Annex I

Economic Specialist Report
Environmental Impact Assessment of the Burgan Cape Terminals Fuel Distribution and Storage Facility, Eastern Mole, Port of Cape Town: Economic Specialist Study

Final Draft Report

July 2014

Prepared for:

Environmental Resources Management (ERM)

Prepared by:

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EXECUTIVE SUMMARY

This report provides socio-economic specialist inputs into the Environmental Impact Assessment (EIA) of the proposed Burgan Cape Terminals (Burgan Oil) fuel distribution and storage facility, Eastern Mole, Port of Cape Town, Western Cape.

In applying basic cost-benefit analysis to the proposed project, financial costs and benefits facing the applicant were considered along with potential distortions and externalities that may impact on wider society. Discussions with the applicant revealed that the financial viability of the project has been considered at length and, in their view, the rewards associated with the project should outweigh risks bearing in mind that financial sustainability/viability is never a certainty in any commercial venture. Confidence in financial viability is further enhanced as Burgan Oil has secured an anchor tenant for the facility in the form of a major oil company. Note also that Burgan Oil was one among three companies that submitted tenders to Transnet to establish similar facilities at the site. They were therefore not alone in seeing a commercial opportunity. From a wider societal perspective, no hidden subsidies or other distortions in favour of the applicant were found that could have made the project ‘artificially’ viable whilst imposing costs on wider society. Environmental externalities or costs associated with the project were also found to be negligible to very low. In summary, cost-benefit analysis considerations do not provide reasons to argue against the desirability of the project provided adequate mitigation is applied.

There are a number of policy and planning imperatives as well as initiatives that are potentially relevant to the project. The project’s broad compatibility with, and implications for, the following key policies and plans was assessed:

- The Port of Cape Town Port Development Plan (2013)
- The Draft Strategic Stocks Petroleum Policy (2013)
- The National Development Plan (2012)
- Competition policy with respect to the petroleum industry
- The Review of Fuel Specifications and Standards (2011)

It was found that the proposed project is compatible with, and generally supportive of, the relevant national policies and plans. These include those related to security of supply, the maintenance of strategic stocks, infrastructural needs, spatial and capacity planning at the Port of Cape Town and the facilitation of greater competition. One key area where compatibility is unclear is in respect of the promotion of local petroleum production over imports where possible. This issue is assessed and discussed further below. It is also important to recognise that the applicant will need to make a licence application to the National Energy Regulator of South Africa (NERSA) in
order to be granted permission to establish the facility. As per its mandate, NERSA can then undertake an evaluation of the facility which includes the consideration of factors related to ‘need and desirability’ and policy compatibility. These include whether the facility (taking cognisance of its size, purpose and location) is economically justifiable and appropriate within the overall petroleum industry context.

**Improved security of supply and associated flexibility** are key economic imperatives and policy goals particularly after the costly fuel supply disruptions experienced in 2005. Measures to enhance security of supply are a particular focus of The Liquid Fuels Energy Security Master Plan (2007) and The Draft Strategic Stocks Petroleum Policy (2013) and include encouraging additional storage and distribution facilities. The introduction of new facilities to store and distribute fuels at an efficient location in the port should therefore contribute to enhance security of supply levels in the region. It would allow for greater flexibility in storage, importation and further distribution at times and in circumstances where this is desirable. It would be particularly valuable in unplanned circumstances such as harbour incidents, refinery incidents which cause an unplanned outage or slowdown of more than six weeks, damage to or failure of Chevron’s 20km white oil pipeline linking the refinery to the harbour and potential urgent demand by Eskom for diesel in the event of power outages. In addition, it would facilitate the availability of low sulphur fuels helping to bridge the likely supply gap due to the delay in meeting the target date of July 2017 for refineries to upgrade to produce these fuels under the Clean Fuels 2 programme.

One of the basic tenets of market driven economies such as South Africa’s is the **desirability of competition.** Not only is it a basic assumption of cost benefit analysis, but it is presumed to foster greater choice, better service and lower costs. At present, Chevron’s competitors have to use infrastructure owned by Chevron when importing fuels which cannot be considered ideal in terms of fostering competition. Aside from the potential positive impacts of introducing a competing facility as such, the overall competitiveness and robustness of the industry should also be enhanced by the introduction of a new entrant such as Burgan Oil that is independent of the existing petroleum suppliers.

**Chevron have raised concerns regarding the proposed project’s impacts on their own viability**, primarily on the grounds that it would significantly increase fuel imports. In this regard it is important to bear in mind that the proposed Burgan Oil facility would be multi-purpose in nature and could be used for the storage and distribution of both locally produced fuels and imported fuels. It is thus specifically one aspect of the facility (i.e. its potential to be used to facilitate imports) that is of concern to Chevron. Focusing on this, it is important to understand that the facility would provide the infrastructure that would **facilitate or allow** for fuel imports potentially in competition with Chevron’s local production. The companies that would pay Burgan Oil to use the facility (i.e. Burgan’s tenants) would, however, be those engaging in the importation, not Burgan Oil. In addition, it is important to bear in mind that
facilities already exist for the importation of fuel in the Port or Cape Town and that the major oil companies currently engage in importation.

The fuel sector specialist report provides the primary assessment of impacts on the continued viability of the Chevron Refinery. This assessment constructs likely future fuel supply and demand balances for the Cape Town supply area. It also considers the current situation in which imports of fuel into Cape Town are already occurring along with the implications of the Basic Fuel Price (BFP) for potential importers. The inputs of the fuel sector specialist indicate that, notwithstanding inherent uncertainties, risks to the continued viability of the Chevron Refinery should be negligible for the most likely scenario and low for the worst case scenario with mitigation. Chevron staff, sub-contractors and suppliers should therefore remain largely unaffected resulting in low socio-economic risks.

If found to be appropriate, mitigation in this regard would need to focus on directly addressing the importing of fuel at times when it is undesirable without foregoing the other advantages of the facility (i.e. providing storage, augmenting security of supply and facilitating competition). This would require the targeting of fuel importers and therefore the involvement of the regulatory authorities that govern fuel imports (i.e. the Department of Energy - DoE) who have a number of applicable mitigation measure options in this regard. Chief among these are existing measures that form part of the current regulatory environment, in which the DoE only grants permission to import fuels when local shortages can be proven. Other additional measures that could be considered if necessary include control of the consumption of low sulphur fuels through the Demand Side Management Levy mechanism, the reformulation of the BFP sourcing model and calculations to reflect the correct landed cost of refined products (note that the oil industry has already initiated discussions on this measure with DoE) and import tariffs. It is therefore recommended that the environmental authorities overseeing the EIA process engage with the DoE around the potential need for these measures in the spirit of co-operative governance required in order to collectively achieve sustainable development.

The project would have a positive impact on economic activity in the local area and region given the new spending injection associated with it. Preliminary estimates indicate that a total of approximately R460 million to R485 million would be spent on all aspects of the detailed design and construction phase over 18 to 22 months. Approximately 110 to 130 contract jobs with an average duration of 18 to 22 months each would be associated with the construction phase. Operational expenditure in the first few years of production have been estimated at between R22 million and R23.5 million and would increase gradually thereafter in line with throughput. Approximately 19 direct operational jobs would be created implying total salary payments of approximately R7 million per year. Additional opportunities would also be associated with the outsourcing of some functions such as jetty operator services. Note that all spending and employment estimates are preliminary and considered accurate to within 25%.
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**ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>BBBEE</td>
<td>Broad Based Black Economic Empowerment</td>
</tr>
<tr>
<td>BEE</td>
<td>Black Economic Empowerment</td>
</tr>
<tr>
<td>CBA</td>
<td>Cost-benefit Analysis</td>
</tr>
<tr>
<td>DEA&amp;DP</td>
<td>Department of Environmental Affairs and Development Planning</td>
</tr>
<tr>
<td>DME</td>
<td>Department of Minerals and Energy</td>
</tr>
<tr>
<td>DoE</td>
<td>Department of Energy</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ERM</td>
<td>Environmental Resources Management</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GRP</td>
<td>Gross Regional Product</td>
</tr>
<tr>
<td>I&amp;APs</td>
<td>Interested and Affected Parties</td>
</tr>
<tr>
<td>IDP</td>
<td>Integrated Development Plan</td>
</tr>
<tr>
<td>IRR</td>
<td>Internal Rate of Return</td>
</tr>
<tr>
<td>LED</td>
<td>Local Economic Development</td>
</tr>
<tr>
<td>NERSA</td>
<td>National Energy Regulator of South Africa</td>
</tr>
<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>PDP</td>
<td>Port Development Plan</td>
</tr>
<tr>
<td>SAPIA</td>
<td>South African Petroleum Industry Association</td>
</tr>
<tr>
<td>TNPA</td>
<td>Transnet National Ports Authority</td>
</tr>
</tbody>
</table>

1 INTRODUCTION

1.1 BACKGROUND AND BRIEF

Burgan Cape Terminals, hereafter referred to as Burgan Oil, has proposed the development of an oil and fuel storage and distribution facility at the Eastern Mole, Port of Cape Town, Western Cape. In terms of the relevant environmental legislation the proposed project triggers a suite of activities which require authorisation from the competent environmental authorities. Environmental Resources Management (ERM) who were appointed as the lead consultant by the applicants to conduct the necessary environmental impact assessment (EIA) process. This report contains an economic specialist study that forms part of the assessment phase of the EIA. Its brief is to:

- Assess the need and desirability of the project at a strategic level and address the economic rationale for the project.
- Assess degree of fit with relevant fuel industry policy and planning as well as port planning along with concerns regarding over-supply and financial viability.
- Assess other economic impacts found to be relevant in accordance with the provincial guidelines for economic specialist inputs into EIAs (van Zyl, et al., 2005). These may include:
  - Impacts on overall economic development potential in the area including impacts on commercial enterprises nearby the site.
  - Impacts associated with project expenditure on direct and indirect employment and household incomes.
  - Impacts associated with environmental impacts that cannot be mitigated and have economic implications. This would focus on potential negative impacts and risks should they be relevant and to the extent possible based on the availability of other specialist studies focusing on assessing these risks.
  - Potential cumulative economic impacts that may be associated with the proposed project.

1.2 PROJECT DESCRIPTION

This section provides a brief overview description of the proposed project. A more detailed project description can be found in the EIA summary report compiled by ERM.

Transnet National Ports Authority identified the establishment of a coastal fuel storage facility on a portion of land measuring 30,452m² on the Eastern Mole in the Port of Cape Town as a strategic business opportunity and released a tender for the establishment of such a facility (locality map provided in Figure 1.1). Burgan Oil were nominated as the preferred bidder and have subsequently been awarded the tender to develop the facility.

1Taken from ERM (2014).
1.2.1 Liquid Bulk Storage System

The proposed facility is expected to have a total tank capacity of approximately 118,000m³. The storage tank area will be covered in a raft type foundation which will be reinforced by concrete piles. The storage tanks will be surrounded by a bund wall with a capacity of 110% of the total tank capacity for that bund area. The product will be received via two main sources, namely the Eastern Mole Berth 2 and an approximately 900m, 10 inch pipeline connected to other oil facilities.

The tanker vessels will decant at the Eastern Mole berth, making use of marine loading arms. Kantey and Templer Engineering Consultants (K & T) have calculated the ship off loading flow rates when decanting at the berth. They have assumed that all ship tankers are able to off-load product within 36 hours and that the largest product supply at any one time would be 50,000m³. Fuel will be able to be pumped from other oil facilities, including the Chevron Oil Refinery, to the storage facility using the Caltex pipeline connected to the Burgan pipeline.

1.2.2 Distribution Facilities

Product Distribution in Depot
The distribution facilities would include a six bay road loading gantry with the ability to pump 2,000 litre/min from the bulk storage tanks. Additionally, all tank skin and manifold valves will be actuated valves and thermal relief and by-passes will be installed at certain required points.
**Product leaving depot**

Fuel product would leave the site via road tankers or the pipeline.

### 1.2.3 Project phases and activities

It is estimated that the construction phase will last for approximately 20 months. Once the site is complete and operational it is expected that the facility will have a lifespan of 40 years or more.
2 APPROACH AND METHODOLOGY

The framework adopted for this study followed the following steps in line with accepted EIA practice:

1. Investigate the existing economic context within which the project would be established.
2. Identify economic impacts.
3. Assess economic impacts without mitigation.
4. Recommend mitigation measures.
5. Re-assess economic impacts assuming the recommended mitigation measures are implemented.

Guidance on the approach was taken from the Department of Environmental Affairs and Development Planning (Western Cape) guidelines on economic specialist input to EIA processes (van Zyl et al., 2005). These indicate the level of detail required for an assessment to inform decision-making without going into superfluous detail (i.e. superfluous detail in this report as well as superfluous detail when the briefs of other specialist studies forming part of the EIA are taken into account).

In order to assess the impacts of the project, a basic cost-benefit analysis was undertaken. This addressed both the project’s financial viability and its non-market socio-economic and environmental impacts (or externalities). This was augmented by a consideration of wider economic impacts and issues. Following the guidelines for economic specialist input into EIAs (van Zyl et al., 2005), I&AP inputs and the nature of the project and its receiving environment, the following impacts and issues were identified as relevant in this regard:

1. Compatibility with key policy and planning guidance
2. Impact on improved security of supply and flexibility
3. Impact on increased opportunities for competition
4. Impact on competitors including associated indirect socio-economic impacts
5. Impact on jobs and incomes linked to expenditure on the construction and operation of the project

These impacts are largely economic in nature. They do, however, also include impact that could be considered more socio-economic than purely economic in nature bearing in mind that the distinction between these is difficult to make.

Where appropriate and feasible, these impacts and issues were rated using accepted EIA conventions to denote their significance (see Appendix 1). As a general observation, however, such significance ratings were not particularly illuminating, and the reader is recommended to focus more on the content and discussions of the assessment sections.
Further details on the approaches used to assess impacts are contained in the individual sections dealing with the impacts.

Note that a previous draft version of this report was submitted to Chevron for comment. In order to address Chevron’s comments, additional work was conducted on the report and an additional specialist focusing exclusively on the liquid fuels sector (Mr Paul Buley) was engaged by ERM in order to provide further assessment of key concerns raised by Chevron. This further assessment focused primarily on analysing the impacts on the proposed facility on the viability of Chevron’s refinery operations in Cape Town. It also provided additional assessment of the following:

- The likelihood that the proposed Burgan Oil facility would be able to achieve financial viability.
- The security of supply impacts of the project.

The full Fuels Sector Specialist Report (hereinafter referenced as Buley, 2014) is contained in Appendix 2 and should be read in conjunction with the main body of this report given its importance to key findings.

### 2.1 Assumptions and Limitations

The following key assumptions and limitation apply to this study:

- The data supplied by the applicant, the project engineers (K & T), other specialists, I&APs and the relevant authorities was assumed to be appropriately accurate, recognising that a rigorous audit or verification exercise of information and data was not possible. The implications of uncertainties have been made clear where necessary.
- Not all economic impacts could be quantified in monetary terms bearing in mind that not all impacts required such quantification in order to perform the assessment.
- The findings of the assessment reflect the best professional assessment of the authors subject to information availability and time constraints generally applicable to EIA processes. See Appendix 3 for the disclaimer associated with this report.

### 2.2 Expertise and Declaration of Independence

The report was compiled by Dr Hugo van Zyl with assistance from Prof. Anthony Leiman. Dr van Zyl holds a PhD in economics from the University of Cape Town. He has sixteen years’ experience focusing on the analysis of projects and policies with significant environmental and development implications and has been involved in project appraisals of infrastructure projects, industrial and mining developments, mixed use developments, renewable energy projects, conservation projects and eco-tourism initiatives throughout Southern Africa. He has lead, participated in and co-ordinated research in
economic impact assessment, environmental resource economics and project appraisal and has contributed specialist input to over 60 environmental assessments. Dr van Zyl is also the lead author of the Western Cape Department of Environmental Affairs and Development Planning guidelines on economic specialist input into EIAs (van Zyl et al., 2005).

Anthony Leiman is an associate professor in the School of Economics at the University of Cape Town. He has taught on, and carried out prior project appraisals in, the petroleum sector, mainly using cost-benefit analysis, and has extensive experience in environment resource economics. He is also a co-author with Dr van Zyl of the Western Cape Department of Environmental Affairs and Development Planning guidelines on economic specialist input into EIAs.

Declaration of Independence:

I, Hugo van Zyl, lead author of the Economic specialist report, hereby declare that I am an independent consultant employed by Environmental Resources Management (ERM). I compiled this report based on independent research and analysis of the proposed Burgan Cape Terminals Fuel Distribution and Storage Facility, Eastern Mole, Port of Cape Town, Western Cape. I hereby confirm that I have no business, financial, personal or other interest in the activity, application or appeal in respect of which I have been involved. All opinions expressed in my specialist report are my own. The findings of my Economic study have been integrated directly into the Environmental Impact Report by ERM.

Dr. Hugo van Zyl
July 2014
The significance of impacts is often highly dependent on the economic environment or context within which they occur. In order to offer such baseline information to the impact assessment this section briefly describes the economic environment. The main information sources used were City of Cape Town data, Census 2001 & 2011, Community Survey 2007, Demarcation Board data and other studies done in the area. The site is within Ward 55 in the City Cape Town municipal area (see Appendix 4 for a Ward Map of the City of Cape Town). This ward includes the Port, Tygerhof, Milnerton, Ysterplaat, Rugby, Woodstock, Brooklyn, Salt River, Maitland, West Side of residential area of Century City, Waterfront Area, Sunset Links. Statistical Information regarding the economic context is consequently provided primarily for the City of Cape Town, Ward 55 and for the other wards within roughly 5km of the site, namely, Wards 54, 57 and 77.

Aside from general socio-economic context information, this section also briefly outlines the overall petroleum industry context and the regulatory environment governing petroleum pipelines, loading facilities and storage facilities.

3.1 Demographics

According to the 2011 Census, total population in the City of Cape Town was roughly 3.74 million persons (see Table 3.1). This is up from roughly 2.89 million in 2001 and represents an increase of 29% over the period. The 2011 populations of Ward 55 which encompasses the Port was roughly 35,500 people with the other wards nearby having relatively similar populations of between approximately 28,000 and 33,000 people.

Table 3-1 Population Numbers in the Wider Study Area for 2011

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Western Cape</th>
<th>City of Cape Town</th>
<th>Ward 54</th>
<th>Ward 55</th>
<th>Ward 57</th>
<th>Ward 77</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black African</td>
<td>1 912 547</td>
<td>1 444 939</td>
<td>5 342</td>
<td>9 029</td>
<td>11 581</td>
<td>6 913</td>
</tr>
<tr>
<td>Coloured</td>
<td>2 840 404</td>
<td>1 585 286</td>
<td>2 227</td>
<td>10 523</td>
<td>9 550</td>
<td>4 226</td>
</tr>
<tr>
<td>Indian or Asian</td>
<td>60 761</td>
<td>51 786</td>
<td>741</td>
<td>1 225</td>
<td>1 390</td>
<td>712</td>
</tr>
<tr>
<td>White</td>
<td>915 053</td>
<td>585 831</td>
<td>18 494</td>
<td>13 290</td>
<td>8 874</td>
<td>14 897</td>
</tr>
<tr>
<td>Other</td>
<td>93 969</td>
<td>72 184</td>
<td>1 059</td>
<td>1 468</td>
<td>1 691</td>
<td>1 504</td>
</tr>
<tr>
<td>Total</td>
<td>5 822 734</td>
<td>3 740 026</td>
<td>27 903</td>
<td>35 535</td>
<td>33 076</td>
<td>28 252</td>
</tr>
</tbody>
</table>

Source: Census 2011

As can be seen in Figure 3.1 below, the area surrounding the site has mostly medium residential population densities when compared with the rest of Cape Town.
3.2 Employment

As with the rest of the country, unemployment is a major challenge in the City of Cape Town and was estimated at 23.9% in the 2011 Census. This is the same rate as that recorded in 2007 but an improvement on the 29.2% unemployment recorded in 2001. In area nearby the site unemployment is a less severe with 13.7% unemployment in Ward 55, 12.8% in Ward 57 and less than 7% for Wards 54 and 77 (Table 3.2).

Table 3-2 Unemployment in the Wider Study Area for 2011

<table>
<thead>
<tr>
<th>Employment category</th>
<th>Western Cape</th>
<th>City of Cape Town</th>
<th>Ward 54</th>
<th>Ward 55</th>
<th>Ward 57</th>
<th>Ward 77</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>2 010 697</td>
<td>1 294 239</td>
<td>13 318</td>
<td>14 583</td>
<td>12 364</td>
<td>13 165</td>
</tr>
<tr>
<td>Unemployed</td>
<td>552 733</td>
<td>405 989</td>
<td>704</td>
<td>2 307</td>
<td>1 611</td>
<td>825</td>
</tr>
<tr>
<td>% unemployed</td>
<td>21.6%</td>
<td>23.9%</td>
<td>5.6%</td>
<td>13.7%</td>
<td>11.5%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Discouraged work-seeker</td>
<td>122 753</td>
<td>81 433</td>
<td>83</td>
<td>313</td>
<td>198</td>
<td>91</td>
</tr>
<tr>
<td>% unemployed including discouraged</td>
<td>25.1%</td>
<td>27.4%</td>
<td>5.6%</td>
<td>15.2%</td>
<td>12.8%</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

With respect to employment per sector, Figure 3.2 shows changes with regard to employment patterns in the City of Cape Town between 1996 and 2007. The trend towards greater employment growth in the services and trade sector is made clear whilst employment in manufacturing has decreased significant over the period. The trade, catering and accommodation sector’s share of total employment rose from 15% in 1996 to roughly 18.5% in 2007. Much of this
growth can probably be ascribed to high growth levels in the tourism industry over this period. Similarly, the finance and business services sector’s share of total employment rose from 16.5% in 1996 to roughly 23% in 2007. In 1996 Manufacturing contributed 22.3% to employment, decreasing to 15.8% in 2007, with roughly 58,000 jobs being shed in real terms in the sector between 1996 and 2007 (Urban-Econ, 2009).

Figure 3-2  Trends in sectoral employment in the City of Cape Town

![Figure 3-2](image)

Source: Urban Econ (2009) drawing on Census and Community Survey data

3.3 INCOME LEVELS

Table 3-4 reports on household income levels in the Study Area for 2011. Approximately 32% 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. Roughly 22% of household in Ward 55 and Ward 57 had incomes below R19,600 per year in 2011 whilst roughly 15% of household in Ward 54 and Ward 77 had incomes at this level.
Table 3-3  Percentage of Household per Income Category in the Wider Study Area for 2011

<table>
<thead>
<tr>
<th>Annual income level</th>
<th>Western Cape</th>
<th>City of Cape Town</th>
<th>Ward 54</th>
<th>Ward 55</th>
<th>Ward 57</th>
<th>Ward 77</th>
</tr>
</thead>
<tbody>
<tr>
<td>No income</td>
<td>13%</td>
<td>14%</td>
<td>9%</td>
<td>10%</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>R 1 - R 4 800</td>
<td>3%</td>
<td>3%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>R 4 801 - R 9 600</td>
<td>4%</td>
<td>4%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>R 9 601 - R 19 600</td>
<td>12%</td>
<td>11%</td>
<td>3%</td>
<td>9%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>R 19 601 - R 38 200</td>
<td>18%</td>
<td>16%</td>
<td>6%</td>
<td>10%</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>R 38 201 - R 7 6400</td>
<td>16%</td>
<td>14%</td>
<td>9%</td>
<td>15%</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>R 7 6401 - R 153 800</td>
<td>13%</td>
<td>13%</td>
<td>16%</td>
<td>17%</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>R 153 801 - R 307 600</td>
<td>11%</td>
<td>12%</td>
<td>20%</td>
<td>18%</td>
<td>18%</td>
<td>21%</td>
</tr>
<tr>
<td>R 307 601 - R 614 400</td>
<td>7%</td>
<td>9%</td>
<td>18%</td>
<td>13%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>R 614 001 - R 1 228 800</td>
<td>3%</td>
<td>4%</td>
<td>11%</td>
<td>5%</td>
<td>6%</td>
<td>11%</td>
</tr>
<tr>
<td>R 1 228 801 - R 2 457 600</td>
<td>1%</td>
<td>1%</td>
<td>4%</td>
<td>1%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>R 2 457 601 or more</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Census 2011

3.4 ECONOMIC GROWTH AND SECTORAL TRENDS

The City of Cape Town contributed 76% to the Western Cape Gross Regional Product (GRP) of roughly R14.5 billion in 2007 and 11% to the national GDP. During the period 2004-2009 the economy grew at roughly 4% per annum on par with the province and slightly higher than the national average (CCT, 2011).

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. Figure 3.3 shows that relative contributions to city GRP have grown rapidly for the finance, insurance and business services sector but have decreased for manufacturing and wholesale and retail trade. Note that although the latter sector declined in relative importance between 2005 and 2009, it experienced strong growth in prior periods. Note also that declining sectoral share does not necessarily imply negative growth, rather indicating that other sectors are growing faster. For example, manufacturing has a low but positive average annual GRP growth rate between 2005 and 2009. The agriculture, mining and construction sectors had very high growth rates but this was of limited significance to production levels because of their relatively small size (CCT, 2010).
3.5 FUTURE DEVELOPMENT GOALS AND OBJECTIVES

In terms of future economic development goals, the latest Integrated Development Plan (IDP) of the City of Cape Town is most instructive. In this Plan, the overall vision of the City is threefold (CCT, 2012):

- To be a prosperous city that creates an enabling environment for shared economic growth and development.
- To achieve effective and equitable service delivery.
- To serve the citizens of Cape Town as a well-governed and effectively run administration.

At a broad level, the IDP is based on the following five pillars or over-arching goals (CCT, 2012):

Pillar 1: Ensure that Cape Town continues to grow as an opportunity city  
Pillar 2: Make Cape Town an increasingly safe city  
Pillar 3: Make Cape Town even more of a caring city  
Pillar 4: Ensure that Cape Town is an inclusive city  
Pillar 5: Make sure Cape Town continues to be a well-run city
With specific reference to Pillar 1 focused on economic development, the IDP states that, “The aim is to keep Cape Town expanding so as to attract investment, generate growth and create jobs. Prosperity is the key to betterment and progress. The provision and maintenance of the city’s economic and social infrastructure are critical for success” (CCT, 2012, pg 34). This Pillar also ties in with the outcomes of the community needs surveys conducted to inform the IDP which place job creation at the top of the list of needs among the wider community. As part of the IDP, the City explicitly recognises that “Only the market – as a key part of an economic enabling environment that allows for competitive and inclusive growth – can truly provide the opportunities that lift people out of poverty and provide them with dignity. Governments have a critical role to play in facilitating the requisite economic environment for these twin imperatives” (CCT, 2012, pg 40). The IDP furthermore identifies the following six objectives to facilitate the creation of an opportunity city:

1. Create an enabling environment to attract investment that generates economic growth and job creation.
2. Provide and maintain economic and social infrastructure to ensure infrastructure-led economic growth and development.
3. Promote a sustainable environment through the efficient utilisation of resources.
4. Ensure mobility and access through the implementation of an effective public transport system.
5. Leverage the City’s assets to drive economic growth and sustainable development.
6. Maximise the use of available funding and programmes for training and skills development.

3.6 **THE PETROLEUM INDUSTRY CONTEXT**

This section provides a brief overview of the petroleum industry at the national and regional/provincial level in order to provide context for the proposed project.

3.6.1 **The national context**

At a national level, South Africa produces about 5% of its liquid fuel needs from gas, about 35% from coal and about 50% percent from local crude oil refineries. The remainder (approximately 10%) is imported as refined product from refineries elsewhere in the world (NPC, 2012). Liquid fuels production in South Africa currently takes place at six refineries with a combined nameplate capacity of approximately 703,000 barrels/day (see Figure 3-4).¹

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¹ One barrel equals roughly 159 litres. Nameplate capacity refers to the intended technical full-load sustained output of a refinery. This level of output is generally difficult to achieve consistently and economically particularly in older refineries.
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. At the aggregate level, the 2012 shortfalls between South African production and consumption for petrol and diesel were approximately 1.38 million litres and 2.81 million litres respectively (see Figure 3-5).

These production shortfalls have been met by imports (see Figure 3-6). The bulk of these imports have entered the country via Durban in order to supply the inland region where production relative to consumption is particularly
constrained. The country has continued to export small amounts of refined product.

**Figure 3-6**  Petrol and Diesel Imports and Export Volumes for South African (2002 to 2012)


With regard to the mix of fuels, diesel consumption has grown more rapidly than petrol, particularly over the last 10 years (see Figure 3-7). Diesel consumption has also been the key driver of imports.

**Figure 3-7**  Petrol and Diesel Consumption Volumes for South African (2002 to 2012)

Source: SAPIA, 2012 using DoE data
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. The price setting mechanism gives producers an incentive to keep their costs as low as possible, while providing acceptable returns and ensuring that local refineries and suppliers compete with their international counterparts. The Basic Fuel Price (BFP) was introduced in 2003 by the DoE with agreement from refiners in order to regulate ‘international equivalent’ prices for fuel that refiners could charge. According to the DoE, “The underlying principles for the basis of determination of the Basic Fuel Price (BFP) are to represent the realistic, market-related costs of importing a substantial portion of South Africa’s liquid fuels requirements, and it is therefore deemed that such supplies are sourced from overseas refining centres capable of meeting South Africa’s requirements in terms of both product quality and sustained supply considerations.”

Genuinely competitive market prices that ‘mimic’ open competition and rival the prices of international producers are thus strived for. Table 3.4 outlines the international influences that all play a role in the periodic determination of the BFP.

**Table 3-4  International influences on the Basic Fuel Price (BFP) calculation**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Free-on Board (FOB) Values</strong></td>
<td>These are petroleum product prices quoted on a daily basis by export orientated refining centres situated in the Mediterranean area, the Arab Gulf and Singapore.</td>
</tr>
<tr>
<td><strong>Freight</strong></td>
<td>This is the cost to transport refined petroleum products from these export refining centres to South African ports. The freight rates used in the BFP calculation are based on freight rates published by London Tanker Brokers Panel on 1 January each year. These freight rates are adjusted on a monthly basis in line with the so-called Average Freight Rate Assessment (AFRA) which is a function of risks and supply and demand of ships transporting refined petroleum products internationally.</td>
</tr>
<tr>
<td><strong>Demurrage</strong></td>
<td>Petroleum products are loaded into ships at ports in the Mediterranean area, Arab Gulf and Singapore and these products are discharged at South African ports. Demurrage rates are published by the World Scale Association Limited. In calculating the demurrage cost, the total demurrage time is limited to 3 days.</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td>An element of 0.15 percent of the FOB-value and freight to cover insurance as well as other costs such as letters of credit, surveyors’ and agents’ fees and laboratory costs.</td>
</tr>
<tr>
<td><strong>Ocean Loss</strong></td>
<td>A loss allowance factor of 0.3 percent to be calculated on the sum of the FOB, Freight and Insurance values for products is applicable to provide for typical uninsurable losses during transportation of fuels.</td>
</tr>
<tr>
<td><strong>Cargo Dues (Wharfage)</strong></td>
<td>The South African harbour facilities are utilised to off-load petroleum products from ships into on-shore storage facilities. The cost to utilise these harbour facilities is based on the tariff set by the National Ports Authority of South Africa.</td>
</tr>
</tbody>
</table>

1 See http://www.energy.gov.za/files/erources/petroleum/petroleum_pricestructure.html
**Coastal Storage**

This is to recover the cost of providing storage and handling facilities at coastal terminals. In 2002, the typical international storage rate was assessed as USD 3 per ton or 2.5 SA cents per litre per month. The BFP only makes provision for 25 days and the initial value when BFP was implemented amounted to 2.083 c/l. This element is adjusted on an annual basis by the increase in the Producer Price Index (PPI).

**Stock Financing**

Stock financing cost is based on (i) the landed cost values of refined petroleum products, (ii) 25 days of stockholding and (iii) the ruling prime interest rate less 2 percent. The BFP, quoted in USD/barrel or USD/ton is converted to US cents/litre by applying the international conversion rates (for example, barrels to tons, tons to gallons and gallons to litres) and is then converted to South African cents/litre by applying the applicable Rand/US Dollar exchange rate. To arrive at the final petrol pump price in the different fuel pricing zones (magisterial district zones), domestic costs, imposts, levies and margins are added to the Basic Fuel Price (BFP).


Once the BFP is determined, domestic elements are added in order to estimate pump prices for consumers. These elements include domestic transport costs, pipeline costs, taxes and levies and retail/dealer and wholesale margins. Figure 3.8 shows how they are added to the BFP in order to determine the final pump price in cents per litre for key fuels.

**Figure 3-8** Pricing structure and determination for petrol, diesel and illuminating parafin (July 2014)

Source: http://www.shell.com/zaf/products-services/on-the-road/fuels/petrolprice.html

### 3.6.2 The regional context

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 up to near Mossel Bay and the

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1 All production, imports, demand and employment data along with projections were supplied by Chevron and have not been audited for accuracy.
western parts of the Northern Cape. This area is one of four major supply regions in the country. Chevron estimates that it provides direct employment to roughly 1,000 people at the refinery and also supports other indirect and contracted jobs.

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% and 72% (see Chevron Corp, 2013). These rates are roughly similar to the overall South African rate of 68% and European averages in this regard (Wood Mackenzie, 2013). According to Chevron, current diesel and petroleum production at the refinery totals between 3.5 and 3.8 million m³/yr (or 22 to 24 million barrels/yr). In their view, these production volumes are largely sufficient to meet fuel demand in the Chevref supply region, though imports to the region are necessary:

1. When Chevron undertakes routine refinery shut-downs for maintenance. These are planned-for in advance allowing for stockpiling and generally occur over 24 to 27 days in the average year.
2. When other fuel companies import low sulphur diesel that Chevron is presently unable to produce in sufficient volumes. Chevron anticipates that these imports will no longer be necessary once investments in their refinery have been made to meet Clean Fuels 2 standards (see Section 4.2.5 for a more detailed discussion of the Clean Fuels 2 process).

Chevron also ships standard sulphur diesel from Chevref to its operations in Durban (and inland areas) where there is demand. Chevron anticipates that growth in diesel demand in the local supply region will ensure that this practice of sending diesel to Durban will stop in the next five to ten years (i.e. at some point between 2019 and 2023). When this happens, any new demand in the Western Cape will need to be met either by imports or the addition of new refining capacity.

In addition to its position as the sole refiner in the supply region, Chevron also currently owns and operates the fuel distribution system tanks and pipelines connected to the two liquid fuels berths at the Port of Cape Town. It is important to note that, aside from using this terminal for its own purposes, Chevron provides a distribution service to the other major oil companies, fuel manufacturers and suppliers using the harbour to move refined product in and out of the Western Cape.
3.7 THE REGULATORY ENVIRONMENT

The nature of the proposed project dictates that the regulatory environment relating to petroleum pipelines, loading facilities and storage facilities is relevant along with that governing fuel importation. These aspects are discussed briefly in the following sections.

3.7.1 Regulations governing petroleum pipelines, loading facilities and storage facilities

The National Energy Regulator of South Africa (NERSA) regulates the petroleum pipelines and storage industry in accordance with the provisions of the Petroleum Pipelines Act of 2003 (Act No. 60 of 2003). Section 2 of the Act stipulates that it should:

“(a) promote competition in the construction and operation of petroleum pipelines, loading facilities and storage facilities;
(b) promote the efficient, effective, sustainable and orderly development, operation and use of petroleum pipelines, loading facilities and storage facilities;
(c) ensure the safe, efficient, economic and environmentally responsible transport, loading and storage of petroleum;
(d) promote equitable access to petroleum pipelines, loading facilities and storage facilities;
(e) facilitate investment in the petroleum pipeline industry;
(f) provide for the security of petroleum pipelines and related infrastructure;
(g) promote companies in the petroleum pipeline industry that are owned or controlled by historically disadvantaged South Africans, by means of licence conditions to enable them to become competitive;
(h) promote the development of competitive markets for petroleum products;
(i) promote access to affordable petroleum products; and
(j) ensure an appropriate supply of petroleum to meet market requirements.”

The provisions of the Act require that anyone wishing to construct and/or operate a petroleum pipeline, loading facility or storage facility is required to apply to NERSA for a licence to do so. NERSA can then undertake an evaluation of any proposed facility (such as that proposed by Burgan Oil) which includes the consideration of factors related to ‘need and desirability’. These include whether the facility (taking cognisance of its size, purpose and location) is economically justifiable and appropriate. NERSA is also mandated to revoke or alter licences should the need arise. Section 24 of the Petroleum Pipelines Act of 2003, specifies circumstances in which, “the licensed facility or activity is not economically justifiable” among other potential reasons. Note that in its evaluation of licences applications, NERSA can draw on inputs from other government bodies or other processes in order to reach its decisions. These include the outcomes of environmental authorisation processes.
3.7.2 Regulations governing the importation of fuel

The Department of Energy (DoE) is the key regulatory authority that governs fuel imports. This is done primarily through an import licencing process in which any party wishing to import fuel is obligated to first enquire whether other local fuel producers have stock available in the country. The DoE then has the opportunity to assess the situation and tends to only grant permission to import once it can be confirmed that stock is not available locally. As per DoE policy, “The import of refined products is restricted to special cases where local producers cannot meet demand. It is subject to state control to promote local refinery utilisation.” Imports are also regulated indirectly through the BFP which was introduced in order to regulate ‘international equivalent’ prices for fuel that refiners could charge (see section 3.6.1 for further discussion of the BFP).

1 Quote from the DoE website (http://www.energy.gov.za/files/oesources/petroleum/petroleum_lpg.html)
4 ASSESSMENT OF IMPACTS

This section focuses on the assessment of impacts starting with a basic cost-benefit analysis augmented by the consideration of the following wider economic impacts and issues:

1. Compatibility with key policy and planning guidance
2. Impact on improved security of supply and flexibility
3. Impact on increased opportunities for competition
4. Impact on competitors
5. Impact linked to expenditure on the construction and operation of the project

4.1 THE BALANCE BETWEEN DIRECT COSTS AND BENEFITS

Cost-benefit analysis which focuses on direct costs and benefits is probably the most widely used technique aimed at providing an indication of the economic efficiency and basic economic desirability of a project. It also forms the conceptual departure point for the DEA&DP guideline for economic specialist inputs to EIA (van Zyl et al., 2005).

In applying basic cost-benefit principles to the proposed project, financial costs and benefits facing the applicant were considered to the degree possible. These were then assessed for potential distortions and for externalities that the project might provide for or impose on the wider society.

4.1.1 Private costs and benefits

Discussions with the applicant revealed that the financial viability of the project has been considered at length. Their appraisal followed standard viability, risk assessment and general business planning methods that have been applied in numerous similar projects across the globe.¹ In their view, the expected rewards of the project outweigh risks, making it financially viable to make the necessary investment (M. Mseleku and S. van Zelst, Burgan and VTII, pers com). Note that Burgan Oil was among the companies that showed earlier interest in establishing similar facilities at the site. Transnet’s tender process included a pre-qualification evaluation, following which requests for proposals were sent to five prospective bidders. Full proposals for the site were then received from three bidders including Burgan Oil (J. Claassen, Transnet, pers com). Burgan Oil was thus not alone in recognising a potentially viable commercial opportunity for liquid fuel facilities at the site.

The Fuels Sector Specialist Assessment provides further input regarding likely financial viability and key risk associated with the proposed facility (see

¹ VTII who have bought out Burgan Oil operate 11 storage facilities across five continents with a combined storage capacity of 8.6 million cubic meters (see www.vtti.com).
Buley, 2014 in Appendix 2). This assessment concludes that there is a “high probability” that the project will be viable when one considers the key drivers of viability alongside risks. It points out that the key requirements for the viability of a project of this nature have been met as follows (Buley, 2014, pg 5):

- “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 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.”

Viability has been extensively considered and a major anchor tenant has been secured making it possible to attach a high probability to the achievement of viability. It is, however, important to bear in mind that financial sustainability/viability is never a certainty in any commercial venture. As a rule, applicants can assess only expected risks and use these to make an informed decision. The available information gives no reason to anticipate financial failure that would argue against the project.

4.1.2 Public costs and benefits

While analysts are rarely in a position to second guess private companies regarding the private financial viability of a project, they are obliged to check that the expected private viability is not a consequence of market distortions or aberrations. In this case, no hidden subsidies or other distortions in favour of the applicant were found that could have made the project ‘artificially’ viable.

This leaves the consideration of physical externalities (i.e. the risk of uncompensated environmental impacts arising from the project). The assessment of these was informed by the other specialist studies contributing to the EIA process, namely, the major hazard installation risk assessment, the air quality assessment and the traffic impact assessment. Their key findings were as follows:

- The major hazard installation risk assessment found that the individual (including workers on and surrounding the site) and the societal risk associated with the project would be tolerable with adequate mitigation. It also found that, given surrounding land-uses, the proposed storage and use of flammable liquids within the site would be acceptable in accordance with the HSE land-use planning...
assessment (Price and Instone, 2013). The latter finding was expected; the site is adjacent to other fuel storage facilities and was earmarked for liquid fuels storage in the Cape Town Port Development Plan (see section 5.2.4 for further discussion of the Plan).

- The air quality impact assessment found that the emissions from the facility would be within acceptable limits and described the overall impact of the facility on air quality as ‘negligible’ (Dracoulides & Xu, 2014.)

- The traffic impact assessment concluded that the proposed project would be acceptable from a traffic impacts point of view, pointing out that (K&T, 2014, pg 14):
  - The traffic generated by the project would be insignificant in the context of the background traffic in Cape Town Harbour and surrounding road network.
  - The project is not expected to cause any significant traffic impact at the key intersections in the study area during the AM and PM peak hours on typical weekdays.

These findings suggest that the environmental externalities or costs associated with the project are likely to be negligible to very low.

In summary, direct cost-benefit analysis considerations provide no reason to argue against the desirability of the project provided adequate mitigation is applied. The remainder of this report focuses on the compatibility of the project with government policy and planning, and any indirect impacts it might have.

### 4.2 Compatibility with Key Policy and Planning Guidance

A number of policy and planning issues are potentially relevant to the project. This section deals with the project’s broad compatibility with, and implications for, key policies and plans. This is done by considering the project relative to the following:

- The Port of Cape Town Port Development Plan (2013)
- The Draft Strategic Stocks Petroleum Policy (2013)
- The National Development Plan (2012)
- Competition policy with respect to the petroleum industry
- The Review of Fuel Specifications and Standards (2011)

#### 4.2.1 Liquid Fuels Energy Security Master Plan

The basic functioning of the South African economy relies heavily on the petroleum industry and its ability to provide an un-interrupted supply of liquid fuels. The Liquid Fuels Energy Security Master Plan was released by the then Department of Minerals and Energy (DME) in 2007 primarily in response
to the supply disruptions experienced in 2005. These had significant economic consequences, the costs of which were estimated at R925 million per day in 2005 Gross Domestic Product (GDP) terms.\(^1\) The plan identified a number of capacity constraints and challenges faced by the petroleum sector in meeting energy demand. With reference to this assessment, the plan points out that the logistical infrastructure for petroleum products is strained (DME, 2007, pg 21):

1. “Harbours: Limited fuel offloading infrastructure severely curtails the ability to import product shortfalls;
2. Oil Companies’ Depots: limited on-loading and offloading infrastructure, as well as limited storage capacity, not only limits the ability of the industry’s value chain to absorb supply shocks, but also impacts negatively on the operations of both petroleum pipelines and rail.”

With regard to operational improvements at ports, the plan notes that “Ports operations are an integral part of the petroleum products logistical value chain. The projected demand growth for petroleum products, coupled with limited refining capacity in South Africa, as shown in recent studies, has begun to put additional pressure on the ports operations. The need for increased imports has placed strain on both the Durban and Cape Town harbours and related facilities.” (DME, 2007, pg 39). Note that after including Cape Town among constrained ports in need of infrastructure, the plan places relatively more focus on the situation in Durban. This is understandable as it was the central regions of the country (which rely on Durban refineries and imports for a significant proportion of their fuel) that experienced the greatest challenges during costly fuel shortages in 2005.

With regard to imports, the Plan comes out in favour of limiting these where possible, but not to such a degree that imports cannot take place when needed. It states that “In support of promotion of local production of liquid fuels, it is recommended that a policy of limited imports be re-endorsed with a dynamic component responding to the fluctuating levels of capacity to produce locally and to enable imports as production capacity changes with time.” (DME, 2007, pg 55).

Aside from the Liquid Fuels Energy Security Master Plan, the DoE is in the process of drafting a 20-year Liquid Fuels Infrastructure Roadmap. When it becomes available, this plan is expected to provide more detailed guidance on fuels infrastructure.

### 4.2.2 Port of Cape Town Port Development Plan

The Port Development Plan (PDP) for the Port of Cape Town was developed by Transnet recently along with PDPs for all the other ports in South Africa. With regard to expansion the PDP notes that, “The port is currently expanding the container terminal to handle larger vessels and increase throughput

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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, 2013, pg. 162). 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 and therefore accords with Burgan’s proposed project (see Figure 4.1).

**Figure 4-1 Port of Cape Town Port Development Plan: Short-term Layout**

![Port of Cape Town Port Development Plan: Short-term Layout](image)


### 4.2.3 Draft Strategic Stocks Petroleum Policy

The Department of Energy (DoE) released the Draft Strategic Stocks Petroleum Policy in 2013. Again, this was partially a response to the supply disruptions experienced in 2005. The overall aim of the policy is to “ensure the uninterrupted supply of petroleum products in the country through the provision of adequate strategic stocks and infrastructure such as storage facilities” (DoE, 2013, pg 5). The policy identifies the age of the refineries in the country as a strategic concern, as catastrophic events at these facilities would severely disrupt supply. South Africa currently holds oil reserves, but not refined product reserves. The rectification of this situation is a key goal of the policy. The draft policy consequently recommends that petroleum manufacturers hold 14 days of refined product stocks relative to their respective market shares. It recognises that significant investment in storage capacity will be required in order to achieve this goal, and estimates that approximately 62 new tanks will be needed for the country as a whole (assuming an average tank capacity of 200,000 m³) (DoE, 2013). Since one of
the key features of the Burgan Oil facility is the construction of additional storage, the project is broadly supportive of the draft policy.

4.2.4 Competition Policy

The current petroleum industry structure in South Africa allows for limited competition and does not comply with the Competition Act, 1998 (Act No.89 of 1998) (Rambau, 2011). With this in mind the Competition Commission proposed an investigation into the industry. However, in 2009 the Minister of Trade and Industry announced a special designation of the petroleum industry given its strategic importance and contribution to economic stability. The designation period ends on 31 December 2015. It enabled the South African Petroleum Industry Association (SAPIA) to win exemption from current competition legislation until the end of 2015 so that interaction between key role players can take place with regard to supply issues, logistics planning and pipeline operations to avoid future fuel shortages and facilitate security of supply (Rambau, 2011). In granting the exemption the Competition Commission imposed certain conditions aimed at minimizing anticompetitive outcomes and promoting greater participation in the sector. These include (Rambau, 2011):

- SAPIA and its members may not share competitively sensitive information, except for the purposes described in the exemption application;
- SAPIA and its members may not share information relating to setting margins, imposition of levies and/or the approval of tariffs unless required to do so by the Department of Energy or NERSA; and
- SAPIA must open up its membership to accommodate both existing and potential marketers in the petroleum and refinery industry on fair, reasonable and transparent grounds.

Whether through internal industry processes or through processes such as those run by the Competition Commission it seems reasonable to assume that the petroleum industry is likely to move towards structural changes that will increase the level of competition.

For the purposes of this assessment it is important to ask whether the project is likely to facilitate or hamper competition in the industry? It seems likely that competition will be increased since the project would introduce new import, storage and distribution facilities to Cape Town. These would be the first form of competition to the existing facilities owned and operated by Chevron.

4.2.5 Review of Fuel Specifications and Standards

The DoE is in the process of reviewing South Africa’s fuel specifications and standards and has released a Discussion Document on the Review of Fuel Specifications and Standards for South Africa (DoE, 2011). This document recommends that the sulphur content in petrol and diesel should be reduced from 500 parts per million (ppm) to 10 ppm, benzene from 5% to 1% and...
aromatics from 50% to 35% (DoE, 2011). In order to achieve these changes, highly significant investment will need to be made to upgrade all existing refineries in South Africa. The magnitude of the total investment required throughout South Africa was estimated at US$3.7 billion in 2009 terms with a relatively low level of accuracy of +/- 40% (DoE, 2011).

The necessary refinery investments cannot be recovered given current government regulated fuel prices. Consequently, all the major petroleum refiners are in negotiations with the government to agree on a cost recovery mechanism (i.e. an equitable way for them to recover their costs). In initial planning, the DoE set a 2017 deadline for the necessary investments to be complete and operational for all refineries (DoE, 2011). This timeline, however, assumed earlier agreement on a cost recovery mechanism with refinery owners and is therefore no longer likely to be met by everyone. Based on experience with other refinery upgrade processes needed to meet new standards, a minimum four year lead time seems most likely (for example, if agreement is reached on cost recovery in the first quarter of 2014 then refinery upgrades need to be complete by first quarter 2018). Early movers in the refinery upgrade process have included Sapref in Durban owned by BP and Shell and Natref in Sasolburg owned by Sasol and Total both of whom have released statements committing to investment in initial engineering and design with a view to completing the necessary conversions by 2017 (see Kotze, 2012).

The fuel sector specialist input provides further insights regarding potential impact of the proposed Burgan facility in meeting revised Clean Fuels 2 standards (see Buley, 2014 in Appendix 2). It points out that a lack of agreement on finalising draft fuel specifications and cost recovery mechanisms for refinery upgrades is likely to result in the Clean Fuels 2 starting date of July 2017 being missed. Under such a scenario, if continued robust demand Clean Fuels 2 compliant petrol and diesel is to be satisfied, there will be an increased requirement to import these fuels. This process could be facilitated by the infrastructure that would be provided by the proposed Burgan facility (Buley, 2014).

4.2.6 National Development Plan

The National Development Plan (NDP) does not deal extensively with the petroleum sector. It does, however, provide a degree of high level guidance. With regard to liquid fuels, it recommends that fuel refineries be upgraded to ensure they meet new fuel quality standards (i.e. Clean Fuels 2) and that larger strategic fuel stocks be held to ensure security of supply (NPC, 2012). It also points out that local refining capacity necessitates imports and that there are essentially five options to deal with this:

- Build a new oil-to-liquid refinery (for example, the proposed Mthombo project in Coega)
- Build a new coal-to-liquid refinery
- Upgrade the existing refineries, allow significant expansion of one or more of the existing refineries or do both
• Import refined product
• Build a refinery in Angola or Nigeria and buy a share of the product of that refinery.

After considering these options, the NDP concludes that, “The least risky and most cost-effective option is to continue importing a share of refined product until the country reaches a stage where it can absorb the output of either a new refinery or a major upgrade of an existing refinery. South Africa will therefore continue to import, taking a decision on the next step by 2016 or 2017 at the latest. Timing is important, given lead-time requirements to develop a new refinery (estimated at about eight to 10 years) that would be expected to produce output by 2025 to 2028 (if no other options are implemented). The decision will need to consider fuel security, employment, the current account, the rand, interest rates, fuel standards and competition.” (NPC, 2012, pg. 172).

In essence, the NDP keeps options open and defers decision-making with regard to major new refinery capacity whilst recognising the need for imports.

4.2.7 Discussion

Based on the above, it seems reasonable to conclude that the proposed project is compatible with, and generally supportive of, the relevant national policies and plans including the parts of these plans which refer specifically to Cape Town and the Western Cape. These include those related to security of supply, the maintenance of strategic stocks, infrastructural needs, spatial and capacity planning at the port and the facilitation of greater competition. However, one key area where compatibility is unclear is in respect of, ‘the promotion of local petroleum production over imports where possible’ as per DoE fuel security of supply planning guidance. This issue is assessed and discussed further in section 4.5.

As outlined in section 3.7, it is also important to bear in mind that the applicant will need to make a licence application to NERSA in order to be granted permission to establish the facility. As per its mandate, NERSA can then undertake an evaluation of the facility which includes the consideration of factors related to ‘need and desirability’ and policy compatibility. These include whether the facility (taking cognisance of its size, purpose and location) is economically justifiable and appropriate within the overall petroleum industry context.

4.3 IMPROVED SECURITY OF SUPPLY AND FLEXIBILITY

Improved security of supply and associated flexibility are key economic imperatives and policy goals as discussed in more detail in section 4.2 above. The introduction of new facilities to store and distribute fuels at an efficient location in the Port should therefore contribute to enhance security of supply levels in the region. It would allow for greater flexibility in storage, importation and further distribution at times and in circumstances where this
is desirable (and is in keeping with relevant fuel industry regulations). This would include the facilitation of direct imports to Cape Town instead of having to first import larger shipments into Durban, then break bulking them for further shipment in smaller quantities to Cape Town thereby increasing logistics costs.

The Fuels Sector Specialist Assessment provides further assessment of impacts on security of supply (see Buley, 2014 in Appendix 2). This assessment found that the proposed Burgan facility would have a positive impact on security of supply in Cape Town and the Western Cape particularly in the following unplanned circumstances (Buley, 2014, pg 5):

- “A harbour incident involving a vessel at either of the existing bulk liquid berths.
- A refinery incident (fire, critical equipment failure, industrial action) which causes an unplanned outage or slowdown of more than 6 weeks.
- Damage to or failure of Chevron’s 20km white oil pipeline linking the refinery to the harbour.
- An urgent demand by Eskom for diesel as a result of county wide power shortages (Eskom gas turbines at Atlantis are estimated to be capable of consuming more than twice the daily diesel demand of the supply area (based on data supplied by ESKOM in the FSSTT study).

In addition, if constructed, the facility will enable the following benefits to be achieved:
- Making imported petrol50 and diesel50 available to all motorists whose vehicles require these grades and bridging the supply gap due to the likely delay in meeting the target date of July 2017 for refineries to upgrade to produce these fuels.
- Provide storage for Clean Fuel strategic stock holding requirements.”

An assessment of the significance of these impacts based on the findings above is presented in the Box below.
**Box 4-1 Impact significant summary: Impacts on improved security of supply and flexibility**

**Nature:** The introduction of new facilities to store and distribute fuels should contribute to enhanced security of supply levels in the region. It would allow for greater flexibility in storage, importation and further distribution.

**Sensitivity/Vulnerability/Importance of Resource/Receptor – Low**

**Irreplaceability:** The impact will not include the loss of irreplaceable resources.

**Impact Magnitude – Medium**
- **Extent:** The extent of the impact is local and regional
- **Duration:** The expected impact will be long-term for the life of the facility
- **Scale:** The impact will result in notable changes to the receptor (i.e. the economy)
- **Frequency:** The frequency of the impact will be periodic with a very high frequency making it virtually constant for the period of operations as expenditure will flow on an ongoing basis
- **Likelihood:** Impacts are highly likely in the economy

**IMPACT SIGNIFICANCE (WITHOUT AND WITH MITIGATION) – MODERATE (+VE)**

**Degree of Confidence:** The degree of confidence is medium.

**Mitigation:**

No mitigation measures are recommended.

**4.4 INCREASED OPPORTUNITIES FOR COMPETITION**

One of the basic tenets of market driven economies such as South Africa’s is the desirability of competition given its benefits in terms of fostering greater choice, better service and lower costs. These benefits are viewed as important and, as such, are recognised in legislation primarily through the Competition Act 1998 (Act No. 89 of 1998) and associated Competition Commission. The stated purpose of the Competition Act is to promote and maintain competition in South Africa in order to achieve the following objectives:

- “To promote the efficiency, adaptability and development of the economy;
- To provide consumers with competitive prices and product choices;
- To promote employment and advance the social and economic welfare of South Africans;
- To expand opportunities for South African participation in world markets and recognize the role of foreign competition in the Republic;
- To ensure that small and medium-sized enterprises have an equitable opportunity to participate in the economy;
- To promote a greater spread of ownership, in particular to increase the ownership stakes of historically disadvantaged persons.”

While it is recognised that greater competition is not desirable in every situation, given the above and taking sound economic principles into account,
it is generally accepted that the onus is on those who argue against competition to, (1) comprehensively prove the merits of their case and (2) show that a given course of action or policy intervention to restrict competition would better serve to limit the negative impacts or un-intended consequences of a development. Notwithstanding the unique structure of the petroleum industry, attempts to restrict competition thus need to be treated with caution both conceptually and with reference to the mechanism through which competition is to be restricted, if at all.

At present, Chevron’s competitors have to use infrastructure owned by Chevron when importing fuels. While this arrangement may be functional, it cannot be considered ideal from a competition perspective (i.e. having only one facility does not foster competition). Aside from the potential positive impacts of introducing a competing facility as such, the overall competitiveness and robustness of the industry should also be enhanced by the introduction of a new entrant that is independent of the existing petroleum suppliers. From a competition perspective, this makes it superior to the construction of a new facility by one of the other existing petroleum producer/suppliers.1

In summary, the project presents an opportunity to facilitate competition in the market for storage and distribution. Despite the present fuel pricing system, this should be viewed as a positive impact as it increases choice and the likelihood that costs would remain as low as possible. Note that given present administered prices, decreased costs would probably benefit fuel suppliers and not necessary be passed on to consumers in the form of lower fuel prices at the pump. As discussed previously, potential changes in the level of competition allowed in the industry may allow for this eventually.

An assessment of the significance of these impacts based on the findings above is presented in the Box below.

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1 Note that government preference for this type of arrangement if possible is outlined in the Liquid Fuels Energy Security Master Plan.
### Box 4-2 Impact significant summary: Impacts on increased opportunities for competition

**Nature:** The project presents an opportunity to facilitate competition in the market for storage and distribution.

**Sensitivity/Vulnerability/Importance of Resource/Receptor - Low**  
**Irreplaceability:** The impact will not include the loss of irreplaceable resources

**Impact Magnitude – Medium**  
- **Extent:** The extent of the impact is local and regional  
- **Duration:** The expected impact will be long-term for the life of the facility  
- **Scale:** The impact will result in notable changes to the receptor (i.e. the economy)  
- **Frequency:** The frequency of the impact will be periodic with a very high frequency making it virtually constant for the period of operations as expenditure will flow on an ongoing basis  
- **Likelihood:** Impacts are highly likely in the economy

**IMPACT SIGNIFICANCE (WITHOUT AND WITH MITIGATION) – MODERATE (+VE)**

**Degree of Confidence:** The degree of confidence is medium.

**Mitigation:**

No mitigation measures are recommended.

### 4.5 IMPACTS ON COMPETITORS

Chevron has raised concerns regarding the proposed project primarily on the basis that it would introduce a threat to their viability through the facilitation of fuel imports. Specifically, the key concern is that significant volumes of fuel would be imported through the facility and sold at lower prices that Chevron would not be able to match.

In this regard it is important to bear in mind that the proposed Burgan Oil facility would be multi-purpose in nature and could be used for the storage and distribution of both locally produced fuels and imported fuels. It is thus specifically one aspect of the facility (i.e. its potential to be used to facilitate imports) that is of concern to Chevron. Focusing on this, it is important to understand that the facility would provide the infrastructure that would facilitate or allow for fuel imports in competition with Chevron’s local production. The companies that would pay Burgan Oil to use the facility (i.e. Burgan’s tenants) would, however, be those engaging in the importation, not Burgan Oil. In addition, it is important to bear in mind that facilities already exist for the importation of fuel in the Port or Cape Town and that the major oil companies currently engage in importation. This has important implications for potential mitigation measures as it would require intervention by authorities who have the primary mandate for the economic regulation of the liquid fuels sector including the regulation of fuel imports.
In terms of volumes, the maximum throughput of the facility under safe operating conditions, estimated by Burgan Oil, and verified by ERM, is approximately 805,000 m³/yr. At current production levels, this is equivalent to between 21% and 23% of the current total petrol and diesel production of the Chevron Refinery (i.e. 3.5 - 3.8 million m³/yr).

The Fuels Sector Specialist Report provides the primary assessment of impacts on the continued viability of the Chevron Refinery (see Buley, 2014 in Appendix 2 for further details). This assessment constructs likely future fuel supply and demand balances for the Cape Town supply area. It also considers the current situation in which imports of fuel into Cape Town are already occurring along with the implications of the BFP for potential importers (bearing in mind that the BFP is designed to provide ‘international equivalent’ or import parity pricing thereby limiting the financial incentive to import).

Given inherent uncertainties associated with the need for forecasts, impacts on the Chevron Refinery are assessed by the fuels sector specialist using a worst case and a most likely case scenario. Findings for the worst case scenario are as follows (Buley, 2014, pg 10):

“Should tenants of Burgan Oil focus solely on the importation of fuels through the facility, once the refinery is Clean Fuel 2 compliant, it would be likely to have a negative impact on the Chevron Refinery amounting to an estimated loss ~$5.8 million per year or $0.21 per barrel of crude oil, which is overshadowed by the daily variations in crude and product pricing and therefore is unlikely to impact the financial viability of the Refinery. It could be addressed by cost cutting and revenue enhancement initiatives. As noted, it would be highly probable that tenants using the Burgan facility would choose to buy product from the refinery as opposed to importing which has not apparently been economically viable to date. For this reason, this scenario is considered highly unlikely – i.e. Chevron’s concern of fully importing 805 Mlpa makes little financial sense.”

Findings for the most likely scenario were as follows (Buley, 2014, pg 10):

“Under this scenario, Burgan Oil will provide more than 50% of its storage facility to an anchor tenant in the form of a major oil company and as explained, this agreement has now been signed. As discussed under the Adversarial Scenario (i.e. worst case), it is considered most likely that the anchor tenant would source petrol500 and diesel500 from the Chevron Refinery prior to the refinery being Clean Fuels 2 compliant. Should the facility be used for a storage facility for strategic stocks and imports of petrol50 and diesel50, then it is highly unlikely to have any negative impact on Chevron. The conclusion is therefore that this scenario will result in a negligible impact on Chevron.”

As per the findings of the fuels sector specialist, the keys risks associated with the proposed Burgan project should not present a threat to the overall viability of the Chevron Refinery particularly when one considers the mitigation available. Importantly, it is not anticipated that the refinery would be forced to
shut down as a direct result of the Burgan project. This should ensure that Chevron staff, sub-contractors and suppliers are to a large extent not adversely affected thereby limiting socio-economic risks. There would, however, be risks associated with manageable cost cutting and/or profit reduction particularly in the worst case scenario. This may result in socio-economic impacts such as slightly less expenditure on sub-contractors and/or suppliers or limited reductions in staff. Alternatively, it may also be possible for Chevron to retain staff and accept lower profits. Much will depend on market conditions and the willingness of Chevron to adapt and manage potential changes.

The findings outlined above imply that the risk of significant negative socio-economic impacts flowing from impacts on Chevron are low to moderate without mitigation. An assessment of the significance of these impacts without mitigation based on the findings above is presented in the Box below.

**Box 4-3 Impact significant summary: Impacts on competitors including associated socio-economic impacts and risks**

**Nature:** The project may entail risks to the financial viability of the Chevron Refinery which would imply indirect socio-economic impacts particularly if the refinery scales back or closes.

**Sensitivity/Vulnerability/Importance of Resource/Receptor – High**

**Irreplaceability:** The impact will not include the loss of irreplaceable resources

**Impact Magnitude – Low to Medium**

- **Extent:** The extent of the impact is primarily local and regional
- **Duration:** The expected impact will be long-term for the life of the facility
- **Scale:** The impact will result in notable changes to the receptor (i.e. the economy)
- **Frequency:** The frequency of the impact will be periodic with a very high frequency making it virtually constant for the period of operations as expenditure will flow on an ongoing basis
- **Likelihood:** Impacts are highly likely in the economy

**IMPACT SIGNIFICANCE (WITHOUT MITIGATION) – MINOR (-VE) TO MODERATE (-VE)**

**Degree of Confidence:** The degree of confidence is medium.

**Mitigation:**

Mitigation would need to focus on directly addressing the issue of concern – i.e. the importing of fuel at times when it is undesirable. This would require the targeting of fuel importers (i.e. tenants of the facility) and therefore the involvement of other regulatory authorities. The regulatory authorities that govern fuel imports (i.e. DoE) have a number of applicable mitigation measures that they could apply should they wish to restrict imports through the proposed facility (or any other similar facility for that matter). Chief among these are existing measures that are part of the current regulatory environment in which the DoE only grants permission to import fuels when local shortages can be proven (as outlined in section 3.7.2 and as emphasised
in the Fuels Sector Specialist). Other additional measures that could also be implemented, but are less likely to be necessary assuming the implementation of existing measures, include the following (Buley, 2014, pg 10):

- “Linkage of the Burgan facility into the Refinery white oil line to enable product to be moved from the refinery. Burgan has already raised this with Chevron. Control of the consumption of petrol50 and diesel50 in vehicles that are capable of using petrol500 and diesel500 through the Demand Side Management Levy mechanism.
- The reformulation of the BFP sourcing model and calculations to reflect the correct landed cost of refined products. The oil industry has already initiated this with Department of Energy.”

If appropriately crafted and implemented, the above existing and potential additional measures would be preferable for the following reasons:

- They would address the imports issue directly and could be tailored to appropriate time periods, bearing in mind that the desirability of imports is likely to fluctuate.
- They could be designed and implemented by the appropriate authorities in keeping with their mandates specifically with respect to fuel import regulation.
- They would be in keeping with the current DoE regulatory framework in which any party wishing to import fuel is also obligated to first enquire whether other local fuel producers have stock available in the country. The DoE then has the opportunity to assess the situation and only grant permission to import once it can be confirmed that stock is not available locally (see section 3.7.2 for further details).
- They could be designed in a way that ensures that they have minimal impact on the availability of the Burgan facility to augment security of supply (i.e. any concerns around imports could be dealt with whilst not foregoing the other strategic benefits of the project as outlined in Sections 4.3 and 4.4.).
- They are likely to be a more equitable way of restricting imports should this be found desirable as they could be applied to importers using existing facilities and importers using the proposed Burgan facility.

It is therefore recommended that the environmental authorities overseeing the EIA process engage with the DoE around the potential need for these measures in the spirit of co-operative governance required in order to collectively achieve sustainable development as envisaged by NEMA and The Constitution.

The applicant should also be required to assist with mitigation by committing to the transparent provision of data to the relevant authorities on fuel movements through their facility. This could, for example, include data on fuel types, volumes and sources per customer.
4.5.1 **Residual impacts**

The implementation of the above mitigation measures should result in impacts with a **Minor Negative** significance. The pre- and post-mitigation impacts are compared in Table 4-3 below.

**Table 4-1 Pre- and Post-Mitigation Significance: Impacts on Competitors including associated socio-economic impacts and risks**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Significance (Pre-mitigation)</th>
<th>Residual Significance (Post-mitigation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>MINOR (-ve) TO MODERATE (-ve)</td>
<td>MINOR (-ve)</td>
</tr>
</tbody>
</table>

### 4.6 **Impacts linked to construction and operational expenditure**

The construction and operational phase of the project would result in spending injections that would lead to increased economic activity best measured in terms of impacts on employment and associated incomes.

All expenditures would lead to direct, indirect and induced impacts on employment and incomes. Taking employment as an example, impacts would be direct where people are employed directly on the project in question (e.g. jobs such as construction workers), indirect - where the direct expenditure associated with a project leads to jobs and incomes in other sectors (e.g. purchasing building materials maintains jobs in that sector) and induced where jobs are created due to the expenditure of employees and other consumers that gained from the project. Direct impacts are the most important of these three categories as they are the largest and more likely to be felt in the local area. Their estimation also involves the lowest level of uncertainty. The quantification of indirect and induced impacts is a far less certain exercise due to uncertainty surrounding accurate multipliers particularly at a local and regional level. This uncertainty makes it inadvisable to quantify indirect employment unless an in-depth analysis of this aspect is absolutely essential to decision making. Potential direct employment and income impacts are consequently quantified here and likely indirect impacts are borne in mind qualitatively when providing overall impact ratings.

#### 4.6.1 Construction phase impacts

**Project construction expenditure/investment**

Construction expenditure would constitute a positive injection of new investment. The applicant’s preliminary estimates indicate that a total of approximately R460 million to R485 million (+/-25%) would be spent on all aspects of the construction phase. Note that this spending estimate and other expenditure and employment estimates are preliminary and considered accurate to within 25%.
The project has the potential to have a positive impact on commercial activity in the local area during construction given its size and the expenditure associated with it outlined above. During the construction phase the building construction, civil and other construction and specialist industrial machinery sectors would benefit substantially. The structural metal products, wholesale and retail trade and construction materials sectors would also stand to gain due to indirect linkages. The project would provide an injection for contractors and workers in the local area and region leading to positive impacts.

Employment during construction

Table 4-1 outlines the total construction phase employment that is anticipated by the applicant for the project. Approximately 110 to 130 contract jobs (+/- 25%) with an average duration of 18 to 22 months each would be associated with all construction expenditure. Bear in mind that the estimates are not to be regarded as highly accurate and are meant to give an indication of potential employment impacts.

Table 4-2  Estimated direct temporary employment during construction

<table>
<thead>
<tr>
<th>Number of workers</th>
<th>Duration of employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly skilled</td>
<td>Medium skilled</td>
</tr>
<tr>
<td>15 - 20</td>
<td>35 - 40</td>
</tr>
<tr>
<td>Construction workers (indicative)</td>
<td></td>
</tr>
</tbody>
</table>

Indirect opportunities during construction

In addition to the above direct employment and associated income opportunities, additional temporary indirect opportunities would be associated with the project. These would stem primarily from expenditure by the applicant in the local area and region as well as expenditure by workers hired for the construction phase.

Overall impacts and impact significance

An assessment of the significance of the combined impacts of project-related expenditure based on the findings above is presented in the Box below.
Box 4-4 Summary of Construction Phase Impact: Impacts Linked to Construction Expenditure

**Nature:** Expenditure on construction would result in a positive impact on the economy, increasing commercial activity, creating jobs and increasing incomes.

**Sensitivity/Vulnerability/Importance of Resource/Receptor - Low**

Irreplaceability: The impact will not include the loss of irreplaceable resources

**Impact Magnitude – Low-Medium**

- **Extent:** The extent of the impact is local and regional
- **Duration:** The expected impact will be short-term (i.e. reversible)
- **Scale:** The impact will result in notable changes to the receptor (i.e. the economy)
- **Frequency:** The frequency of the impact will be Once-off but for the duration of construction
- **Likelihood:** Impacts from expenditure are a certainty in the economy

**IMPACT SIGNIFICANCE (PRE-MITIGATION) – MINOR TO MODERATE (+VE)**

Degree of Confidence: The degree of confidence is high.

Construction Phase Mitigation:

The objective of mitigation would be to maximise economic benefit from jobs and expenditure particularly at a local and regional scale.

Mitigation measures should include:

- Use of local contractors and sub-contractors where possible.
- Setting of targets (in tender documents, for example) for how much local labour should be used during construction and operations.
- Provision of training opportunities where possible.

4.6.2 Operational phase impacts

**Project expenditure/investment during operations**

The key operational phase impacts associated with the project would flow from expenditure on operations at the facility. Operational costs in the first few years of production have been estimated at between R22 million and R23.5 million (+/-25%) and would increase gradually thereafter in line with throughput.

**Employment and incomes during operations**

Table 4-2 outlines the operational phase direct employment opportunities that are anticipated by the applicant. Approximately 19 jobs would be created implying total salary payments of approximately R7 million per year (+/-25%). Additional opportunities would also be associated with the outsourcing of some functions such as jetty operator services.
Table 4-3  Operational employment

<table>
<thead>
<tr>
<th>Employment categories</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Manager</td>
<td>1</td>
</tr>
<tr>
<td>Finance Administration</td>
<td>1</td>
</tr>
<tr>
<td>Finance Administration and human resources</td>
<td>1</td>
</tr>
<tr>
<td>Operations Manager (incl health and safety)</td>
<td>1</td>
</tr>
<tr>
<td>Shift leaders</td>
<td>5</td>
</tr>
<tr>
<td>Tankfarm operators</td>
<td>5</td>
</tr>
<tr>
<td>Maintenance &amp; repair Coordinator</td>
<td>1</td>
</tr>
<tr>
<td>Maintenance &amp; repair Technician</td>
<td>1</td>
</tr>
<tr>
<td>Control systems representative</td>
<td>1</td>
</tr>
<tr>
<td>Control systems desk staff</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>

Indirect opportunities during operations

In addition to the above direct employment and associated income opportunities, indirect opportunities would be associated with the operational phase of the project. These would stem primarily from increased expenditure by Burgan and its employees in the local area and region.

Overall impacts and impact significance

An assessment of the significance of the combined impacts of project-related expenditure based on the findings above is presented in the Box below.

**Box 4-5**  Summary of Operational Phase Impact: Impacts Linked to Operational Expenditure

**Nature:** Expenditure on operations would result in a positive impact on the economy, increasing commercial activity, creating jobs and increasing incomes.

**Sensitivity/Vulnerability/Importance of Resource/Receptor – Low**

**Irreplaceability:** The impact will not include the loss of irreplaceable resources

**Impact Magnitude – Low-Medium**

- **Extent:** The extent of the impact is local and regional
- **Duration:** The expected impact will be long-term for the life of the facility
- **Scale:** The impact will result in notable changes to the receptor (i.e. the economy)
- **Frequency:** The frequency of the impact will be periodic with a very high frequency making it virtually constant for the period of operations as expenditure will flow on an ongoing basis
- **Likelihood:** Impacts from expenditure are a certainty in the economy

**IMPACT SIGNIFICANCE (PRE-MITIGATION) – MINOR TO MODERATE (+VE)**

**Degree of Confidence:** The degree of confidence is high.
Operational Phase Mitigation:

The objective of mitigation is to: maximise economic benefit from jobs and expenditure particularly at a local and regional scale.

Mitigation measures would be the same as for the construction phase focused on local employment and procurement as outlined in more detail in construction phase mitigation section.

4.6.3 Residual impacts

The implementation of the above mitigation measures should result in positive construction and operational phase impacts with a Moderate significance. The pre- and post-mitigation impacts are compared in Table 4-3 below.

Table 4-4 Pre- and Post-Mitigation Significance: Impacts Associated with Project Expenditure

<table>
<thead>
<tr>
<th>Phase</th>
<th>Significance (Pre-mitigation)</th>
<th>Residual Significance (Post-mitigation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>MINOR TO MODERATE (+ve)</td>
<td>MODERATE (+ve)</td>
</tr>
<tr>
<td>Operations</td>
<td>MINOR TO MODERATE (+ve)</td>
<td>MODERATE (+ve)</td>
</tr>
</tbody>
</table>

The no-go would result in no construction and operational phase impacts as outlined above. The opportunities created by the positive impacts associated with expenditure on the project would thus not materialise.
5 CONCLUSIONS

The available information provides no reason to suspect that the project would be a financial failure. In addition, no hidden subsidies in favour of the applicant were found and environmental externalities or costs associated with the project were found to be negligible to very low. Direct cost-benefit analysis considerations therefore do not provide reasons to argue against the desirability of the project provided adequate mitigation is applied.

It was found that the proposed project is compatible with, and generally supportive of, the relevant national policies and plans. These include those related to security of supply, the maintenance of strategic stocks, infrastructural needs, spatial and capacity planning at the Port of Cape Town and the facilitation of greater competition.

The key area of concern regarding the project relates to its potential to result in imports that take market share away from Chevron to the degree that its viability is put at risk. The inputs of the fuels sector specialist indicate that, notwithstanding inherent uncertainties, risks to the continued viability of the Chevron Refinery should be negligible for the most likely scenario and low for the worst case scenario with mitigation. Chevron staff, sub-contractors and suppliers should therefore remain largely unaffected resulting in low socio-economic risks.

If found to be appropriate, mitigation in this regard would need to focus on directly addressing the importing of fuel at times when it is undesirable without foregoing the other advantages of the facility (i.e. providing storage, augmenting security of supply and facilitating competition). This would require the targeting of fuel importers and therefore the involvement of the regulatory authorities that govern fuel imports (i.e. the Department of Energy - DoE) who have existing measures in place and could considered additional measures if needed. It is therefore recommended that the environmental authorities overseeing the EIA process engage with the DoE around the potential need for these measures in the spirit of co-operative governance required in order to collectively achieve sustainable development.
6 REFERENCES


Appendix 1: ERM method of assessing the environmental issues and alternatives

The adequate assessment and evaluation of the potential impacts and benefits that will be associated with the proposed project necessitates the development of a scientific methodology that will reduce the subjectivity involved in making such evaluations. A clearly defined methodology is used in order to accurately determine the significance of the predicted impact on, or benefit to, the surrounding natural and/or social environment. For this the proposed project must be considered in the context of the area and the people that will be affected.

Nonetheless, an impact assessment will always contain a degree of subjectivity, as it is based on the value judgment of various specialists and EIA practitioners. The evaluation of significance is thus contingent upon values, professional judgement, and dependent upon the environmental and community context. Ultimately, impact significance involves a process of determining the acceptability of a predicted impact to society.

The purpose of impact assessment is to identify and evaluate the likely significance of the potential impacts on identified receptors and resources according to defined assessment criteria, to develop and describe measures that will be taken to avoid, minimize, reduce or compensate for any potential adverse environmental effects, and to report the significance of the residual impacts that remain following mitigation.

There are a number of ways that impacts may be described and quantified. An impact is essentially any change to a resource or receptor brought about by the presence of the proposed project component or by the execution of a proposed project related activity.

The nature of the project may determine whether one needs to assess both routine and non-routine impacts. Non-routine impacts generally relate to accidents and could include oil/chemical/fuel spills, emergency venting of noxious gases, etc. In most cases, it would be sensible to have separate chapters for the assessment of routine and non-routine impacts.

The types of impacts and terminology to be used in the assessment are outlined in Table 7.1.
Table 7.1  Defining the Nature of the Impact

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact nature</td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>An impact that is considered to represent an improvement on the baseline or introduces a positive change.</td>
</tr>
<tr>
<td>Negative</td>
<td>An impact that is considered to represent an adverse change from the baseline, or introduces a new undesirable factor.</td>
</tr>
<tr>
<td>Direct impact</td>
<td>Impacts that result from a direct interaction between a planned project activity and the receiving environment/receptors (eg. between occupation of a site and the pre-existing habitats or between an effluent discharge and receiving water quality).</td>
</tr>
<tr>
<td>Indirect impact</td>
<td>Impacts that result from other activities that are encouraged to happen as a consequence of the Project (eg. in-migration for employment placing a demand on resources).</td>
</tr>
<tr>
<td>Cumulative impact (1)</td>
<td>Impacts that act together with other impacts (including those from concurrent or planned future third party activities) to affect the same resources and/or receptors as the Project.</td>
</tr>
</tbody>
</table>

Assessing Significance

There is no single accepted definition of ‘significance’ and its determination is, therefore, somewhat subjective. However, it is generally accepted that significance is a function of the magnitude of the impact and the likelihood of the impact occurring. It is widely accepted that Impact Magnitude (or Severity) is a function of the extent, duration and intensity of the impact.

The criteria used to determine significance are summarised in Table 7.2. These criteria (specifically Extent and Duration) should be customised to suit individual projects.

Table 7.2  Significance Criteria

| Impact magnitude – the degree of change brought about in the environment |
|---------------------------|------------------------------------------------------------------------|
| Extent                    | On-site - impacts that are limited to the site boundaries.             |
|                           | Local – impacts that affect an area in a radius of 5 km around the site. |
|                           | Regional – impacts that affect regionally important environmental resources or are experienced at a regional scale as determined by administrative boundaries, habitat type/ecosystem. |
|                           | National – impacts that affect nationally important environmental resources or affect an area that is nationally important/ or have macro-economic consequences. |
|                           | Transboundary/International – impacts that affect internationally important resources such as areas protected by international conventions. |
| Duration                  | Temporary – impacts are predicted to be of short duration and intermittent/occasional. |
|                           | Short-term – impacts that are predicted to last only for the duration of the construction period. |
|                           | Long-term – impacts that will continue for the life of the Project, but ceases when the Project stops operating. |
|                           | Permanent – impacts that cause a permanent change in the |

(1) The assessment of cumulative impacts is qualitative and is often discussed in a separate chapter in the ESIA Report. One should remember to include the assessment of cumulative impacts in the terms of reference to specialists.
affected receptor or resource (e.g., removal or destruction of ecological habitat) that endures substantially beyond the Project lifetime.

BIOPHYSICAL ENVIRONMENT: Intensity can be considered in terms of the sensitivity of the biodiversity receptor (i.e., habitats, species or communities).

Negligible – the impact on the environment is not detectable.
Low - the impact affects the environment in such a way that natural functions and processes are not affected.
Medium – where the affected environment is altered but natural functions and processes continue, albeit in a modified way.
High – where natural functions or processes are altered to the extent that it will temporarily or permanently cease.

Where appropriate, national and/or international standards are to be used as a measure of the impact. Specialist studies should attempt to quantify the magnitude of impacts and outline the rationale used.

SOCIO-ECONOMIC ENVIRONMENT: Intensity can be considered in terms of the ability of project affected people/communities to adapt to changes brought about by the Project.

Negligible – there is no perceptible change to people’s livelihood
Low - People/communities are able to adapt with relative ease and maintain pre-impact livelihoods.
Medium - Able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support.
High - Those affected will not be able to adapt to changes and continue to maintain pre-impact livelihoods.

Impact likelihood – the likelihood that an impact will occur
Unlikely The impact is unlikely to occur.
Likely The impact is likely to occur under most conditions.
Definite The impact will occur.

Once a rating is determined for magnitude and likelihood, the matrix in Table 7.3 can be used to determine the impact significance.

**Table 7.3** Example of Significance Rating Matrix for Positive and Negative Impacts

<table>
<thead>
<tr>
<th>SIGNIFICANCE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIKELIHOOD</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>MAGNITUDE</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

A colour scale for negative and positive ratings is given in Table 7.4

**Table 7.4** Colour Scale for Ratings

(1) The frequency of the activity causing the impact also has a bearing on the intensity of the impact, i.e., the more frequent the activity, the higher the intensity.
Table 7.5 outlines the various definitions for significance of an impact and is based on the significance rating matrix.

**Table 7.5 Significance Definitions**

<table>
<thead>
<tr>
<th>Significance definitions</th>
<th>Negative ratings</th>
<th>Positive ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible significance</td>
<td>An impact of negligible significance is where the magnitude is negligible, low or medium and the likelihood of the impact occurring is unlikely or likely.</td>
<td></td>
</tr>
<tr>
<td>Minor significance</td>
<td>An impact of minor significance is where a resource or receptor will not be affected in any way by a particular activity, or the predicted effect is deemed to be imperceptible or is indistinguishable from natural background levels.</td>
<td></td>
</tr>
<tr>
<td>Moderate significance</td>
<td>An impact of moderate significance is where the magnitude is medium to high and the likelihood of the impact occurring is likely or definite.</td>
<td></td>
</tr>
<tr>
<td>Major significance</td>
<td>An impact of major significance is where the magnitude of the impact is medium to high and the likelihood of the impact occurring is also likely or definite.</td>
<td></td>
</tr>
</tbody>
</table>

Once the significance of the impact has been determined, it is important to qualify the degree of confidence in the assessment. Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact. Degree of confidence can be expressed as low, medium or high.

**Mitigation Potential and Residual Impacts**
It is expected that for the identified significant impacts, the project team will work with the client in identifying suitable and practical mitigation measures that are implementable. Mitigation that can be incorporated into the Project design in order to avoid or reduce the negative impacts or enhance the positive impacts will be developed. A description of these mitigation measures should also be included within the Framework ESMP.

Residual impacts are those impacts which remain once the mitigation measures have been designed and applied. Once the mitigation is applied, each impact is re-evaluated (assuming that the mitigation measure is effectively applied) and any remaining impact is rated once again using the process outlined above. The result is a significance rating for the residual impact.

The approach taken to defining mitigation measures is based on a typical hierarchy of decisions and measures, as described in Box 7-1.

**Box 7-1 Mitigation Hierarchy**

<table>
<thead>
<tr>
<th>THE MITIGATION HIERARCHY FOR PLANNED PROJECT ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Avoid at Source; Reduce at Source</strong></td>
</tr>
<tr>
<td>Avoiding or reducing at source is essentially ‘designing’ the project so that a feature causing an impact is designed out (eg a waste stream is eliminated) or altered (eg reduced waste volume). Often called minimisation.</td>
</tr>
<tr>
<td><strong>Abate on Site</strong></td>
</tr>
<tr>
<td>This involves adding something to the basic design to abate the impact - pollution controls fall within this category. Often called ‘end-of-pipe’.</td>
</tr>
<tr>
<td><strong>Abate at Receptor</strong></td>
</tr>
<tr>
<td>If an impact cannot be abated on-site then measures can be implemented off-site - an example of this would be to use the stand-by vessel to help control the level of interference with fishing activity.</td>
</tr>
<tr>
<td><strong>Repair or Remedy</strong></td>
</tr>
<tr>
<td>Some impacts involve unavoidable damage to a resource, eg land disturbance. Repair essentially involves restoration and reinstatement type measures, such as base camp closure.</td>
</tr>
<tr>
<td><strong>Compensate in Kind</strong></td>
</tr>
<tr>
<td>Where other mitigation approaches are not possible or fully effective, then compensation, in some measure, for loss, damage and general intrusion might be appropriate.</td>
</tr>
</tbody>
</table>
Fuel Sector Specialist Report

Final Report

June 2014

Prepared for:

Environmental Resources Management (ERM)

Prepared by:

Paul Buley
1. Introduction

Background and purpose

The purpose of this report is to consider and respond to concerns raised regarding (1) the impact on the Chevron refinery’s operations of the proposed Eastern Mole fuel and oil storage facility to be constructed by Burgan Cape Terminals (Pty) Ltd, (2) the reasonable likelihood that the proposed facility will be able to achieve financial viability and (3) the security of supply enhancement benefits of the project.

Terms of reference

- Consider the concerns raised by Chevron in the environmental impacts assessment process regarding the possible impacts of the proposed facility on the Chevron Refinery.
- Review and comment on supply and demand balances in the Cape Town supply area based on analyses previously undertaken for the oil industry and other publicly available official statistics on fuel import/export volumes that may be relevant when considering the impact of the proposed facility on the Chevron Refinery.
- Assess the present and future market demand\(^1\) for the Cape Town supply area and the sourcing of product from the Chevron Refinery and imports to meet this demand.
- Assess the impact of the proposed facility on the Chevron Refinery. If a negative conclusion is reached regarding the likely impact of the proposed facility on the Chevron then this will be quantified to the degree possible.
- Assess whether a terminal in the Cape Town harbour will enhance the security of supply for the Cape Town area taking cognisance of the relevant nuances of the Cape Town supply area.
- Consider the financial viability of the proposed facility, providing an outline of risks and opportunities and clarity on whether and why financial viability is to be expected recognising that absolute certainty with regard to future viability predictions are not possible.

Overall approach

In order to address the above terms of reference, this report comprises four distinct sections which include:

- A discussion of the impact of the proposed facility on the security of supply in the Cape Town supply area (defined by magisterial districts agreed within the oil industry for the FSSTT\(^2\) study).
- A discussion on the likely financial viability of the project.
- An analysis of the demand and supply dynamics within the Cape Town area and the concomitant impact of the proposed facility on the Chevron Refinery.
- Finally based on the above, conclusions are drawn in relation to the terms of reference detailed above.

The primary input into in the overall analysis of this report is the expected supply and demand balances for the Cape Town supply area from 2014 to 2020. The two main

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\(^1\) Petrol, illuminating kerosene, jet fuel and diesel.

elements in determining the overall supply and demand analysis are the anticipated market demand for the Cape Town supply area and the refinery production for the area (the supply). Based on the above analysis, a shortfall in supply would require imports (from other areas, either within South Africa or from elsewhere) and a surplus of supply would require exports.

The data used for the demand and supply analysis was based on client studies undertaken between 2006 and 2009 on the RSA supply/demand balances, broken down into 21 major terminals (which include Cape Town) as well as data developed on the Chevron Refinery capacity and harbour infrastructure. Chevron was willing to provide more current information but does not wish it to be used in the environmental impact assessment due to the confidentiality of its operations (refinery utilisation, imports and exports). No confidential information (either that provided by Chevron or obtained by the writer in his employment with Chevron) was used in the preparation of this report. Instead, judgement and experience in the oil sector were applied as to what would be reasonable assumptions. The absence of data on Chevron’s refining margins and conflicting industry data on imports resulted in an approximated quantitative analysis based on supporting industry data. In addition, the analysis of the Chevron Refinery’s position needs to be seen in the light of forecasts where demand growth, refining margins and exchange rates are purely assumptions of the future and have a 50% probability of being higher or lower than forecast.

The writer’s qualifications and experience with respect to the type of analysis performed above is detailed further as an addendum to this document

2. Security of supply

Following the country wide fuel shortages in 2005/6 and investigations thereafter,¹ various actions have been taken within South Africa to improve the security of fuel supply through adequately sized logistics for all probable supply incidents e.g. the upgrading of inland pipelines, terminal and depot tankage and port offloading capacities at Durban and Cape Town. In economic terms, the upgrading of pipelines, terminals, depots etc. has been the most effective deployment of capital to ensure the security of supply. Gas and coal to liquid plants (XTL) using indigenous feedstock offer the most security but have a long development time frames and are very expensive. Oil refineries using imported crude add to the security of supply and are less expensive than XTL plants. However they are, to a degree, inflexible with regard to crude sourcing as crude refineries are designed for specific crude types and have limited capabilities of operating efficiently outside a narrow band of crude oil types. For example, South African refineries are designed to refined crude oil from the Middle East. If there was conflict in the Middle East and crude oil was not readily available from Middle Eastern countries, South African refineries would only be able to operate at reduced capacity. However, globally the refining impact would be less significant and refined product could be sourced from many other places in the world where refineries are designed to refine crude oil sourced from places other than the Middle East, albeit at higher prices and freight costs.

As an indication, the cost of country-wide fuel shortages (stock out costs) for South Africa have been estimated at R925 million per day (2005 GDP).¹ The referenced study analysed the business sectors of the economy which relied on liquid fuels and determined the impact fuel shortages would have on their contributions to Gross Domestic Product.

Supply/demand balances
Supply/demand balances which reflect a shortage of product provide a valuable insight into the vulnerability of the supply with respect to the infrastructure at a location and its ability to cope with all probable supply incidents.

The South African Petroleum Industry Association (SAPIA) annual report 2012 tabulates the petroleum imports and exports for petrol, diesel and jet fuel as well as the imports derived from demand/refining capacity balances for 2012. Page 37 of the annual report (reproduced below) shows that the supply shortfalls (imports) from refineries were 11% and 17% of petrol and diesel respectively. However from the import/export table on the same page, the imports are 13% and 34% for petrol and diesel respectively.

Differences (between refining production capabilities and the delivery of refined product) are common and are usually caused by longer than planned events that have an impact on refinery output (shutdowns and slowdowns) and unplanned incidents (equipment failures, EHSQ incidents, industrial action and power outages). These differences also need to be borne in mind when analysing demand and supply balances within a particular area.

Cape Town supply area balances
Chevron has provided a confidential forecast of its expectations for the supply/demand balances for petrol and diesel only in the Cape Town supply area from 2014 onwards.² Based on Chevron’s planned production, Chevron expects to

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² Economic Specialist Report (Van Zyl & Leiman 2014 Section 3 page 15)
produce diesel in excess of the forecast demand for the area and consequently the resultant oversupply will need to be exported up the coast. Petrol50 and diesel50 have significantly higher rates of growth in demand than the overall demand requirement for current sulphur standard petrol and diesel. (Note: petrol50 and diesel50 growth should have been linked to the growth in the number of vehicles to be sold manufactured with modern engine technology (see Clean Fuels 2 below)).

As discussed above, refinery supply forecasts can be overestimated, resulting in higher imports than planned. A review of import volumes into Cape Town in 2013 from various sources\(^2\) ranged from 678 to 119 Ml\(^3\) for petrol and 391 to 304 Ml for diesel. This variation adds to the challenge posed by other uncertainties in evaluating the impact of the facility on Chevron. The imports around the refinery shut-down window in February 2013 range from ~120 Ml and 122 to 180 Ml for petrol and diesel respectively. The provision of a storage facility will greatly assist with the security of supply in Cape Town in the event of a scheduled refinery shutdown, however it is Chevron’s view that the above does not provide a viable business case for Burgan’s proposed facility whose planned throughput has been tabled at 805 Mlpa.\(^4\)

Clean Fuels 2

Over 100 000 people are employed in the motor assembly and parts sector, producing passenger vehicles with modern technology engines for the domestic and export markets. These engines have been designed to meet European vehicle emission standards in order to reduce atmospheric pollution and brown haze incidents over cities. The main fuel specifications that impact on the latest engine technology are the sulphur in petrol and diesel. The National Association of Automobile Manufacturers of South Africa (NAAMSA) has motivated for Clean Fuels 2 grades of petrol and diesel to be introduced into the market place earlier than the current target date of July 2017, when refineries are scheduled to be upgraded over a window period of 18 months to supply these products. The NAAMSA guideline requirements\(^5\) in 2011 were for petrol50 to have a 10% distribution by 2012 (current grades are petrol500 and diesel500). A wider distribution of diesel50 was required by not later than 2012. Based on the forecast vehicle sales, the market would require >35% of petrol50 and >15% diesel50 by 2017. This translates into an import requirement for the Cape Town supply area of 864 Mlpa of products (petrol50 +diesel50) which Chevron is unable to produce at its refinery as currently configured. At present diesel50 is available in certain area of the Cape Town supply area but petrol50 is not available anywhere.

It appears that the draft fuel specifications have not yet been finalised nor has the funding mechanism for the refinery upgrades for Clean Fuels 2 compliance been determined. Consequently some refineries may be reluctant to progress with developing the necessary upgrades required in order to produce the Clean fuels 2 (in particular petrol50 and diesel50) – a process which will likely take 4 years to complete. As a result of this, RSA will require increasing volumes of Clean Fuels 2 petrol50 and diesel50 to be imported and be made available for the motorist. A

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1. Petrol50=petrol of 95 Octane and 50ppm sulphur  Diesel50 =diesel of 50ppm sulphur
2. Transnet, SARS and Chevron
3. Ml = mega-litres = thousand cubic meters
4. Mlpa = mega-litres per annum
5. NAAMSA website
further complication for the industry with the introduction of clean fuels is that the products will require separate receiving and distribution systems in order to minimise contamination of the 50ppm sulphur products by the 500ppm sulphur products. It is noted that the Burgan facility, if constructed, has been designed to eliminate this potential for contamination.

Overall assessment of the project’s contribution to security of supply

The existing two bulk liquid berths in the Cape Town harbour are capable of handling 3.4 MTPa and are being utilised 60% to 75% to the time. If the project proceeds, it will equip a third berth with offloading gantries and dedicated lines for each product, tankage and road truck loading racks. Chevron’s white oil (refer footnote 1) pipeline linking the harbour to the refinery is used for multiproduct imports/exports as well as supplying product to the nearby BP and Engen terminals. It is estimated to have some spare capacity but not sufficient for the supply area requirements over a prolonged period. The proposed project will contribute to the security of supply in the following unplanned circumstances:

- A harbour incident involving a vessel at either of the existing bulk liquid berths.
- A refinery incident (fire, critical equipment failure, industrial action) which causes an unplanned outage or slowdown of more than 6 weeks.
- Damage to or failure of Chevron’s 20km white oil pipeline linking the refinery to the harbour.
- An urgent demand by Eskom for diesel as a result of county wide power shortages (Eskom gas turbines at Atlantis are estimated to be capable of consuming more than twice the daily diesel demand of the supply area, based on data supplied by Eskom in the FSSTT study).

In addition, if constructed, the facility will enable the following benefits to be achieved:

- Making imported petrol50 and diesel50 available to all motorists whose vehicles require these grades and bridging the supply gap due to the likely delay in meeting the target window of July 2017 to December 2018 for refineries to upgrade to produce these fuels.
- Provide storage for Clean Fuel strategic stock holding requirements.

3. Financial viability of the project

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 refinery. Storage of strategic stocks for companies without facilities in Cape Town would be an added benefit. These requirements have been met, as set out below.

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

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1 Transnet. MTPa= mega-tons per year = thousand kilo tons per year
- 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 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 MI of storage.

Considering the drivers above, it is concluded that there is a high probability that the proposed project will be 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.

4. Demand and supply forecasts and the potential impact on the Chevron Refinery

Chevron’s forecast, (which, as mentioned above, is confidential and details may not be quoted) provided for its 2014+ production of petrol and diesel, shows supply data which matches expected demand for petrol and shows that a surplus of diesel (i.e. production in excess of demand in the Cape Town area) will be exported up the coast declining to near zero by 2020 as local demand for diesel absorbs the excess production. Based on the forecast, small volumes of diesel50 would be supplied for the market from the refinery but no petrol50. Given the above, Chevron’s concern is that if the Burgan facility is constructed, significant volumes of petrol and diesel would be imported by Burgan’s tenants at a lower price than the Basic Fuel Price (BFP) which determines the refinery profitability. The lower demand on the refinery would result in increased exports or could result in lower crude runs making the refinery unprofitable and potentially resulting in it being shut down.

With regard to the potential imports, one needs to question why the existing oil companies, who are currently able to import significant volumes of product into Cape Town, have not done so in the past or at present. There is berth capacity and an unknown volume of pipeline capacity, so the opportunity is clearly currently available. The logical conclusion would be that due to the BFP, which regulates the prices of petrol and diesel around the coast, and the cost of shipping refined product from Durban to Cape Town at a cost of between $1.90 and $2.50 per barrel, makes importing product into Cape Town economically unattractive. The only situation where importing is likely to occur is when Chevron is unable to supply products of an appropriate quality (or quantity). It has however been pointed out in recent discussions with Chevron and other sources that it is indeed possible to land product at a lower cost than BFP (apart from the reality that the BFP is an average of two
import prices\(^1\), of which one will usually be lower than the other). However there appear to be known errors in the BFP workup\(^2\) for both petrol and diesel which are receiving the attention of the Department of Energy and the oil industry. Despite this and given that there have been no significant product imports to date, it follows therefore that there is a high probability that the anchor tenant for Burgan is likely to source its product from the refinery (rather than source via importation). Failing this, the tenant would be required to apply for an import permit from the Department of Energy which would be rejected if spare refining capacity was available locally from which the required product can be sourced.\(^3\) Given the above, there appear to be two sources of protection for the Chevron Refinery against the risks it perceives from the construction of the Burgan facility. These are firstly, the shipping cost of importing the product into Cape Town versus the lower cost of sourcing product directly from the Chevron refinery and, secondly, the permitting process administered by the Department of Energy which protects local refineries.

Clean Fuels 2 is a different challenge with a lower level of certainty regarding the pace at which this demand will grow. For the most part local refineries are unable to meet the current market requirements, let alone the volumes expected by NAAMSA. If the demand for diesel50 and petrol50 is not met by the industry one might anticipate some form of customer reaction because the emission control systems of their new vehicles will be compromised by the use of diesel50 and petrol50 products. Alternatively an oil company might deem it to be a marketing opportunity to grow market share. Supplying the petrol50/petrol500 and diesel50/diesel500 inland is problematic as the pipeline system and receiving depots are not configured to receive the four products. However there is little reason for not doing this at the coast, as already both diesel50 and diesel500 are sold at a number of service stations and as the Lead Replacement Petrol volumes dwindle, this grade could be withdrawn and those tankage and forecourt pumps placed into petrol50 service.

Chevron has expressed concern that importing clean fuels will erode its refined volumes as it is unable to produce petrol50 and only limited quantities of diesel50. Motorists have a tendency to buy the “best” quality fuel that is available as they believe it is good for their vehicle engines and this can result in an unnecessary demand growth for these products. A remedy is already in place inland, through a Demand Side Management Levy, administered by the Department of Energy, to curb the unwarranted use of 95 Octane petrol inland. The same mechanism could be used by the Department of Energy to curb the needless purchasing of clean fuels.

Chevron has requested that a more detailed evaluation be carried out with regard to the impact that the proposed Burgan facility would have on its profitability and viability. In order to conduct the above analysis, there is simply not sufficient Chevron data publicly available nor is there sufficient confidence in future crude, product prices and exchange rates to conduct such an analysis to a degree of detail that will result in a high degree of confidence. Further, should Chevron provide the

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\(^1\) Department of Energy: Working Rules to Administer the Basic Fuel Price (BFP) Methodology.

\(^2\) Department of Energy: Working Rules to Administer the Basic Fuel Price.

\(^3\) Import permits are issued by the International Trade Administration Commission under the International Trade Administration Act, 71 of 2002, and on the recommendation of the Department of Energy under the Guidelines Governing the Recommendations by the Department of Minerals and Energy to the International Trade Administration Commission in Respect of the Importation and Exportation of Crude Oil, Petroleum Products and Blending Components, published in GN 1069 in Government Gazette 29328 of 3 November 2006.
data on condition of confidentiality, it could then not be used in a report legally required to be released to interested and affected parties and the competent authority to inform the decision making process regarding authorisation of the proposed facility. The following information is not available in the public domain:

- The types, volumes, proportions and costs of crudes processed at the Chevron Refinery.
- The volumes and prices of Liquefied Petroleum Gas and fuel oils sold to ships.
- The volume and prices of fuel oil exported offshore.
- The variable costs relating to fuel consumed, electricity, water, catalysts and chemicals.
- The fixed costs to cover staffing, contractors, all services, maintenance and repairs.
- Inventory and exchange rate adjustments.

However in being required to assess the impact of the Burgan storage facility on Chevron’s continued viability, it is possible to estimate the magnitude of the impact using a supply/demand model and the simple basis of shipping costs. Refinery profitability (excluding exchange and inventory adjustments) can be assessed in the following manner based on each barrel of crude processed:

Product revenue less crude costs less variable costs less fixed costs = net margin
Net margin x crude processed = Refining profit before tax, interest and depreciation.

A supply/demand model covering 2013 to 2020 was developed on the basis of the data provided by Chevron and modified for the following:

- The inclusion of import volumes for shutdowns.
- The inclusion of jet fuel with a growth of 5%pa.
- Petrol50 was excluded as currently there appears to be no market demand for this product.
- The volume of diesel50 currently placed in the market was grown by 10% pa in line with NAAMSA’s forecast of demand basis vehicle sales.
- A factored adjustment to the refinery supply data to reflect the impact of unplanned events.
Based on the above, the estimated demand and supply values in Ml are presented below:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mogas500</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market demand</td>
<td>1731</td>
<td>1734</td>
<td>1733</td>
<td>1741</td>
<td>1746</td>
<td>1746</td>
<td>0</td>
</tr>
<tr>
<td>Refinery supply</td>
<td>1593</td>
<td>1593</td>
<td>1593</td>
<td>1593</td>
<td>1593</td>
<td>1593</td>
<td>0</td>
</tr>
<tr>
<td>Import(+)/export(-)</td>
<td>138</td>
<td>142</td>
<td>145</td>
<td>149</td>
<td>152</td>
<td>156</td>
<td>0</td>
</tr>
</tbody>
</table>

| **Mogas50** | | | | | | | |
| Market demand | 0 | 0 | 0 | 0 | 0 | 0 | 1752 |
| Refinery supply | 0 | 0 | 0 | 0 | 0 | 0 | 1572 |
| Import(+)/export(-) | 0 | 0 | 0 | 0 | 0 | 0 | 180 |

| **Jet** | | | | | | | |
| Market demand | 315 | 331 | 347 | 365 | 383 | 402 | 422 |
| Refinery supply | 288 | 288 | 288 | 288 | 288 | 288 | 268 |
| Import(+)/export(-) | 27 | 43 | 59 | 77 | 95 | 114 | 134 |

| **Diesel500** | | | | | | | |
| Market demand | 1092 | 1063 | 1071 | 1053 | 1031 | 1034 | 0 |
| Refinery supply | 1613 | 1613 | 1613 | 1613 | 1613 | 1613 | 0 |
| Import(+)/export(-) | -521 | -530 | -542 | -560 | -582 | -609 | 0 |

| **Diesel50** | | | | | | | |
| Market demand | 484 | 532 | 586 | 644 | 709 | 779 | 1828 |
| Refinery supply | 190 | 180 | 180 | 180 | 180 | 180 | 1793 |
| Import(+)/export(-) | 304 | 352 | 405 | 464 | 529 | 599 | 35 |

| Summary | | | | | | | |
| Imports | 470 | 537 | 610 | 690 | 776 | 859 | 349 |
| Exports | -521 | -530 | -542 | -560 | -582 | -609 | 0 |

The table shows that until 2019, there is a need for increasing imports to accommodate the demand growth in petrol500 and jet fuel. It is assumed that petrol50 is only likely to become available in the Cape Town supply area in 2020 when the refinery becomes clean fuels compliant. The rapid increase in diesel50 imports is primarily driven by the demand from the new passenger vehicle market rather than economic growth (diesel growth is a function of GDP growth). If the Burgan facility is commissioned during 2016, then in 2017 690 Ml of product will be imported and 560 Ml exported up the coast (Port Elizabeth, East London or Durban). In 2020, when it is assumed the refinery will be clean fuels compliant, imports of petrol50, jet fuel and diesel50 amounting to 349 Ml will be required.

If the Burgan facility comes online Chevron will be exporting 560 Ml of diesel at a shipping cost of ~$2 per barrel of product which translates into $7.1 million in 2017. On the basis of processing 27.91 Ml of crude a year the cost would be $0.25 per barrel of crude. The 805 Ml import capability provided by Burgan would simply displace the 690 Ml of imports and cause the refinery to export an additional 115 Ml (805 Ml – 690 Ml) up the coast as the excess supply in the Cape Town area would need to be exported. The additional cost incurred by the Chevron refinery would be $1.4 million or $0.05 per barrel of crude.

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1 Estimated maximum refinery capacity based on previous studies
The balances following the conversion of the refinery to Clean Fuels 2 in 2020 change significantly from the above. From the table above, there will be a requirement to import 349 Ml of product and based on the 805 Ml import capability of the proposed new facility, 456 (805-349) Ml of product would need to be exported by Chevron up the coast if the tenant did not buy product from Chevron. The shipping cost of the exported product would be $5.8 million or $0.21 per barrel of crude.

According to Chevron, the above scenarios would significantly impact its viability. The analysis above and the loss of $0.21 per barrel of crude needs to be seen within the context of the graph below which reflects the variations in GRM\(^1\) for a refinery configuration similar to that of Chevron’s, from 1993 to 2009. From the graph alone it is evident that refineries have been and will continue to be exposed to market forces which show margin variability in excess of $6 per barrel of crude in a one month period. The uncertainty in demand growth and gross margin in the graph below place the potential impact of the Burgan facility on the Chevron refinery in perspective and it is submitted that variations in US cents per barrel are insignificant in comparison to the movements below which are expressed in US dollars per barrel.

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### Scenario Analysis

Given inherent uncertainties in the forecast of demand and supply balances, impacts on the Chevron Refinery were assessed further using a worst case and a most likely scenario if the Burgan facility is built, as outlined below:

**Adversarial Scenario** (Worst case): Should tenants of Burgan Oil focus solely on the importation of fuels through the facility, once the refinery is Clean Fuel 2 compliant, it would be likely to have a negative impact on the Chevron Refinery amounting to an estimated loss ~$5.8 million per year or $0.21 per barrel of crude oil, which is overshadowed by the daily variations in crude and product pricing and therefore is unlikely to impact the financial viability of the Refinery. It could be addressed by cost

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\(^{1}\) GRM=gross refining margin=product revenue less crude cost expressed as $/bbl = $ per barrel of crude
cutting and revenue enhancement initiatives. As noted above, it would be highly probable that tenants using the Burgan facility would chose to buy product from the refinery as opposed to importing which has not apparently been economically viable to date. For this reason, this scenario is considered highly unlikely – i.e. Chevron’s concern of fully importing 805 Mlpa makes little financial sense.

**Co-operative Scenario** (Most likely): Under this scenario, Burgan Oil will provide more than 50% of its storage facility to an anchor tenant in the form of a major oil company and as explained above, this agreement has now been signed. As discussed under the Adversarial Scenario, it is considered most likely that the anchor tenant would source petrol500 and diesel500 from the Chevron Refinery prior to the refinery being Clean Fuels 2 compliant. Should the facility be used for a storage facility for strategic stocks and imports of petrol50 and diesel50, then it is highly unlikely to have any negative impact on Chevron. The conclusion is therefore that this scenario will result in a negligible impact on Chevron.

**Overall assessment**

For both scenarios there are a number of measures that are already in place or may need to be rectified or implemented to minimise the impact of the proposed Burgan facility on Chevron.

- Linkage of the Burgan facility into the Refinery white oil line to enable product to be moved from the refinery. Burgan has already raised this with Chevron.

- The control of product imports is already regulated by the Department of Energy and restricted to situations where no refining capacity is available or refining capacity is full.

- Control of the consumption of petrol50 and diesel50 in vehicles that are capable of using petrol500 and diesel500 through the Demand Side Management Levy mechanism.

- The reformulation of the BFP sourcing model and calculations to reflect the correct landed cost of refined products. The oil industry has already initiated this with Department of Energy.

**5. Conclusion**

- Analysis of studies previously undertaken for the oil industry indicates that there are often discrepancies between refineries’ stated rates of production and refineries actual rates of production

- Future supply and demand balances for the Cape Town supply area have been constructed, analysed and the impact on the Chevron refinery quantified. It is anticipated that the Cape Town area will require an increase in imports as well as an increase in exports due to the anticipated demand for diesel50 and the resultant displacement of locally produced diesel500.

- The proposed Burgan facility is highly unlikely to impact materially on the operations of the Chevron Refinery as it is considered most likely that the
anchor tenant would source petrol500 and diesel500 from the Chevron Refinery prior to the refinery being Clean Fuels 2 compliant.

- The proposed facility has the potential to be used for the storage of strategic stocks of petrol50 and diesel50.

- The facility will significantly enhance the security of supply for the area as it will assist in mitigating a number of unplanned (negative) supply events.

- The viability of the proposed facility is considered to be highly probable and this has been confirmed through an agreement secured with a major oil company as well as further opportunities under discussion, including storage for strategic stocks.
Qualifications and experience:

Education:
1968  Graduated from University Cape Town BSc (Chem Eng)
1988  PMD UCT School of Business Management

Experience:
1969 – 2002
Worked for Caltex (now Chevron) mainly in refining and travelled the world extensively. A Director of Caltex from 1993 in positions of Strategic and Supply Planning and Information Technology and from 1995 until retirement in 2002 General Manager Refining

2002 – current
Broad experience in the oil industry and knowledge of chemical engineering has resulted in being engaged on a number diverse projects as an independent business consultant with most of the local oil companies and more recently venture capitalists

Relevant independent business consulting experience
Chevron
  - Undertook a supply optimisation study to determine preferred partnerships for client following the termination of the Sasol Supply Agreement in 2004 (2002/2003)
  - Developed a strategic and business plan for supply chain optimisation of client’s oil business in West Africa (2004)
  - Conducted a study for the evaluation, planning and introduction of clean fuel products in the transport fuel market to meet Government regulations and gain competitive edge (2005)
Deloitte Consulting (FSSTT Government and Oil Industry in 2006)
  - Carried out a strategic assessment of the supply/demand balance for Southern Africa to 2020, identification of oil industry and state infrastructural constraints and recommendations to eliminate constraints. Evaluated need for timing and location of additional crude oil refining and coal to liquid plants including high level economic assessment.
PetroSA (2007 to 2008)
  - Evaluated and ranked preferred locations for additional refining capacity for client (2007)
  - For client’s grass-root refinery (2008): Established the benefits of including a lubricants refinery, developed marketing strategy for the production, undertook scenario analysis for uncertainties and preliminary analysis of supply chain alternatives.
Kwande Consulting (2009)
  - Analyst, strategist and co-author of The Energy Security Master Plan for Liquid Fuels (Project Delta)
Burgan Oil (2009 to 2012)
- Determined oil industry storage capacity and future needs.
- Undertook comparative financial analysis of independent storage companies world wide
- Examined financial returns for acquisitions and new builds using the service differential and cost of new capacity.

FSSTT update project for client (2009)
- Revisited the subject study using current views on market growth
- Assessed the impact of introducing cleaner fuels into the market
- Determined a path forward to accommodate the production of cleaner fuels, maintain the viability of existing refinery capacity and jobs, minimise capital investment of RSA Inc and enhance sec
Appendix 3: Disclaimer

This report has been prepared by the study team (i.e. Hugo van Zyl and Anthony Leiman) with all reasonable skill, care and diligence and taking account of the resources devoted to it by agreement with the client. The primary role of this study is to inform the decision-making processes being undertaken by the relevant environmental authorities with regards to the proposed project. Responsibility for approving, denying or requiring changes to the proposed project application rests with the relevant environmental authorities (and other government bodies where relevant) who also bear responsibility for interrogating and determining how assessment information from this study along with other information is to be used to reach their decisions. The study team can therefore not be held responsible or liable for any consequences of the decisions made by the relevant environmental authorities with regard to the proposed project. This includes any financial, reputational or other consequences that such decisions may have for the applicant, the Environmental Assessment Practitioner responsible for conducting the Environmental Impact Assessment process or for the environmental authorities themselves.
Appendix 4: Ward Map of the City of Cape Town
## DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

<table>
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### PROJECT TITLE

**Burgan Cape Terminals Proposed Liquid Bulk Storage Facility, Eastern Mole, Port of Cape Town**

<table>
<thead>
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<th>Dr Hugo van Zyl</th>
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<th>ERM Southern Africa (Pty) Ltd</th>
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The specialist appointed in terms of the Regulations
Dr Hugo van Zyl
I, .............................................................. , declare that --

General declaration:

I act as the independent specialist in this application
I will perform the work relating to the application in an objective manner, even if this results in
views and findings that are not favourable to the applicant
I declare that there are no circumstances that may compromise my objectivity in performing such
work;
I have expertise in conducting the specialist report relevant to this application, including knowledge
of the Act, regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my
possession that reasonably has or may have the potential of influencing - any decision to be taken
with respect to the application by the competent authority; and - the objectivity of any report, plan
or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms
of section 24F of the Act.

Signature of the specialist:
Independent Economic Researchers

Name of company (if applicable):
05/05/2014

Date:
### DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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<td>Professional affiliation(s) (if any)</td>
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<td><a href="mailto:dean.alborough@erm.com">dean.alborough@erm.com</a></td>
</tr>
</tbody>
</table>
The specialist appointed in terms of the Regulations...

I, Paul Jonathan Buley, declare that --

General declaration:

I act as the independent specialist in this application
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the specialist: 

Independent Business Consultant: Paul Buley

Name of company (if applicable):

19th May 2014

Date: