately to ensure that the Storage Terminal operates within its design capacity to deliver as the market requires. This will promote and attract future investment.	• High (Positive)
• Potential visual intrusion of structures and buildings associated with the proposed development on existing views of sensitive visual receptors. This impact is rated as neutral.	• Low (Neutral)	• No specific mitigation measures are recommended.	• Low (Neutral)

• Potential impact of night lighting of the development on the nightscape of the surrounding landscape. This impact is rated as neutral.	• Low (Neutral)	• No specific mitigation measures are recommended as it is assumed that night lighting of the proposed storage facility will be planned in such a manner so as to minimize light pollution such as glare and light spill (light trespass) by:
		  • Using light fixtures that shield the light and focus illumination on the ground (or only where light is required).
		  • Using minimum lamp wattage within safety/security requirements.
		  • Avoiding elevated lights within safety/security requirements.
		  • Where possible, using timer switches or motion detectors to control lighting in areas that are not occupied continuously (if permissible and in line with minimum security requirements).
		  • Switching off lights when not in use in line with safety and security.
			• Low (Neutral)

• Potential noise impact from road tanker filling during the operational phase.	• Low (Negative)	• It is recommended that the proposed pumps be installed in enclosed pump houses (in line with the	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		current operations at the existing terminal). Where pumps are to be installed in the open, these should be located within the planned bunded areas, as the bund walls will offer noise attenuation.	
• Potential noise impact from road transport of products during the operational phase (i.e. increased road traffic).	• Low (Negative)	• It is recommended that the drivers of the road tankers be discouraged from using air brakes at night. • The road tanker drivers should be educated and trained regarding the use of air brakes.	• Low (Negative)

• Pollution of the ground and water due to a potential burst of a hose on a berthed ship, a pipe burst on the berth, overflowing or bursting of storage tanks or overfilling of road tankers. This impact is rated as neutral.	• Medium (Neutral)	• The following mitigation measures should be incorporated into the design:
		  • high integrity ship offload hoses, berth pipes and storage tanks;
		  • storage tank level indication and high alarms;
		  • adequate bunding, sumps and recovery systems; and
		  • curbed catchment areas in the road tanker loading gantry, including sumps and recovery system.
		• The berth pipelines should be protected against corrosion.
		• Scheduled inspections should be implemented by operating personnel in order to assure and verify the integrity of hoses, piping and storage tanks, in line with API 650 and OTGC standards (based on best practice and international standards).
		• The operating personnel should undergo proper training to prevent overfilling incidents during the operational phase.
		• An Emergency Plan should be compiled by OTGC in order to deal with potential spillages of the stored product at the berths and on site, in line with OTGC
			• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		Health, Security, Safety and Environment (HSSE) policies. Records of practices should be kept on site.	
• Atmospheric pollution due to fumes, smoke from fires (involving plant and vegetable oils or MEG). This impact is rated as neutral.	• Medium (Neutral)	• Portable fire extinguishers and fire water hydrants (i.e. appropriate fire-fighting equipment) should be provided at the terminal as required. Mobile fire-fighting equipment should be provided at the berths as a safety precaution during the vessel offloading process. It should be noted that the products planned to be stored at the terminal have high flash points and low volatility. As a result, fires are unlikely, unsustainable, and can be extinguished with basic fire water and portable fire extinguishers.	• Low (Neutral)
• Potential impact on the health of operating personnel resulting in potential health injuries. This impact is rated as neutral.	• Medium (Neutral)	• Operational personnel must wear basic PPE (e.g. gloves, goggles etc.) as necessary during the operational phase.	• Low (Neutral)
• Potential impact on the safety of operating personnel due to splashing of corrosive Caustic Soda Solution during maintenance or filling operations. This impact is rated as neutral.	• High (Neutral)	• Operational personnel must wear basic PPE (e.g. gloves, goggles etc.) as necessary during the operational phase. • Adequate emergency showers and eye wash fountains should be provided at strategic locations at the terminal. • A safety system should be implemented during the operational phase. This system should include, for example, permits to work, modifications, training schedules, records and inspections.	• Medium (Neutral)
• Heavy traffic, congestion and potential for collisions during the operational phase. This impact is rated as neutral.	• Medium (Neutral)	• Suitable staging lanes should be provided and designated for those road tankers in waiting (i.e. two trucks on each lane). • OTGC should undertake scheduled planning and stock control during the operational phase. The dispatch of products at the road tanker loading gantry should be planned and scheduled in order to minimise	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		congestion. • The road tanker loading process should be undertaken rapidly in order to prevent delays. • The routes taken by road tankers in the gantry should be streamlined.	
• Minor accidents to the public and moderate accidents to operational staff (e.g. fires). This impact is rated as neutral.	• Medium (Neutral)	• A preliminary HAZOP study must be carried out before detailed design, followed by a detailed HAZOP study on the final design, as well as incorporating the recommendations into the final design of the storage installation. • An Emergency Plan should be compiled by OTGC in order to deal with potential spillages and fires, in line with OTGC HSSE policies. Records of practices should be kept on site. • Scheduled inspections should be implemented by operating personnel in order to assure and verify the integrity of hoses, piping and storage tanks, in line with API 650 and OTGC standards (based on best practice and international standards). • Portable fire extinguishers and fire water hydrants (i.e. appropriate fire-fighting equipment) should be provided at the terminal as required. Mobile fire-fighting equipment should be provided at the berths as a safety precaution during the vessel offloading process. It should be noted that the products planned to be stored at the terminal have high flash points, do not sustain fires and have a low volatility. As a result, fires are unlikely, unsustainable, and can be extinguished with basic fire water and portable fire extinguishers.	• Low (Neutral)
• Minor accidents to the public and moderate accidents to operational staff (e.g. corrosive	• Medium (Neutral)	• Suitable safety warning signs should be fixed at potential leak locations at the terminal prior to	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
spillages). This impact is rated as neutral.		commissioning the storage and handling of the Caustic Soda. • Minimise flanges and joints on the Caustic Soda pipelines (this is optional for other pipelines carrying products that are not toxic and corrosive). • Provide flange guards on the Caustic Soda pipelines (this is optional for other pipelines carrying products that are not toxic and corrosive). • A preliminary HAZOP study must be carried out before detailed design, followed by a detailed HAZOP study on the final design, as well as incorporating the recommendations into the final design of the storage installation. • An Emergency Plan should be compiled by OTGC in order to deal with potential (corrosive) spillages and fires, in line with OTGC HSSE policies. Records of practices should be kept on site. • Scheduled inspections should be implemented by operating personnel in order to assure and verify the integrity of hoses, piping and storage tanks, in line with API 650 and OTGC standards (based on best practice and international standards). • Operational personnel must wear basic PPE (e.g. gloves, goggles etc.) as necessary during the operational phase. • Adequate emergency showers and eye wash fountains should be provided at strategic locations at the terminal. • Portable fire extinguishers and fire water hydrants (i.e. appropriate fire-fighting equipment) should be provided at the terminal as required. Mobile fire-fighting equipment should be provided at the berths	

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		as a safety precaution during the vessel offloading process. It should be noted that the products planned to be stored at the terminal have high flash points, do not sustain fires and have a low volatility. As a result, fires are unlikely, unsustainable, and can be extinguished with basic fire water and portable fire extinguishers.	
• Impact of extra operational vehicles on the Maydon Wharf road network.	• Low (Negative)	• Undertake re-calibration of existing traffic signals if required. **However, the simulation and modelling undertaken in the Traffic Impact Assessment indicates that this should not be required.**	• Low (Negative)
• Impact of extra parked vehicles waiting to be serviced on Johnstone Road (e.g. blocking access to the road).	• Low (Negative)	• Implement good logistics planning during the operational phase in order to prevent waiting road tankers. • Conduct stringent scheduling of the road tanker arrival, loading and departure process in order to reduce parking impacts. • Ensure that the design allows for the provision of a three lane gantry.	• Low (Negative)
Indirect impacts:			
• Potential spills of fuel/products as a result of vessel collisions in the adjacent area outside the Port of Durban. Note: The probability of this impact occurring is **improbable**. In terms of the vessel traffic, a minimal increase is expected (i.e. up to four vessels per month based on the full operations). The significance of the impact (with the implementation of mitigation measures) is considered to be low. It is also important to	• Medium (Negative)	• Implement an environmental management and control plan to limit ecological risks from operational accidents (linked to the OTGC Terminal). The plan should include feedback from the TNPA in terms of efficient operation of shipping in the approaches to the port.	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
point out that the risk of this impact is evident even without the implementation of the proposed project, as the port is currently operational.			
Cumulative impacts:			
• As explained above.			

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING OR CLOSURE PHASE

a. Site alternatives

List the potential impacts associated with site alternatives that are likely to occur during the decommissioning or closure phase:

Note from the CSIR: As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project. Therefore, this section is not applicable. However, Section 2.4 (b) is applicable and has been completed below.

Alternative S1 (preferred alternative) - *Not Applicable – Refer to the note above.*

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

Alternative S2

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

No-go alternative (compulsory)

Direct impacts: ***Indirect impacts:***   ***Cumulative impacts:***

Indicate mitigation measures to manage the potential impacts listed above:

Alternative S1	**Alternative S2**
Not Applicable – Refer to the note above.	Not Applicable – Refer to the note above.

b. Process, technology, layout or other alternatives

List the impacts associated with process, technology, layout or other alternatives that are likely to occur during the decommissioning or closure phase (please list impacts associated with each alternative separately):

Note from the CSIR: The findings of the Traffic Impact Assessment indicate that no significant traffic impacts are expected during the decommissioning phase of the proposed project, as the traffic volumes will most likely decrease, therefore resulting in a positive impact on the road network.

The findings of the Noise Impact Assessment show that the future decommissioning of the whole facility (if the terminal operations cease) will be the same as the noise impacts identified for the construction phase (as described above).

Note that the generic impacts described below apply to the decommissioning or closure of the upgraded OTGC Storage Terminal, should the lease agreement with the TNPA expire or if other reasons become evident warranting the closure of the terminal (which is highly unlikely in the near future).

Alternative A1 (preferred alternative) - Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)

Direct impacts:

- Increased water usage during the decommissioning phase.
- Potential spillage of effluent to the surrounding environment (from portable sanitation facilities for decommissioning personnel).
- Discharge of contaminated stormwater into the surrounding environment. Contamination could result from chemicals, oils, fuels, sewage, solid waste, litter etc.
- Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste.
- Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillages of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during decommissioning.
- Air Quality Impact: Emissions from decommissioning vehicles and generation of dust as a result of earthworks and demolition.
- Potential visual intrusion of decommissioning activities on the existing views of sensitive visual receptors.
- Pollution of sea water as a result of ingress of spillages and materials resulting from the washing of tanks (Molasses, Caustic Soda and MEG) into storm water drains and the harbour. This impact is rated as neutral.
- Noise generation from demolition activities (e.g. grinding, steel falling, use of angle grinders) during the decommissioning phase. This impact is rated as neutral.
- Potential health injuries to demolition staff during the decommissioning phase. This impact is rated as neutral.
- Heavy traffic, congestion and potential for collisions. This impact is rated as neutral.
- Demolition safety injuries. This impact is rated as neutral.
- Pollution of the surrounding water and ground as a result of spillages, generation of building rubble and waste scrap material. This impact is rated as neutral.

Indirect impacts:

- There are no indirect impacts during the decommissioning phase for Layout Alternative 1 – Phase 1 and Phase 2 (Option 1).

Cumulative impacts:

- There are no cumulative impacts during the decommissioning phase for Layout Alternative 1 – Phase 1 and Phase 2 (Option 1).

Alternative A2 - Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2

Direct impacts:

- Increased water usage during the decommissioning phase.
- Potential spillage of effluent to the surrounding environment (from portable sanitation facilities for decommissioning personnel).
- Discharge of contaminated stormwater into the surrounding environment. Contamination could result from chemicals, oils, fuels, sewage, solid waste, litter etc.
- Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste.
- Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillages of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during decommissioning.
- Air Quality Impact: Emissions from decommissioning vehicles and generation of dust as a result of earthworks and demolition.
- Potential visual intrusion of decommissioning activities on the existing views of sensitive visual receptors.
- Pollution of sea water as a result of ingress of spillages and materials resulting from the washing of tanks (Molasses, Caustic Soda and MEG) into storm water drains and the harbour. This impact is rated as neutral.
- Noise generation from demolition activities (e.g. grinding, steel falling, use of angle grinders) during the decommissioning phase. This impact is rated as neutral.
- Potential health injuries to demolition staff during the decommissioning phase. This impact is rated as neutral.
- Heavy traffic, congestion and potential for collisions. This impact is rated as neutral.
- Demolition safety injuries. This impact is rated as neutral.
- Pollution of the surrounding water and ground as a result of spillages, generation of building rubble and waste scrap material. This impact is rated as neutral.

Indirect impacts:

- There are no indirect impacts during the decommissioning phase for Layout Alternative Phase 2 (Option 2) and Layout Alternative 2.

Cumulative impacts:

- There are no cumulative impacts during the decommissioning phase for Layout Alternative Phase 2 (Option 2) and Layout Alternative 2.

No-go alternative (compulsory)

Direct impacts:

- If this project does not go ahead there will be no need to decommission the project. Therefore direct impacts during the decommissioning phase for the No-go Option are not applicable.

Indirect impacts:

- If this project does not go ahead there will be no need to decommission the project. Therefore indirect impacts during the decommissioning phase for the No-go Option are not applicable.

Cumulative impacts:

- If this project does not go ahead there will be no need to decommission the project. Therefore cumulative impacts during the decommissioning phase for the No-go Option are not applicable.

Indicate mitigation measures to manage the potential impacts listed above:

Alternative A1	**Alternative A2**
Refer to the table below. Note that there is no difference in the significance of the impacts identified for the decommissioning phase. The impacts are the same for all alternative layouts (i.e. Alternative 1 - Phase 1, Alternative 1 - Phase 2 – Option 1, Alternative 1 - Phase 2 – Option 2 and Alternative 2). As a result, the impacts, significance and mitigation measures for the various layout alternatives have been combined to avoid repetition and for ease of reference and review.	Refer to the table below. Note that there is no difference in the significance of the impacts identified for the decommissioning phase. The impacts are the same for all alternative layouts (i.e. Alternative 1 - Phase 1, Alternative 1 - Phase 2 – Option 1, Alternative 1 - Phase 2 – Option 2 and Alternative 2). As a result, the impacts, significance and mitigation measures for the various layout alternatives have been combined to avoid repetition and for ease of reference and review.

IMPACT	**SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION**	**PROPOSED MITIGATION**	**SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION**
• **ALTERNATIVE A1 (PREFERRED ALTERNATIVE) - Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)** • **ALTERNATIVE A2 (IF ANY) - Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2**			
Direct impacts:			
• Increased water usage during the decommissioning phase.	• Low (Negative)	• Where possible, water conservation should be practiced. Water conservation techniques include making decommissioning personnel aware of the importance of limiting water wastage, as well as reducing water use during the cleaning of the site (such as sweeping the site before it is being washed).	• Low (Negative)
• Potential spillage of effluent to the surrounding	• Medium (Negative)	• Normal sewage management practises should be	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
environment (from portable sanitation facilities for decommissioning personnel).		implemented. These include ensuring that portable sanitation facilities are regularly emptied and the resulting sewage is transported safely (by an appointed service provider) for correct disposal at an appropriate, licenced facility. Proof of disposal (in the form of waste disposal slips or waybills) should be retained on file for auditing purposes. • The ablution facilities must be located beyond 32 m of the estuary.	
• Discharge of contaminated stormwater into the surrounding environment. Contamination could result from chemicals, oils, fuels, sewage, solid waste, litter etc.	• Medium (Negative)	• The appointed Contractor should compile a Method Statement for Stormwater Management during the decommissioning phase. • Provide secure storage for oil, chemicals and other waste materials to prevent contamination of stormwater runoff.	• Low (Negative)
• Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste.	• Medium (Negative)	• General waste (i.e. building rubble, demolition waste, discarded concrete, bricks, tiles, wood, glass, plastic, metal, excavated material, packaging material, paper and domestic waste etc.) and hazardous waste (i.e. empty tins, paint and paint cleaning liquids, oils, fuel spillages and chemicals etc.) generated during the decommissioning phase should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. • Should the on-site storage of general waste and hazardous waste exceed 100 m^3 and 80 m^3 respectively, then the National Norms and Standards for the Storage of Waste (published on 29 November 2013 under GN 926) must be adhered to. • Ensure that general waste and hazardous waste generated are removed from the site on a regular basis	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		and disposed of at an appropriate, licensed waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal. • Ensure that sufficient general waste disposal bins are provided for all personnel throughout the site. These bins must be emptied on a regular basis.	
• Impact on the Durban Bay Estuary and surrounding environment as a result of potential spillages of hazardous materials and waste (chemicals, oil, fuel, hydraulic fluids etc.) during decommissioning.	• Medium (Negative)	• Hazardous waste (i.e. empty tins, paint and paint cleaning liquids, oils, fuel spillages, and chemicals etc.) generated during the decommissioning phase should be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate. • Ensure that hazardous waste is removed from the site on a regular basis and disposed of at an appropriate, licensed waste disposal facility by an approved waste management Contractor. Waste disposal slips or waybills should be kept on file for auditing purposes as proof of disposal. • Littering and contamination of the Durban Bay Estuary during decommissioning must be prevented by effective camp management. • Ensure that adequate containment structures are provided for the storage of dangerous goods and hazardous materials on site. Appropriate bund areas must be provided for the storage of these materials. Bund areas should contain an impervious surface in order to prevent spillages from entering the ground and stormwater system. • If any spilled hazardous material reaches the Durban Bay Estuary, the TNPA must be informed immediately and the Port of Durban Oil Spill Contingency Plan must	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		be followed. The following procedures should be followed: • Take immediate action to stop or reduce the spill and contain it. • Implement actions necessary to prevent the spread of the contamination. • Recover the spilled product. • Ensure proper disposal of spilled material.	
• Air Quality Impact: Emissions from decommissioning vehicles and generation of dust as a result of earthworks and demolition.	• Low (Negative)	• Ensure that cleared (excavated) areas and unpaved surfaces are sprayed with water (obtained from an approved source) to minimise dust generation. • Approved soil stabilisers may be utilised to limit dust generation. • Ensure that decommissioning vehicles travelling on unpaved roads do not exceed a speed limit of 40 km/hour.	• Low (Negative)
• Potential visual intrusion of decommissioning activities on the existing views of sensitive visual receptors.	• Low (Negative)	• No specific mitigation measures are required other than standard site housekeeping and dust suppression. These are included below: • The contractor(s) should maintain good housekeeping on site to avoid litter and minimise waste. • Litter and rubble should be timeously removed from the work site and disposed at a licenced waste disposal facility. • The project developer should demarcate decommissioning boundaries and minimise areas of surface disturbance. • Appropriate plans should be in place to minimise fire hazards and dust generation. • Night lighting of the decommissioning site should be minimised within requirements of	• Low (Negative)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		safety and efficiency.	
• Pollution of sea water as a result of ingress of spillages and materials resulting from the washing of tanks (Molasses, Caustic Soda and MEG) into storm water drains and the harbour. This impact is rated as neutral.	• Medium (Neutral)	• A method statement, including detailed procedures, must be drawn up prior to any decommissioning of existing tanks. • Empty all storage tanks and pipelines by sale and dispatch to customers of the Storage Terminal. • The material resulting from the washing of the storage tanks should be pumped into tankers and correctly disposed by an approved hazardous waste disposal Contractor (as per the OTGC decommissioning procedures).	• Low (Neutral)
• Noise generation from demolition activities (e.g. grinding, steel falling, use of angle grinders) during the decommissioning phase. This impact is rated as neutral.	• Medium (Neutral)	• A method statement, including detailed procedures, must be drawn up prior to any decommissioning of existing tanks. • Decommissioning personnel must wear proper hearing protection, which should be specified as part of the Decommissioning Phase Risk Assessment carried out by the Contractor. • The Contractor must ensure that all decommissioning personnel are provided with adequate PPE, where appropriate. • The Contractor must prescribe, to decommissioning personnel, what is required by the OTGC permit to work system.	• Low (Neutral)
• Potential health injuries to demolition staff during the decommissioning phase. This impact is rated as neutral.	• Medium (Neutral)	• The Contractor must ensure that all decommissioning personnel are provided with adequate PPE for use where appropriate. • The Contractor must prescribe, to decommissioning personnel, what is required by the OTGC permit to work system.	• Low (Neutral)
• Heavy traffic, congestion and potential for collisions. This impact is rated as neutral.	• High (Neutral)	• Suitable parking areas should be created and designated for trucks and vehicles.	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		• A supervisor should be appointed to co-ordinate traffic during the decommissioning phase. • Road barricading should be undertaken where required and road safety signs should be adequately installed at strategic points within the site.	
• Demolition safety injuries. This impact is rated as neutral.	• High (Neutral)	• Ensure that a skilled and competent Contractor is appointed. The Contractor must be evaluated during the tender/appointment process in terms of safety standards. • The Contractor must ensure that all decommissioning personnel are provided with adequate PPE for use where appropriate. • The Contractor must prescribe, to decommissioning personnel, what is required by the OTGC permit to work system. • The Contractor must undertake a Decommissioning Phase Risk Assessment. • A Site Manager or Safety Supervisor should be appointed, in conjunction with the project manager, to monitor all safety aspects during the decommissioning phase. This could be the same person that is assigned to co-ordinate the decommissioning traffic.	• Medium (Neutral)
• Pollution of the surrounding water and ground as a result of spillages, generation of building rubble and waste scrap material. This impact is rated as neutral.	• High (Neutral)	• The amount of hazardous materials and liquids (such as cleaning materials) handled will be minimal. Fumes generated during welding will be minimal, within a well-ventilated area. • All demolition waste (including rubble) should be frequently removed from site and correctly disposed by a suitable waste Contractor. • The work area should be cleaned regularly. • The Contractor should provide adequate waste skips (or similar) on site and the contract should specify that	• Low (Neutral)

IMPACT	SIGNIFICANCE RATING OF IMPACT BEFORE MITIGATION	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACT AFTER MITIGATION
		the Contractor must be responsible for the correct disposal of the contents of the waste skips.	
Indirect impacts:			
Cumulative impacts:			

2.5. PROPOSED MONITORING AND AUDITING

For each phase of the project and for each alternative, please indicate how identified impacts and mitigation will be monitored and/or audited.

Alternative S1 (preferred site)	**Alternative S2**
As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project.	As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project.

Alternative A1 (preferred alternative) - Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)	**Alternative A2 - Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2**
An independent Environmental Control Officer (ECO) will be appointed by OTGC during the construction phase. The ECO will be responsible for overseeing the implementation of the EMPr and for monitoring environmental impacts, record-keeping and updating of the EMPr as and when necessary during the construction phase. The ECO will audit the proposed project and will be required to compile audit/compliance reports (at a frequency recommended in the Draft EMPr) for submission to the KZN DEDTEA. It is understood that the KZN DEDTEA will also undertake regular audits to verify compliance with the EMPr. OTGC will also appoint an Environmental Health and Safety (EHS) Manager to oversee the implementation of the EMPr during the operational phase (as well as during the construction phase, to supplement the monitoring carried out by the independent ECO). The EHS will be responsible for liaising with the independent ECO during the construction phase and the KZN DEDTEA during the operational phase. Both the ECO and EHS Manager will be responsible for monitoring compliance with the conditions of the Environmental Authorisation that may be issued to OTGC. The Draft EMPr is included in Appendix F of this Draft BA Report. The Draft EMPr will be reviewed by the KZN DEDTEA during the decision-making phase.	As per Alternative A1 Layout Alternative 1 – Phase 1 and Phase 2 (Option 1).

Detailed monitoring and auditing recommendations are included in the Draft EMPr. Some recommendations for monitoring and auditing the identified impacts and mitigation measures are provided below. These apply to both layout alternatives. Aspects to be monitored during the construction and decommissioning phases: • Management of waste on site and correct disposal at a registered waste disposal facility. • Removal of planted alien vegetation. • Monitoring water usage at the site camp. • Dust generation and correct implementation of dust suppression techniques. • Noise generation during the construction phase. • Safety and health impacts during construction and demolition. • Visual and traffic impacts during construction and decommissioning. • Demarcation of the construction site. • Demarcation of no-go areas or sensitive areas, such as the Durban Bay Estuary. • Monitor compliance with the EMPr and Environmental Authorisation. • Audit the construction site to determine any pollution and degradation and monitor the implementation of mitigation measures. • Record all complaints from the public and incidents. Aspects to be monitored during the operational phase: • Monitor any spillages during the vessel offloading process and the road tanker loading process. • Monitor compliance with the EMPr and Environmental Authorisation. • Audit the operations at the upgraded Storage Terminal to determine any pollution and degradation, as well as monitor the implementation of mitigation measures. • Record all complaints from the public and incidents. • Monitor visual, traffic, noise, and safety and health impacts.	

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative S1 (preferred site)

As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project.

Alternative S2

As mentioned above, feasible site alternatives (i.e. location and property alternatives) do not exist for the proposed project.

Alternative A1 (preferred alternative) – Layout Alternative 1 – Phase 1 and Phase 2 (Option 1)

This section provides a summary of the Basic Assessment and conclusions drawn from the specialist studies for the proposed OTGC Storage Terminal project.

- **Traffic Impact Assessment:**

A Traffic Impact Assessment (Appendix D.1 of this Draft BA Report) was conducted as part of the BA Process in order to identify and assess traffic impacts associated with the construction and operation of the proposed project.

The following main impacts were identified in the Traffic Impact Assessment:

- Construction phase: Impact of construction vehicles on the Maydon Wharf road network and parking of construction vehicles on public roads when not in use.
- Operational phase: Impact of extra operational vehicles on the Maydon Wharf road network.
- Operational phase: Impact of extra parked vehicles waiting to be serviced on Johnstone Road (e.g. blocking access to the road) during the operational phase.

Table 4 below illustrates a summary of the number of direct impacts identified in the Traffic Impact Assessment.

Table 4. Summary of the Traffic Impact Assessment

		Significance Before Mitigation			Significance After Mitigation		
	Total Impacts	Low	Medium	High	Low	Medium	High
Direct Impacts - Construction Phase	**1**	1	0	0	1	0	0
Direct Impacts - Operational Phase	**2**	2	0	0	2	0	0
Total Impacts	**3**						

The study specified that no significant traffic impacts are expected during the decommissioning phase (i.e. should the terminal close down in the distant future).

Furthermore, the above traffic impacts and associated significance have exactly the same operational impact on the ambient traffic for all alterative layouts proposed as part of the project. This is due to the fact that both alternatives will have the same ultimate potential additional trip generation.

The above impacts are predicted to be of a low significance without the implementation of mitigation measures. It is clear from Table 4 that no impacts were assessed as being of high significance after the implementation of mitigation. There are no major negative traffic impacts created by the proposed project.

- **Risk Assessment:**

A Safety, Health and Environmental Risk Assessment was carried out as part of the BA Process in order to identify the potential major hazards associated with the operation of the proposed project, as well as to determine the causes, consequences and effects (impacts) of these hazards.

The following main impacts were identified in the Risk Assessment for the construction phase (which includes demolition processes) and the decommissioning phase (should the terminal close down in the distant future):

- Pollution of sea water as a result of spillages and washing of Molasses tanks;
- Noise generation from demolition and construction activities;
- Construction and demolition health injuries;
- Heavy traffic, congestion and potential for collisions;
- Construction and demolition safety injuries; and
- Pollution of water and ground as a result of Caustic Soda spills, building rubble and waste material.

The following main impacts were identified in the Risk Assessment, for the operational phase:

- Pollution of the ground and water;
- Atmospheric pollution;
- Health injuries;
- Safety injuries;
- Heavy traffic, congestion and potential for collisions;
- Minor accidents to the public and moderate accidents to employee's e.g. fires; and
- Minor accidents to the public, moderate accidents to employee's e.g. corrosive spillages.

Table 5 below illustrates a summary of the number of direct impacts identified in the Risk Assessment.

Table 5. Summary of the Risk Assessment

		Significance Before Mitigation			Significance After Mitigation		
	Total Impacts	Low	Medium	High	Low	Medium	High
Direct Impacts - Construction Phase (Layout Alternative 1 – Phase 1)	**6**	0	3	3	5	1	0
Direct Impacts - Construction Phase (Layout Alternative 1 – Phase 2 – Option 1)	**6**	0	4	2	5	1	0
Direct Impacts – Construction Phase (Layout Alternative 1 – Phase 2 – Option 2)	**6**	0	3	3	5	1	0
Direct Impacts – Construction Phase (Layout Alternative 2)	**6**	0	3	3	5	1	0
Direct Impacts - Operational Phase	**7**	0	6	1	6	1	0
Direct Impacts - Decommissioning Phase	**6**	0	3	3	5	1	0
Total Impacts	**37**						

Based on Table 5, it is clear that none of the impacts identified for the construction, operational or decommissioning phases of the proposed project were rated with a high significance with the implementation of mitigation measures. With the implementation of mitigation measures, the safety, health and environmental impacts identified in the Risk Assessment (Appendix D.2 of this Draft BA Report) have a **low-medium significance**. It is also important to point out that the status of all impacts identified in the Risk Assessment were all categorised as "neutral". It should also be noted that the same impacts were identified for each alternative layout (Alternative 1 – Phase 1, Alternative 1 – Phase 2 – Option 1, Alternative 1 – Phase 2 – Option 2 and Alternative 2).

- **Noise Impact Assessment:**

The Noise Impact Assessment (Appendix D.3 of this Draft BA Report) investigated the potential noise impacts resulting from the construction and operation of the proposed upgraded OTGC Storage Terminal. The Noise Impact

Assessment included a desktop study to model the likely noise emissions from the proposed terminal, as well as a field study to determine the existing ambient noise.

Table 6 below illustrates a summary of the number of direct impacts identified in the Noise Impact Assessment.

Table 6. Summary of the Noise Impact Assessment

		Significance Before Mitigation			Significance After Mitigation		
	Total Impacts	Low	Medium	High	Low	Medium	High
Direct Impacts - Construction Phase	**2**	2	0	0	2	0	0
Direct Impacts - Operational Phase	**2**	2	0	0	2	0	0
Total Impacts	**4**						

As illustrated in Table 6 above, four impacts were identified in the Noise Impact Assessment. These impacts are described below:

- Construction phase: Noise impact from the use of construction equipment.
- Construction phase: Noise impact from piling during the construction phase.
- Operational phase: Noise impact from road transport during the operational phase.
- Operational phase: Noise impact from tanker filling during the operational phase.

The study indicated that the noise impacts during the decommissioning phase (i.e. should the terminal close down in the distant future) will be the same as those impacts identified for the construction phase.

Furthermore, the above noise impacts and associated significance are the same for all alternative layouts (i.e. the different phases will not impact on the significance of the noise impacts).

The above impacts are predicted to be of high intensity with a low significance without the implementation of mitigation measures. The noise impacts identified during the construction phase are predicted to be short-term, whilst those identified during the operational phase are long-term. Derived from Table 6, it is clear that no impacts were assessed as being of high significance after the implementation of mitigation. All noise impacts on the closest residential receptors (i.e. the suburb of Glenwood) were rated with a **low significance** with the implementation of recommended mitigation measures. It is important to point out that the suburb of Glenwood is located approximately 780 m away from the proposed project site, and given the existing context it is not considered as a significant sensitive noise receptor for this proposed project. In some instances, mitigation measures are not recommended based on the minimal nature of the impact. Under these circumstances, best practice measures should be followed.

Overall, the noise impacts associated with the proposed project are predicted to be of a **low significance**.

- **Visual Impact Assessment:**

The Visual Impact Assessment (Appendix D.4 of this Draft BA Report) studied the potential visual impacts that the proposed project will have on sensitive visual receptors in the surrounding landscape. The Visual Impact Assessment notes that logistics, including cargo handling, container services, freight services, storage and warehousing, is the main industrial activity taking place at Maydon Wharf. The study further confirms that no residential areas occur within a 500 m radius of the proposed Storage Terminal site. The Congella industrial area borders Maydon Wharf on the west with the Southern Freeway (M4) and large railway infrastructure separating the two areas. The suburb of Glenwood occurs to the west of Congella. Glenwood includes smaller properties and blocks of flats on the coastal plain and larger properties further west against the ridge.

Residents living against the ridge on the western boundary of Glenwood are classified as highly sensitive visual receptors since they potentially have scenic views of the harbour and Indian Ocean. Recreational users of parks and sports facilities in the areas surrounding the proposed development site will be moderately sensitive to changes in their views and the landscape.

Visual intrusion will be low for the proposed development since it will replace an existing development with the same or similar structures. The proposed development will also be built in an industrial area where surrounding industrial

developments are of a similar type concerned with logistics, warehousing and storage. Buildings and structures are similar and the proposed storage facility will fit in with its surroundings.

Table 7 below illustrates a summary of the number of direct impacts identified in the Visual Impact Assessment.

Table 7. Summary of the Visual Impact Assessment

		Significance Before Mitigation			Significance After Mitigation		
	Total Impacts	Low	Medium	High	Low	Medium	High
Direct Impacts - Construction Phase	**1**	1	0	0	1	0	0
Direct Impacts - Operational Phase	**2**	2	0	0	2	0	0
Direct Impacts - Decommissioning Phase	**1**	1	0	0	1	0	0
Total Impacts	**4**						

As illustrated in Table 7 above, four impacts were identified in the Visual Impact Assessment. These impacts are described below:

- Construction phase: Potential visual intrusion of construction/demolition activities on the views of sensitive visual receptors.
- Operational phase: Potential visual intrusion of structures and buildings associated with the proposed development on existing views of sensitive visual receptors.
- Operational phase: Potential impact of night lighting of the development on the nightscape of the surrounding landscape.
- Decommissioning phase: Potential visual intrusion of decommissioning activities on the existing views of sensitive visual receptors.

These impacts are predicted to be of low intensity with a low significance without the implementation of mitigation measures. No impacts were rated as being of high significance without mitigation.

Alternative A2 - Layout Alternative 1 – Phase 2 (Option 2) and Layout Alternative 2

As above for Layout Alternative 1 – Phase 1 and Phase 2 (Option 1).

No-go alternative (compulsory)

The main implication of the no-go alternative is the lack of secure supply of necessary Bulk Liquids such as Caustic Soda, MEG and Vegetable Oils for storage and distribution to the domestic market. This, in turn, will influence the economic potential of this industrial sector and the eThekwini Municipality (i.e. by limiting the importing potential of these Bulk Liquids). Furthermore, it will also create negative local socio-economic implications as approximately 350 new employment opportunities will not be generated during the construction phase of the proposed project. Moreover, added economic spin off activities will not be realised for the shipping, trading and trucking industries. The no-go alternative would halt a potential of 68 500 m^3 of Bulk Liquids being made available to the domestic market.

If the no-go alternative is adopted, the existing terminal will continue to operate for the storage, handling and distribution of Molasses only, which is a seasonal procedure with limited growth potential. However, based on the current infrastructure and technologies present at the Storage Terminal, together with the fact that the terminal was constructed in the 1960s, a complete maintenance programme will therefore need to be implemented for the pipelines and storage tanks. If the proposed project is not implemented, the Storage Terminal will not be upgraded with newer technologies and equipment, which are planned to optimise the terminal operations. Furthermore, if the proposed project is not implemented, larger tank storage capacities will not be achieved and enhanced equipment (such as actuated valves, weigh bridges and batch meters at the road tanker loading gantry etc.) will not be installed.

It is also important to point out that the site is zoned for industrial use and it is already transformed and impacted on. The implementation of the no-go option is therefore considered to be unviable.

SECTION F. RECOMMENDATION OF EAP

Is the information contained in this report and the documentation attached hereto in the view of the EAP sufficient to make a decision in respect of this report? If "NO", please contact the KZN Department of Economic Development, Tourism & Environmental Affairs regarding the further requirements for your report.	**YES** **X**

If "YES", please attach the draft EMPr as Appendix F to this report and list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

This Draft BA Report has investigated and assessed the significance of the predicted positive and negative impacts associated with the proposed OTGC Storage Terminal project. No negative impacts have been identified within this BA that, in the opinion of the Environmental Assessment Practitioners who conducted this BA Process, 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 within a designated port should be taken into account when considering the main residual impacts of the proposed project.

It is clear that the impacts identified in this Draft BA Report are the same for both layout alternatives. The specialist studies confirm that there is no preferred alternative between the two layout options. It is therefore recommended by the Environmental Assessment Practitioners that both layout alternatives be included in the Environmental Authorisation (should such authorisation be granted for the proposed project). The Project Applicant, will then need to complete the detailed engineering phase and make an informed decision in terms of whether to construct the facility at once (i.e. Alternative 2) or in phases (i.e. Alternative 1 – Phase 1 and Phase 2 (Option 1 or Option 2)). The detailed engineering phase should be informed by the customer demand levels and timing requirements.

Taking into consideration the findings of the BA Process, it is the opinion of the Environmental Assessment Practitioners, Mr Paul Lochner and Ms Rohaida Abed, that the project benefits outweigh the costs and that the project will make a positive contribution to sustainable infrastructure development in the Port of Durban and in facilitating improved service delivery within South Africa for Molasses, Vegetable Oils and the other chemical products included. **Provided that the specified mitigation measures are applied effectively, it is recommended that the project receive Environmental Authorisation in terms of the EIA Regulations promulgated under the National Environmental Management Act (Act 107 of 1998, as amended).**

In order to ensure the effective implementation of the mitigation and management actions, a Draft EMPr has been compiled and is included in Appendix F of this Draft BA Report. The mitigation measures necessary to ensure that the project is planned, constructed, operated and decommissioned in an environmentally responsible manner are listed in this Draft EMPr. The EMPr is a dynamic document that should be updated regularly and provides clear and implementable measures for the establishment and operation of the upgraded Storage Terminal.

Listed below are some of the main recommendations that should be considered (in addition to those in the EMPr and Draft BA Report) for inclusion in the Environmental Authorisation (should such authorisation be granted by the KZN DEDTEA):

- Relevant environmental specifications drawn up by TNPA for construction activities within the Port of Durban should be considered in the construction, operation and decommissioning of the proposed project.

- The Bulk Liquid Operator Licence agreement issued to OTGC by TNPA must be adhered to.
- All planted exotic species at the existing terminal site must be removed and correctly disposed. Relevant environmental specifications regarding the control and removal of alien vegetation should be followed.
- The Port of Durban Oil Spill Contingency Plan should be implemented stringently during all phases of the proposed project. All oil/fuel/product spills that may occur as a result of the proposed project should be recorded (in terms of location, cause and estimated quantities). Debriefing reports should be compiled after spill events (as well as those spill events that nearly occur) and circulated to all relevant operational staff of the terminal.
- Prior to the commencement of construction, it is essential that all permits required to remove the indigenous Red Aloe (*Aloe ferox*) from the site are obtained from the relevant Authorities, if required.
- An independent ECO must be appointed for the construction phase of the proposed project in order to monitor environmental impacts and compliance with the EMPr and Environmental Authorisation.
- The Durban Bay Estuary should be demarcated as a no-go (sensitive) area with regards to construction personnel.
- Environmental Awareness Training should be carried out during the construction phase to ensure that construction personnel are aware of environmental concerns and proper house-keeping recommendations.

SECTION G: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site Plan(s)

Appendix B: Photographs

Appendix C: Facility Illustration(s)

Appendix D: Specialist Reports

Appendix E: Comments and Responses Report

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix H: Public Participation