Final Environmental Impact Report

Proposed Liquid Bulk Storage Facility, Eastern Mole, Port of Cape Town, Western Cape

Burgan Cape Terminals (Propriety) Limited

DEA&DP Ref: E12/2/4/2-A2/75-3030/11

August 2014

www.erm.com
For and on behalf of
Environmental Resources Management

Approved by: Stuart Heather-Clark

Signed: [Signature]

Position: Partner
Date: 22 August 2014
NON-TECHNICAL SUMMARY

INTRODUCTION

Burgan Cape Terminals (Proprietary) Limited hereafter referred to as Burgan Oil, appointed Environmental Resources Management Southern Africa (Pty) Ltd, hereafter referred to as ERM, as independent Environmental Assessment Practitioners (EAPs) to undertake the Environmental Impact Assessment (EIA) process for the proposed development of an oil and fuel storage and distribution facility (the facility) at the Eastern Mole, Port of Cape Town, Western Cape.

PURPOSE OF THIS REPORT

This report is the non-technical summary of the Environmental Impact Report (EIR) for the proposed facility. The EIR has been compiled as part of the EIA process in accordance with regulatory requirements stipulated in the EIA Regulations (Government Notices R543, R544 and R546 of 18 June 2010) promulgated in terms of Section 24(5) of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), as amended.

The non-technical summary provides a summary of the Project activities, alternatives considered, the EIA methodology, and impacts identified and assessed.

EIA PROCESS, APPROACH AND METHODOLOGY

Environmental Impact Assessment (EIA) is a systematic process that identifies and evaluates the potential impacts (positive and negative) that a proposed project may have on the biophysical and socio-economic environment. It identifies mitigation measures that need to be implemented in order to avoid, minimise or reduce the negative impacts, and also identifies measures to enhance positive impacts. The overall EIA process required for development proposals in South Africa is shown schematically in Figure 1. The EIA is not fully a linear process, but one where several stages are carried out in parallel and where the assumptions and conclusions are revisited and modified as the project progresses. The following sections provide additional detail regarding the key stages in this EIA process. These stages are:

- Scoping Phase;
- Specialist Study Phase; and
- Integration and Assessment Phase.

Figure 1 below provides an outline of the EIA process and indicates where you can be involved as an interested and affected (I&AP). All steps are described in more detail in the EIR.
COMMENTING ON THE EIR

The initial Draft EIR was made available for a 40-day commenting period to I&APs and commenting authorities in order to provide I&APs and commenting authorities with an opportunity to comment on any aspect of the EIA. A copy of the Draft EIR was also lodged at the City of Cape Town Central Public Library and made available on the Project website http://www.erm.com/burganoil for the 40-day commenting period.

The Draft EIR Revision 2 was made available for a 21-day commenting period to I&APs and commenting authorities in order to provide I&APs and
commenting authorities with an opportunity to comment on any aspect of the EIA. Changes from the initial DEIR were underlined. A copy of the Draft EIR Revision 2 was also lodged at the City of Cape Town Central Public Library and made available on the Project website http://www.erm.com/burganoil.

This released Final EIR has been made available for a 21-day commenting period to I&APs and commenting authorities in order to provide I&APs and commenting authorities with an opportunity to comment on any aspect of the EIA. A copy of the Final EIR has been lodged at the City of Cape Town Central Public Library and made available on the Project website http://www.erm.com/burganoil. Any comments should be forwarded to ERM by 12 September 2014 at the address, telephone/fax numbers or e-mail address shown below.

Att: Tougheeda Aspeling  
ERM Southern Africa (Pty) Ltd  
Postnet Suite 90, Private Bag X12, Tokai, 7966  
Tel: (021) 681 5400; Fax: (021) 686 0736  
E-mail: burganoil@erm.com

**NEED AND DESIRABILITY**

The need and desirability of the Project has been considered in the context of the relevant Integrated Development Plan (IDP), Spatial Development Framework (SDF) and Environmental Management Framework (EMF), which included:

- City of Cape Town Integrated Development Plan 2012 – 2017;
- City of Cape Town Table Bay District Spatial Development Plan 2012; and
- City of Cape Town Table Bay District Environmental Management Framework (EMF) 2012.

The above IDP, SDP and EMF although not directly applicable to the Project, inform the below discussed Port of Cape Town Port development Plan which directly influences the Project. Nonetheless, the Project is in alignment with the relevant IDP, SDF and EMF.

*Port of Cape Town Port Development Plan*

The Port Development Plan (PDP) for the Port of Cape Town was developed by Transnet, as were other PDPs for other ports in South Africa. The PDP notes in terms of expansion activities, “The port is currently expanding the container terminal to handle larger vessels and increase throughput capacity. Short term plans include a dedicated two-berth passenger terminal, the expansion of the landside area for ship repair and the development of 160ha of the Culemborg site for back-of-port commercial logistics. Medium term plans include expanding the container stacking seaward and in the long-term building an outer basin for an additional four-berth container terminal, and five extra liquid bulk berths” (Transnet,
The PDP also contains short, medium and long term port layout plans. Regarding the liquid bulk areas, the short term layout earmarks the entire Eastern Mole for this purpose. Therefore the proposed Project is in alignment with the Port of Cape Town Port Development Plan (see Figure 2.1).

Financial Viability

A Fuel Sector Specialist Report (see Annex I of the EIR) has been undertaken as part of this EIA process. One of the aspects assessed by this specialist study was the question of financial viability of the Project. The key requirements for the viability of a project of this nature are an anchor tenant, efficiency, capability to handle clean fuels and a connection into the Chevron white oil pipeline receiving facility to the Chevron Refinery. Storage of strategic stocks for companies without facilities in Cape Town would be an added benefit. The above mentioned requirements have been met by the Project as follows:

- An anchor tenant agreement has been signed with a major oil company and additional agreements including strategic stock storage will be advanced.

- The facility has been designed for efficiency which is primarily driven by size, as similar staffing levels would be required for a smaller facility and smaller tanks would be more expensive on a cost/volume basis.

- Capability to handle cleaner fuels is an essential component to minimise the cross contamination of product and would further enhance the viability given the increasing demand for these fuels as the demand will not be able to be met by the Chevron Refinery.

- Connectivity into the Chevron pipeline would enable product from the refinery to be received into the facility and road hauled into the supply area.

- Storage of 14 days strategic stocks for those companies without storage in the Cape Town supply area would require ~40 Ml of storage.

Considering the drivers above, the Fuel Sector Specialist Assessment concludes that there is a high probability that the proposed Project will be financially viable. In addition, the facility would offer a platform to members of the industry, who are dependent on Chevron for offloading and pipeline facilities, to negotiate competitive supply agreements with the Chevron Refinery. Furthermore it would improve the security of supply to the area and access to petrol50 and diesel50 to those oil companies which choose to market the products required for customers whose passenger vehicle engines meet European emission standards.
Analysis of the ‘Need’ of the Project

The Project, as discussed above, is in line with the relevant IDP, SDF, EMF and PDP. There is no reason why this development should not be considered at this particular point in time considering the growing demand of fuel in the Western Cape. The required services are available on site to cater for the development, and there is already bulk storage fuel facilities located in the area.

The Project will bring increased fuel storage infrastructure, and allow for fuel importation thereby increasing the security of supply to the Western Cape. This speaks to the need of the Project for the local community in the context of a growing fuel demand. However, this must be balanced by any potential negative impacts on the supply from the Chevron Refinery which currently supplies the Western Cape with fuel (see Chapter 8 of the EIR).

The oil and gas sector plays an important role in the development of Cape Town’s economy and the contribution it makes to the city’s economy is expected to grow. Analysts forecast that the industry will contribute R7.2 billion to Cape Town’s economy and employ roughly 11 400 people by 2014 (1).

The oil and gas sector has been identified as a priority sector by the City of Cape Town and investment into this sector is being promoted (2). Additionally, the location of Cape Town is ideally positioned to service the demands of Africa’s oil and gas sector (3).

The Department of Energy (DoE) (previously known as the Department of Minerals and Energy), identified a number of capacity constraints and challenges faced by the petroleum sector in meeting energy demand in the ‘Energy Security Master Plan - Liquid fuels’.

They have identified that the logistical infrastructure associated with the petroleum industry have been under pressure especially within ports and the depots of oil companies.

More specifically, the lack of fuel offloading infrastructure at ports, minimal on-loading and offloading infrastructure as well as minimal storage capacity have all been highlighted by the DoE as decreasing the petroleum industry’s ability to adequately deal with supply irregularities as well as adversely impacting on both petroleum pipelines and rail operations (4).

One of the short-term solutions identified by the DoE to increase fuel security in South Africa is to update and increase liquid fuel handling facilities at ports.

(1) City of Cape Town IDP 2011 review
(2) City of Cape Town IDP 2011 review
(3) ‘Investors prefer Cape Town’ (article)
(4) Department of Minerals and Energy- Energy Security Master Plan- Liquid Fuels
Ports are considered an integral part of the petroleum industry’s logistical value chain. However, the increased demand for imports has put additional strain on the Cape Town harbour. This will be amplified from 2017 onwards when Clean Fuels must be available to the South African market and it is widely assumed that infrastructure to handle additional imports will be critical.

Investment into infrastructure such as fuel storage depots has been identified as a solution to relieve some of the pressure currently faced by ports and other sections of the petroleum supply chain. A study conducted by the Fuel Supply Strategic Task Team (FSSTT), has shown that most of the current depots are unable to receive large pipeline shipments (1).

An economic specialist study has been undertaken as part of this EIA and is included as Annex I of the EIR.

Analysis of the ‘Desirability’ of the Project

The proposed development is one of the better practicable environmental options for this particular site, given the industrial zoning of the area, the vacant land with very low biodiversity present, the fact that the adjacent site is already used as a bulk fuel storage facility and the strategic location within the Port of Cape Town. The approval of the Project would not compromise the integrity of the existing approved and credible IDP, SDF and EMF as described above.

The location does favour the proposed land use, as the Port of Cape Town is a strategic location for the import, export and storage of bulk fuel. Again, these is existing bulk fuel storage facilities in the area at the Port of Cape Town.

The findings of the impact assessment (see Chapter 8 of the EIR) show that the potential impacts on the natural and the cultural heritage in the area is negligible. Considering the industrial zone of the area and the already existing bulk storage facilities in the Port of Cape Town, there is no anticipated negative impact on the sense of place of the area as a result of the development. In terms of health and safety, given the mitigation measures stipulated in this EIR are adhered to, the health and safety risks of the facility can be mitigated.

From an economic perspective, it is not anticipated that the approval of the Project will result in unacceptable opportunity costs for the site. The site has been marked by Transnet National Ports Authority specifically for the proposed land use. The site is currently vacant with no other potential uses being considered. The Project aims to have the site utilized by an ongoing, sustainable, profitable business. The proposed Project is also not anticipated to result in unacceptable cumulative impacts (see Chapter 8 of the EIR).

(1) Department of Minerals and Energy- Energy Security Master Plan- Liquid Fuels
**PROJECT DESCRIPTION**

The Eastern Mole is located within the Port of Cape Town which is a large multi-purpose port located in Table Bay on the Western Cape coast, Cape Town, South Africa. According to Transnet, the port is the second busiest port in South Africa, after Durban and specialises in the handling of fruit and agricultural produce. The Eastern Mole, which is ear-marked for the proposed development (see Figure 2), is vacant at present.

The site is split into two plots. Plot 1 is the road loading and office area and plot 2 is the tank storage area. The plots are split by FFS Refiners (Pty) Ltd (FFS) oil storage facility.

Burgan Oil has recently signed a contract for the terminal to be supplied by an above ground 10 inch pipeline, approximately 900m in length, operating at about 6 bar pressure (the pipeline is designed for a pressure of 15 bar) connected to the main import pipeline servicing the Joint Bunkering Services (JBS) from the Chevron Refinery. The terminal can also be supplied by ship from the Eastern Mole Berth 2 located adjacent to the FFS site. While the jetty will be operated by Burgan Oil, all fire protection for the jetty will be the responsibility of TNPA.
Figure 2  Project Location
Figure 3 shows the preferred and final layout (Alternative Layout 3) for Plot 1 (road loading facility), which will have the following infrastructure components:

- Five off two arm bottom loading gantries complete with additive injection and ethanol/ fatty-acid methyl ester (also known as FAME or biodiesel) blending facilities;
- Two off additive storage tanks and pump skids (Automotive Gas Oil (AGO Diesel) additive and unleaded petrol (ULP) additive);
- Fire / foam pump station;
- Fire water / foam tank;
- Office block;
- Guard house;
- 2.4 m high security fence complete with truck entrance / exit gates and emergency exits;
- Vapour Recovery Unit (VRU); and
- Associated lighting and closed circuit television (CCTV).

Figure 4 shows the preferred layout (Alternative Layout 3) for Plot 2 (product storage), which will comprise of the following components:

- Three off bunded storage areas;
  - Bund A will contain three ULP storage tanks and three AGO storage tanks all 26mØ x 18.9mH - total combined working capacity of 54,000m³
  - Bund B will contain four AGO storage tanks all 31.2mØ x 18.9mH - total combined working capacity of 52,000m³
  - Bund C will contain one Ethanol storage tank and one Bio Fame storage tank both 11.65mØ x 18mH - total combined working capacity of 3,400m³
- Import/export manifold;
- Road loading pump bay AGO – six off 2,000 l/m pumps;
- Road loading pump bay ULP – five off 2,000 l/m pumps;
- Motor Control Centre (MCC) and Generator building;
- 2.4 m high security fence complete with truck entrance / exit gates and emergency exits;
- Associated lighting, closed circuit television (CCTV) and bund access roads; and
- An above ground 10 inch diameter 900m long pipeline operating at about 6 bar pressure (designed for 15 bar pressure)

Solar panels with power packs will be installed on the lighting fixtures the power for the lights. Solar panels will also be installed on the office building roofs for power output. Rainwater will be collected in water tanks for the flush toilets to be installed.

The FSS facility is located between plots 1 and 2. The existing road that currently surrounds the site will be extended to match the existing road.
outside the new boundary area of plot 2 in order to keep access to the existing factory at the end of Eastern Mole Road (see Figure 5).

The facility will also have the following components:

- Fuel System;
- Fire Protection System; and
- Electrical System.

**CONSIDERATION OF ALTERNATIVES**

**Site Location Alternatives**

Alternative site locations in South Africa were considered early on by shareholders of the Burgan Oil fuel storage and distribution facility. Alternative site locations included the ports of Durban and Richard’s Bay. However, no commercial site opportunities were available at the time at either of these ports. Therefore the ports of Durban and Richard’s Bay were excluded from any further analysis.

Saldanha Bay was also evaluated as a potential site alternative. However, considering the distance from Saldanha Bay to the major demand centre for fuel products in the region, namely Cape Town, this site alternative was excluded from further analysis for economic and transportation logistics reasons. *Table 1* shows the fuel storage facilities evaluated in the Cape Town area.

**Table 1**  
*Fuel Storage Facilities Evaluated in Cape Town Area*

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Operator</th>
<th>Location</th>
<th>Capacity (km³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Town Harbour Tank Farm</td>
<td>FFS Refiners Pty Ltd</td>
<td>Port of Cape Town</td>
<td>10</td>
</tr>
<tr>
<td>Cape Town Bulk Storage</td>
<td>FFS Refiners Pty Ltd</td>
<td>Port of Cape Town</td>
<td>4</td>
</tr>
<tr>
<td>Joint Bunkering Services</td>
<td>BP/Chevron/Shell/Engen</td>
<td>Port of Cape Town</td>
<td>41</td>
</tr>
<tr>
<td>Strategic Fuel Fund Association (SFF) Milnerton</td>
<td>SFF affiliate of Central Energy Fund</td>
<td>Milnerton</td>
<td>1,268</td>
</tr>
<tr>
<td>Chevron Refinery (storage)</td>
<td>Chevron</td>
<td>Milnerton</td>
<td>650</td>
</tr>
<tr>
<td>Engen</td>
<td>Engen</td>
<td>Montague Gardens</td>
<td>64</td>
</tr>
<tr>
<td>BP Cape Town</td>
<td>BP</td>
<td>Montague Gardens</td>
<td>80</td>
</tr>
</tbody>
</table>

The spare capacity available at the SFF Milnerton tank farm was investigated. However, given that current imports are also from Saldanha Bay, this alternative was deemed not feasible for economic and transportation logistics reasons.
The Port of Cape Town was investigated as an alternative. From Table 1 above Burgan Oil determined that there was a relatively low level of storage capacity at the Port of Cape Town. It was found that the Eastern Mole has existing petroleum handling facilities and this development fits with current Cape Town Port activities in the vicinity and minimizes the construction footprint (ie there is not a requirement to construct an additional pipeline from the Cape Town Port as the Chevron Pipeline already serves this purpose). Furthermore, an advantage of locating a storage and distribution facility at the Port of Cape Town is that fuel can be received from tankers and ships.

The feasibility of this alternative was further supported by the open tender process that the Transnet National Ports Authority (TNPA) ran for a fuel storage and distribution facility in the port boundaries. Burgan Oil tendered for this opportunity and won the tender to develop a fuel storage and distribution facility at the Eastern Mole in the Port of Cape Town (the preferred site).

**Site Layout Alternatives**

A number of layout alternatives have been considered during the engineering design and EIA process for the proposed liquid bulk storage and distribution facility. Many iterations of preliminary engineering drawings have been completed for layout alternatives. The three main site layout alternatives that resulted from the iterative process are outlined briefly below.

The first site layout alternative (Site Layout Alternative 1) includes designing the site according to SANS 10089 which is less stringent in their requirements of safety distances between tanks than the Transnet National Ports Authority (TNPA) Guidelines on Fuel Storage at the harbour (see Figure 4.10 of the EIR). This would allow the distribution and storage facility to have a total storage capacity of approximately 110,000m³.

The second site layout alternative (Site Layout Alternative 2) would follow the Transnet National Ports Authority (TNPA) Guidelines on Fuel Storage at the harbour (see Figure 4.11 of the EIR). These guidelines are more conservative with their specifications of safety distances between tanks. The increased safety distances between the tanks would allow the facility to have a total storage capacity of 78,000m³.

The third site layout alternative (Site Layout Alternative 3) is the preferred and final layout (see Figure 3, Figure 4 and Figure 5 below). This site layout alternative is as a result of discussions with and approval from TNPA to have the layout design according to SANS 10089 and not the Transnet National Ports Authority (TNPA) Guidelines on Fuel Storage. This site layout allows for a total storage capacity of 118,000m³ and a total working volume tank capacity of approximately 109,400m³. It is this preferred and final layout.
Technological Alternative

No alternative technologies have been considered. Fuel storage vessels can be stored either aboveground or underground and underground storage tanks are not a feasible option given the proposed location and the volumes anticipated for the Project.

No-Go Alternative

The no-go alternative is the option of not implementing the activity or executing the proposed development. Assuming that the storage and distribution facility will not be developed at the proposed site, Cape Town Port would continue to have inadequate fuel storage facilities and the mandate stated by the DoE would not be met. The opportunity to improve the efficiency in the logistical fuel supply chain would be lost and TNPA would also lose the opportunity of maximizing use of this portion of the port. The site is currently unoccupied, and the economic stimulus the proposed development has the potential to create would not occur. There would also be no potential negative environmental and risk impacts which may be associated with the proposal.
Figure 3  Plot 1 Preferred Layout Alternative 3
Figure 4    Plot 2 Preferred Layout Alternative 3
Figure 5 Overlay of Plot 2 Preferred Layout Alternative 3 over current site
**Key Biophysical Baseline Aspects**

**Climate:** The City of Cape Town has a Mediterranean climate and receives approximately 788mm of rain per year. The rainfall values for Cape Town per month are lowest in February (15mm) and highest in June (140mm). The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Cape Town range from 15.5°C in July to 25.9°C in February. The data show that the most predominant wind in the area is from the south easterly direction. The second predominant wind is from the north westerly direction.

**Air Quality:** Cape Town’s air quality is showing overall improvements. According to the 2009 State of the Environment Report, none of the sites measured exceeded the South African National Standards (SANS) amounts for nitrogen dioxide, small particulate matter or sulphur dioxide. Nitrogen dioxide levels in Cape Town’s central business district (CBD) remain high, but below the guideline amount. Small particulate matter levels across the city significantly exceeded the more stringent World Health Organisation’s (WHO) recommended guideline and reduction has been prioritised. Sulphur dioxide levels have dropped consistently.

**Ocean:** The Port of Cape Town is located within Table Bay which is described as a log spiral bay anchored by rocky headlands at Mouille Point in the south and Blouberg in the north. Robin Island is also found within Table Bay area. Table Bay is enclosed with the Atlantic ocean to the west and north- west, and the Greater Cape Town region in the south and south- east. Strong tidal currents are not observed, and the tidal range is an average of one meter and reaches a height of 1.8m during spring tides.

**Topography:** The site is almost entirely level, with the surface projecting about 3 – 3.5m above sea level.

**Geology:** The Eastern Mole is known to be situated in terrain composed of and underlain at depth by meta-sedimentary strata of the Tygerberg Formation, Malmesbury Group. This is typically comprised of layers of fine grained siltstone, phyllitic shales, greywacke, and quartzite, which range in thickness from a few centimetres to more than three metres. These are over lain by a thin veneer of marine sediment. The development area comprises man-made ground imported and placed over several years of reclamation.

**Seismicity:** There are no known or proven faults in the site vicinity. A study of the available aeromagnetic and radiometric maps of the area did not suggest the presence of any such faults which could become the focus of a seismic event. The risk associated with the maximum size of a seismic event in and around Cape Town remains a matter of some academic debate. Fernandez and du Plessis (1992) in Kantey and Templer (2013) give the peak horizontal ground acceleration with a 10 percent probability of being exceeded at least once in a period of 50 years as 200cm/sec².

**Soil and Geotechnical:** The entire site is located on reclaimed land. The fill extends to a maximum depth of between ±12-17m below existing ground level. The fill is mostly composed of a highly variable mixture of concrete blocks, concrete fragments, bricks, brick fragments, section of brick walling, chunks of premixed asphalt, pieces of timber (isolated), gravel, pebbles, hornfels boulder fragments, large hornfels boulders, all packed in matrix material. Seabed marine sediments are typically composed of fine to medium grained sands but also include layers of silty sands, sandy silts and even sandy clays. Bedrock at the site was found to generally occur as completely weathered shale, with the degree of weathering typically high and the rock hardness low. Water levels were found to fluctuate in sympathy with the level of the prevailing tide. Groundwater (essentially sea water given the location of the site), was measured to be at depth of 2.9m below ground level at high tide. Tidal range for the site is from 1.8m at spring tide to 1.2m at leap tide.

**Contaminated Site Study:** Twenty-two trial pits were excavated with a TLB across the site. Concentrations of mono-aromatic hydrocarbons (MAH) are below the laboratory detection limit, and below the relevant screening values, in all trial pits except three. Of these, only two trail pits returned values above the detection limit for more than one analyte. These two trial pits are located on the inside edge of the two Burgan Oil land portions, adjacent to the FFS Refiners site, suggesting a possible relationship between the FFS Refiners facility and the MAHs in the soil. Concentrations of total petroleum hydrocarbons (TPH) in the C₁₆ – C₁₀ range (i.e. the volatile TPH range) were below detection for all trial pits. Given the site is constructed of a variety of back-filled material of unknown origin, some of which may have been hydrocarbon-stained, the potential for soil contamination may be expected. The current low concentrations of MAH and TPH in the soil samples from trial pits indicate levels of impact that do not pose a health or liability risk. Concentrations of individual metals vary considerably between trial pits. Variability is most likely due to the nature of the site. All metal concentrations in the soil are significantly below SSV2 screening values for commercial / industrial sites, indicating no significant health risk.
### Key Socio-economic Baseline Aspects

#### Administrative Structure:
The Project Area is located within the City of Cape Town Metropolitan area, which is governed by the City Council. The City Council is both a legislative and an executive body. It is empowered by the Constitution to make decisions concerning the exercise of all the powers and the performance of all the functions of the municipality.

#### Population Size and Growth:
Population of Cape Town was estimated to be 3.74 million in 2011. This is up from roughly 2.89 million in 2001 and represents an increase of 29% over the period. The age profile for the Cape Town illustrates a developing population dominated by youth and middle aged people; followed by the children and the elderly population. During 2011, the population groups for the City of Cape Town were broken down as follows: 39 percent Black African, 42 percent Coloured, 1.4 percent Indian or Asian, 16 percent White and two percent under the category of ‘Other’.

#### Employment:
Unemployment is a major challenge in the City of Cape Town and was estimated at 23.9 percent in the 2011 Census. In 2007, approximately 29 percent of the population were classified as high skilled, 36 percent semi-skilled, 14 percent low skilled and 23 percent had unspecified occupations.

#### Income Levels:
Approximately 32 percent of households in the City of Cape Town had low incomes below R19,600 per year in 2011. As one would expect, incomes nearer the site are higher than the city-wide average.

#### Economic Growth and Sectoral Trends:
The City of Cape Town contributed 76 percent to the Western Cape Gross Regional Product (GRP) of roughly R14.5 billion in 2007 and 11 percent to the national GDP. During the period 2004-2009 the economy grew at roughly four percent per annum on par with the province and slightly higher than the national average. With regard to sectoral trends, recent production data in the Draft Analysis of the Cape Town Spatial Economy confirms that the economy is shifting towards the services sector and that this trend may have accelerated in the current economic recession.

#### Petroleum Industry:
At a national level, South Africa produces about five percent of its liquid fuel needs from gas, about 35 percent from coal and about 50 percent from local oil refineries. The remainder (approximately 10 percent) is imported as refined product from refineries elsewhere in the world. Liquid fuels production in South Africa currently takes place at six refineries with a combined nameplate capacity of approximately 703,000 barrels/day. Until early in the first decade of this century, the combined output of these refineries was sufficient to meet all local fuel needs. Thereafter, the importation of refined fuels in bulk became necessary to meet local demand, and has increased steadily since. Prices for liquid fuels (petrol, diesel and illuminating paraffin) while linked to costs, are essentially administered and not set by the free market. This circumscribes competition in the industry. It means that consumers in a given region face identical petrol prices at the pump regardless of the fuel supplier, with only minimal retail variations allowed for diesel. Chevron through its Chevref refinery in Table View is currently the sole producer of petroleum products in the supply region centred at Cape Town. This includes the majority of the Western Cape to Mossel Bay and the western parts of the Northern Cape. This area is one of four major supply regions in the country. The nameplate capacity of the Chevron refinery is noted at approximately 110,000 bpd (barrels per day) in its annual company reports. Average crude inputs to the refinery over the last four years have been between 70,000 and 79,000 bpd implying utilisation rates of between 64 percent and 72 percent (see Chevron Corp, 2013). Current diesel and petroleum production at the refinery totals between 3.5 and 3.8 million m³/yr. According to Chevron, these production volumes are largely sufficient to meet regional fuel demand, though imports to the region are sometimes necessary.

#### Port of Cape Town Developments:
The Port of Cape Town is considered key strategic regional infrastructure and Transnet has recently increased the ports container terminal so that the demand for both short term and long term import and export needs are met. This increase in terminal capacity is expected to be able to handle double the current cargo capacity. Other port developments currently under-way include the construction of a new entrance at the end of Marine Drive, the rehabilitation of port roads, the replacement of pilot roads and the rehabilitation of the rail network.

#### Transportation:
Entrances to Cape Town Harbour are relatively congested during peak hours and at times during the day. The key intersection in the study area is Container Road / Marine Drive / Paarden Eiland Road. The existing traffic is generated by the developments in the area to the south of Marine Drive. According to existing traffic data it appears that the existing intersection is currently operating within the range of LOS C with side road delays during the morning and evening peak hours.
**IMPACTS IDENTIFIED AND ASSESSED**

The biophysical and socio-economic impacts during the construction and operations phases that have been identified and assessed in the EIR are shown in *Table 2* and *Table 3*. The mitigation/enhancement measures to address the impacts for the construction and operations phases are given in *Chapter 8* of the EIR and the Environmental Management Programme (EMPr) in the EIR.

### Table 2

**Summary of Pre-mitigation and Residual Significances during Construction Phase**

<table>
<thead>
<tr>
<th>Section in EIR</th>
<th>Impact</th>
<th>Pre-mitigation Significance</th>
<th>Residual Impact Significance (Based on mitigation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Dust and Emissions</td>
<td>MINOR (-VE)</td>
<td>NEGLIGIBLE</td>
</tr>
<tr>
<td>Soils and Water</td>
<td>Soil and Groundwater contamination</td>
<td>MODERATE (-VE)</td>
<td>MINOR (-VE)</td>
</tr>
<tr>
<td>Traffic</td>
<td>Increased traffic volumes</td>
<td>MINOR (-VE)</td>
<td>NEGLIGIBLE</td>
</tr>
<tr>
<td>Noise</td>
<td>Increased ambient noise levels</td>
<td>MINOR (-VE)</td>
<td>MINOR (-VE)</td>
</tr>
<tr>
<td>Project Expenditure</td>
<td>Economic impacts from Project expenditure</td>
<td>MINOR-MODERATE (+VE)</td>
<td>MODERATE (+VE)</td>
</tr>
<tr>
<td>Social Disturbance Factors</td>
<td>Impacts from increased social disturbance</td>
<td>MINOR (-VE)</td>
<td>NEGLIGIBLE</td>
</tr>
</tbody>
</table>

### Table 3

**Summary of Pre-mitigation and Residual Significances during Operations Phase**

<table>
<thead>
<tr>
<th>Section in EIR</th>
<th>Impact</th>
<th>Pre-mitigation Significance</th>
<th>Residual Impact Significance (Based on mitigation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Dust and Emissions</td>
<td>MINOR (-VE)</td>
<td>NEGLIGIBLE</td>
</tr>
<tr>
<td>Soils and Water</td>
<td>Soil and Groundwater contamination</td>
<td>MODERATE-MINOR (-VE)</td>
<td>MINOR (-VE)</td>
</tr>
<tr>
<td>Traffic</td>
<td>Increased traffic volumes</td>
<td>MINOR (-VE)</td>
<td>NEGLIGIBLE</td>
</tr>
<tr>
<td>Noise</td>
<td>Increased ambient noise levels</td>
<td>MINOR (-VE)</td>
<td>MINOR (-VE)</td>
</tr>
<tr>
<td>Visual</td>
<td>Visual impact on landscape</td>
<td>MINOR (-VE)</td>
<td>MINOR (-VE)</td>
</tr>
<tr>
<td>Improved Security of Supply and Flexibility</td>
<td>Economic impacts from increased security of supply</td>
<td>MODERATE (+VE)</td>
<td>MODERATE (+VE)</td>
</tr>
<tr>
<td>Increased Opportunities for Competition</td>
<td>Economic impact from increased opportunities for competition</td>
<td>MODERATE (+VE)</td>
<td>MODERATE (+VE)</td>
</tr>
<tr>
<td>Impact on Competitors</td>
<td>Socio-economic impacts on competitors to the Project</td>
<td>MODERATE-MINOR (-VE)</td>
<td>MINOR (-VE)</td>
</tr>
<tr>
<td>Project Expenditure</td>
<td>Economic impacts from Project expenditure</td>
<td>MINOR-MODERATE (+VE)</td>
<td>MODERATE (+VE)</td>
</tr>
<tr>
<td>Social Disturbance Factors</td>
<td>Impacts from increased social disturbance</td>
<td>NEGLIGIBLE</td>
<td>NEGLIGIBLE</td>
</tr>
<tr>
<td>Unplanned Event of Oil Spill on Marine Fauna</td>
<td>Impacts of oil pollution on sensitive marine fauna</td>
<td>MODERATE(-VE)</td>
<td>MODERATE-MINOR(-VE)</td>
</tr>
</tbody>
</table>
Note that the impact on competitors is informed by the Economic Specialist Study and the Fuel Sector Specialist Report (see Annex I of the EIR). In order to determine any further social impact as a result of the impact on competitors, the above mentioned studies would be wholly relied upon. Any potential further social impact as a result of the impact on competitors would be derived from the Economic Specialist Study and Fuel Sector Specialist Report’s two scenarios and assess the impacts of those. In this case no meaningful separate social specialist report would have resulted, as based on the best (and most likely) case scenario, no jobs are likely to be lost, and on the worst scenario, slightly less expenditure on sub contractors and/or suppliers or limited reductions in staff are expected. Furthermore as it is not possible for a social or economic study to be able to estimate how many jobs would be lost as a result of possible cost cutting measures (e.g. which jobs, since there is no way of knowing what Chevron's retrenchment strategy would be) it would not have been possible to provide any meaningful additional social impact assessment about the two scenarios.

A Quantitative Risk Assessment (QRA) (ERM, 2014) (see Annex H of the EIR) was undertaken to simulate a number of incident scenarios associated with the facility in the Port of Cape Town. The following hazardous scenarios were identified:

- Bulk Storage Tank Scenarios
- Buncefield Scenarios (the possible domino effect of adjacent facilities containing flammable substances in the event of a fire)
- Pipework and Pipeline Scenarios
- Road Tanker Offloading Scenarios
- Road Tanker Loading Scenarios

Using the criteria outlined in Chapter 3 of the EIR it has been shown that the Project falls within the ‘Don’t Advise Against DAA’ category for all 3 probability of dangerous dose zones. As a result, for the current land-use surrounding the site, the storage and use of flammable liquids within the site is acceptable in accordance with the health, safety and environment (HSE) land-use planning assessment.

As a result of being declared a MHI, the Requirements of the MHI Regulations must be followed completely to ensure the Burgan Oil is legally compliant. Copies of this risk assessment must be submitted to the Local Provincial Director of the Department of Labour, the Chief Inspector of the Department of Labour Head Office in Pretoria and the Local Authorities.
**RECOMMENDATIONS**

ERM is confident that every effort has been made by Burgan Oil to accommodate the mitigation measures recommended during the EIA process to the extent that is practically possible, without compromising the economic viability of the Project. The implementation of the mitigation measures detailed in *Chapter 8* of the EIR and listed in the Environmental Management Programme (EMPr) of the EIR, including monitoring, will provide a basis for ensuring that the potential positive and negative impacts associated with the establishment of the development are enhanced and mitigated to a level which is deemed adequate for the development to proceed.

In summary, based on the findings of this assessment, ERM finds no reason why the facility proposed for the site should not be authorised, contingent on the mitigations and monitoring for potential environmental and socio-economic impacts as outlined in the EIR and EMPr being implemented.
ERM has 140 offices across the following countries worldwide:

Argentina, Australia, Belgium, Brazil, Canada, China, Colombia, France, Germany, Hong Kong, Hungary, India, Indonesia, Ireland, Italy, Japan, Kazakhstan, Malaysia, Mexico, Mozambique, The Netherlands, New Zealand, Panama, Peru, Poland, Portugal, Puerto Rico, Romania, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Taiwan, Thailand, United Arab Emirates, United Kingdom, United States of America, Vietnam.

ERM’s Cape Town Office
2nd Floor Great Westerford
240 Main Road,
Rondebosch, 7700
Cape Town, South Africa
T:+27 (0) 21 681 5400
F:+27 (0) 21 686 0736

ERM’s Durban Office
Unit 6, St Heller Office Park,
Cnr St Heller & Forbes Drive
Gillitts, 3610
Durban, South Africa
T:+27 (0) 31 767 2080
F:+27 (0) 31 764 3643

ERM’s Johannesburg Office
Building 32, The Woodlands Office Park,
Woodlands Drive,
Woodmead, 2148
Johannesburg, South Africa
T:+27 (0) 11 798 4300
F:+27 (0) 11 804 2289

www.erm.com