CEN INTEGRATED ENVIRONMENTAL MANAGEMENT UNIT

Environmental and Rural Development Specialist

DRAFT Basic Assessment Report:

Construction and operation of a highway rest and service facility, tourist facilities and commercial mixed uses and associated infrastructure, including a Waste Water Treatment Plant on Ptn 147 of Farm Gedults River No 411 in the Division of Uitenhage

Project Title:

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Project Applicant: Suwenda 40 (Pty) Ltd

Reference Number:

DEDEAT: ECM1/LN1&3/M/12-04

DEA: 12/9/11/L830/1

Environmental Assessment Practitioner:

CEN Integrated Environmental Management Unit

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South Africa

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Date of submission: July 2012

Executive Summary

CEN Integrated Environmental Management Unit was appointed by Suwenda 40 (Pty) Ltd to undertake the necessary environmental assessments for the proposed construction and operation of a highway rest and service facility, tourist facilities and commercial mixed uses and associated infrastructure, including a Waste Water Treatment Plant on Ptn 147 of Farm Gedults River No 411 in the Division of Uitenhage (approximate GPS location 33°55'11.09"S 25°17'37.16"E).

The activities require the following assessments and authorisations: 1) A Basic Assessment and Waste Licence application to the National Department of Environmental Affairs for activities listed under the National Environmental Management: Waste Act No 59 of 2008; and 2) A Basic Assessment to the Provincial Department of Economic Development, Environmental Affairs and Tourism for activities listed in terms of the National Environmental Management Act 107 of 1998

1.1 Activity Description

1.1.1 Listed Activities

Preliminary List of Listed Activities in Terms of the EIA Regulations
The Minister of Environmental Affairs and Tourism has in terms of sections 24 and 24D of the National Environmental Management Amendment Act (Act No. 107 of 1998), listed the activities that require an environmental assessment.

In terms of the Environmental Impact Assessment Regulations, 2010, made under section 24(5) of the Act and published in Government Notice R.543 in Government Gazette 33306 of 10 December 2010 the following activities are subject to an assessment.

No. R. 544	10 December 2010 – Listing 1
Activity number	Activity description
9	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water -

	(i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more, excluding where: such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve;
10	The construction of facilities or infrastructure for the transmission and distribution of electricity - (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;
13	The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres;
22	The construction of a road, outside urban areas, (i) with a reserve wider than 13,5 meters or, (ii) where no reserve exists where the road is wider than 8 metres,
23	The transformation of undeveloped, vacant or derelict land to – (ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares
No. R. 546	10 December 2010 – Listing 3
Activity number	Activity description
14	The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation: (a) In the Eastern Cape (i) all areas outside urban areas

Listed Activities in terms of the National Environmental Management: Waste Act No. 59 of 2008

The following waste management activities listed in GNR 718 in terms of Section 19 (1) of the National Environmental Management: Waste Act No. 59 of 2008 have been identified and require a Basic Assessment process to be conducted as stipulated in terms EIA Regulations, as part of a Waste Management License (WML):

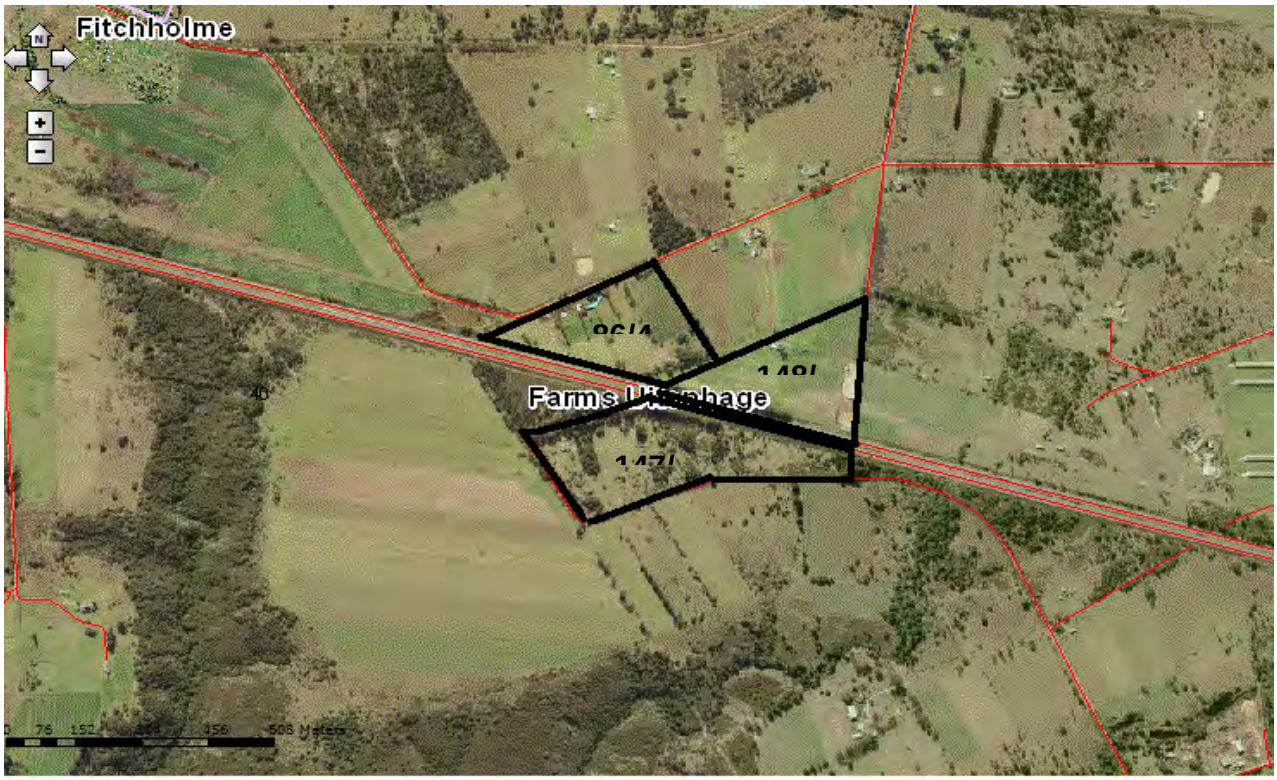
Category A – GNR 718
Activity No. 11: “The treatment of effluent, wastewater or sewage, with an annual throughput capacity of more than 2000 cubic metres but less than 15 000 cubic metres “
Activity No 18: “The construction of facilities for activities listed in Category A of this Schedule”.

An application for the Waste Licence is being submitted to the National Department of Environmental Affairs and a copy thereof is included in this application.

1.1.2 Activity Description

The application is for construction and operation of a highway rest and service facility, tourist facilities and commercial mixed uses and associated infrastructure, including a Waste Water Treatment Plant on Ptn 147 of Farm Gedults River No 411 in the Division of Uitenhage. The site is situated south of the N2/Great West Way (approximate GPS location 33°55’11.09”S 25°17’37.16”E) The east-bound on- and off-ramps to access the facility will be located on servitudes to be registered over Ptn 148 and Ptn 86 of Farm Gedults River No 411. The site is currently zoned as Agriculture and an application is being made to rezone it to Business Zone 5.

Figure 1 is an aerial image showing the relative location of the properties.



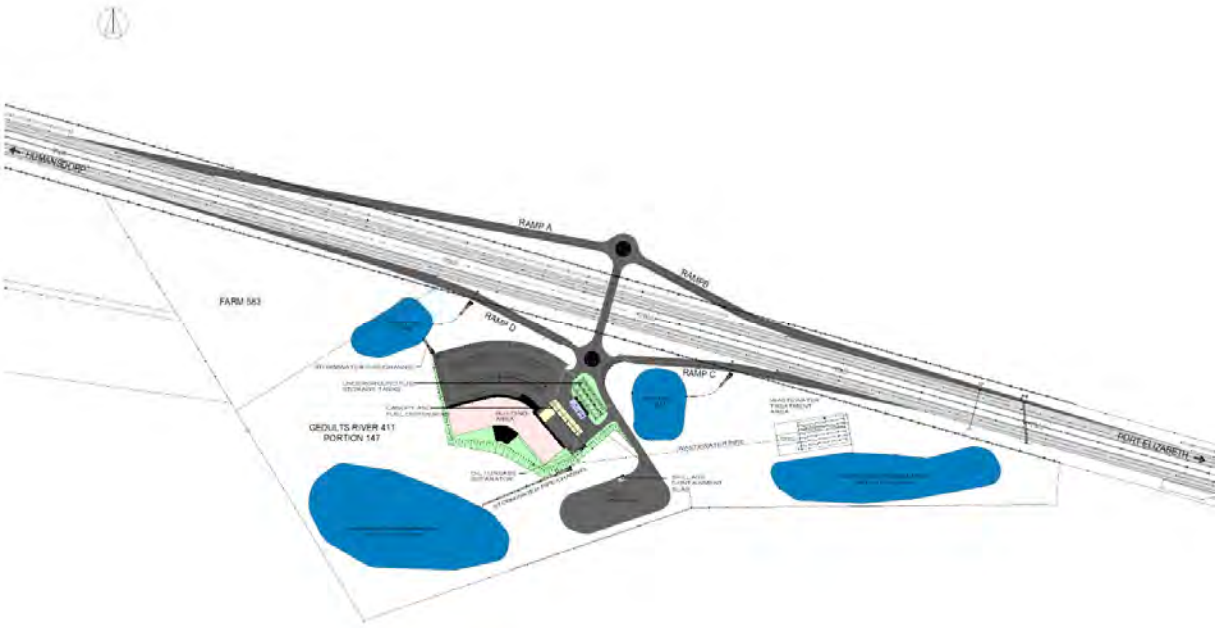
- **Figure 1: An aerial image showing the approximate location of the site (outlined in black).**

The facility will include the following structures and infrastructure (refer to Figure 2 and 3):

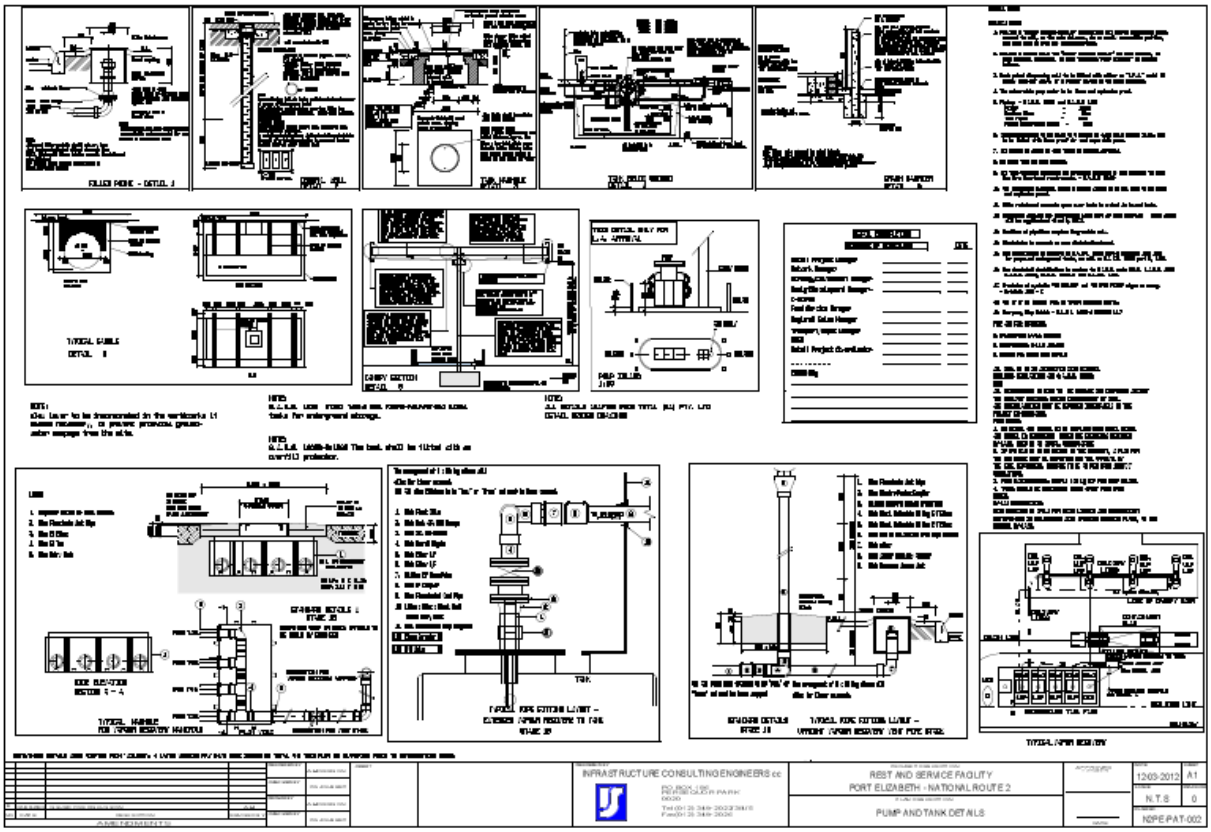
- A 6-island fuel installation for light vehicles and 1 island for trucks, with underground storage tanks
- Canopy: 520 m^2
- Covered walkways: 500 m^2
- Building: maximum 4000 m^2 consisting of a convenience store, toilets, restaurant, take away shop, information centre, storage area and offices.
- Play park, touchfarm and eco-educational facility
- Waste treatment plant: 2000 m^2 (a detailed description of the works with plans is given in Appendix D)

- Parking Area: ~170 vehicle parking bays, 7 caravan parking bays and 3 bus parking bays
- Full interchange consisting of on- and- off ramps and a bridge. Area occupied on site: ~10 500m^2

The total site size is 11.53 ha and the proposed coverage is 75%.



- **Figure 2: A schematic plan of the proposed highway rest and service facility and the Waste Water Treatment Plant (Source: Infrastructure Consulting Engineers, 2012).**



➢ **Figure 3: Pump and tank details**

1.2 Methodology

1.2.1 Compliance with legislated requirements

The Environmental Impact Assessment Regulations (2010) clearly state the requirements that need to be fulfilled by all role-players involved in the Environmental Assessment Process. In this regard, Regulations 21 to 25 list the requirements that an EAP must fulfil in order to compile a comprehensive Basic Assessment Report.
To assist with interpretation of these regulations, a set of guidelines was published by the Department of Environmental Affairs. In this regard, Guidelines 3 (General Guide to Environmental Impact Regulations (2006)), 4 (Public Participation) and 5 (Assessment of Alternatives and Impacts) were consulted.

1.3 Identification and Assessment of Alternatives

The methodology described in guidelines published to assist with the interpretation of EIA Regulations was followed to ensure the adequate consideration of alternatives, including the “no development” option. Seven site alternatives were investigated – the preferred site was selected from a safety and traffic volume perspective for the location of a rest and service facility. From an environmental perspective, the site is not part of the NMBM’s critical biodiversity network and has no ecological process areas that traverse it. Vegetation cover has been largely transformed from its original status by farming activities, habitat fragmentation and alien vegetation invasion. Three waste water treatment technologies were considered - activated sludge, Lilliput and rotating disc systems. The three systems were evaluated in terms of their maintenance requirements and ability to treat sewage effluent from direct access rest and service facilities. The selected treatment options provides for a low risk technology that can be implemented on remote sites. The “no-development” option was considered as a baseline throughout the prediction and analysis of impacts.

1.4 Prediction and Analysis of Impacts

Impacts were predicted and analysed based on observations made during site visits and discussions with authorities, review of scientific literature, analysis of various Environmental Planning Guidelines (e.g. the East Cape Biodiversity Conservation Plan (2007), the Nelson Mandela Bay Metropolitan Open Space System (2009)), aerial photography interpretation, and comments from Interested and Affected Parties.

1.4.1 Comments from Interested and Affected Parties

All registered Interested and Affected Parties and other stakeholders have been sent a copy of this Executive Summary and notified of the availability of the full Draft Basic Assessment Report. All I&APs have been given a 40 day period to review the draft report and submit comments.

Below is a summary table listing comments raised by registered Interested and Affected Parties in response to the public participation process to date. These have been integral in the assessment of impacts.

Interested and Affected Party	Comment	EAP response
Human Settlements Directorate (Schalk Potgieter)	• Request to be registered	• Registered and will be kept informed of the process
Syd Lippstreau	• Request to be registered	• Registered and will be kept informed of the process
Patrick Cull	• Request to be registered	• Registered and will be kept informed of the process
Terence Liebenberg	• Request to be registered	• Registered and will be kept informed of the process
Riana Nel	• The BID states that notice boards have been placed in the vicinity of the site. We did not see these?	• Two notice boards were placed on site on 25 November 2011: On the northern boundary of the site along the N2; and at the start of the gravel access road as it

	• The site falls within an area that is a 'farming community' • The site is within the reception area of the Geduldsrivier • A request was submitted for a detailed project description – i.e. what structures and infrastructure is planned • A query was raised regarding the suitability of the site selected based on its location in a farming community and also the relatively close proximity of Jeffreys Bay and Port Elizabeth • Why is it necessary to build a new on-and-off ramp when there are other sites nearby to two existing bridges over the freeway? • The infrastructure in this particular location is not sufficient as it is a farming community, where further down the road is a better suitable area (towards Jeffreys Bay) – The Van Standens River bridge / Uitenhage interception • What roads will be used to carry the building material etc. in construction phase? Currently, the local roads are not in good condition and are not regularly maintained. If heavy trucks use it on a daily basis, the roads will deteriorate • Will the local people receive the benefit of jobs – building and working at the proposed Petroport? • Will the local people be able to sell	branches off the R102 • Noted, thank you. The site falls within an area classified as 'rural zone 2' in the Nelson Mandela Bay Spatial Development Framework Plan (see extract from the SDF in Appendix G). The desirability of the proposed development has been motivated by Urban Dynamics in the town planning report (refer to Appendix D). The report concludes that the development is desirable and would have a positive impact on the precinct. • Noted, thank you. We have consulted various environmental guideline documents available for the study area (e.g. the East Cape Biodiversity Conservation Plan, the NMBM Metropolitan Open Space System, and a 1:50 000 topographical map – refer to Appendix G). All maps extracted show that no drainage areas traverse the site boundary or occur within at least 300 m of the site boundary. However, surface water runoff from the site may drain into the Geduldsrivier and impacts associated have been addressed in the environmental assessment. Recommendations have been given to avoid risks of contaminating both surface and groundwater. A geotechnical study has also been done for the site which showed that the site is suitable for underground storage tanks and that based on soil type and depth and the absence of shallow groundwater, treating sanitation effluent should pose a low risk on groundwater. • This was sent to the I&AP and is included in this Draft BAR • An investigation of the section of N2 between Port Elizabeth and Humansdorp was done to determine the best location for the facility. The preferred site was

	their fresh products etc. in the proposed Petroport or can their products be market there? • How will you ensure that the waste water treatment plant will be successful where it has not been anywhere else in the country? • The area is not connected to municipal services • The location will evolve in a Taxi Rank for the unemployed locals • There is a squatter camp 1 km from this location and bring more safety hazards and concerns • Pollution will not only affect and occur in and around the located area, but for kilometres along the N2: o Who will clean this area on a regular basis? o Where will you find the man power for that? • What will be done if sanitation spills etc. flow into the river? o Who will clean the spills? o Monitor the spills? o Maintain the situation? o If a problem occurs, who can be called out and how long will it take for the situation to be stabilised and resolved? • Why don't you consider building this Petroport at the existing on-and-off ramp to Van Stadens River bridge / Uitenhage? The infrastructure is already there; there is a bridge, on-and-off ramps, there is also incoming traffic from Uitenhage, Port	selected from a safety and traffic volume point of view. Direct Rest and Service Facilities are crucial elements of road systems. This is evident from research that indicates interception rates of between 15 and 20% at similar locations. Further research indicates that less than 50% of vehicles turning into Rest and Service Facilities refuel at the facility. The facilities are primarily used for relaxation and use of the toilets, convenience stores and food offering. The South African National Roads Agency Limited (SANRAL) acknowledges the need for direct access rest and service facilities. In Paragraph 4.4.1 of their Policy in Respect of Road Planning and Design it states that "Road users travelling on the network have a need for roadside services and rest areas along the network of national roads at reasonable intervals, in balance with road safety and sound traffic management. To this end, the private sector may take the initiative to identify and acquire service area sites." Currently there are no direct access rest and service facilities on the N2 between Grahamstown and Tsitsikamma, a stretch of road of approximately 260 km in length. According to SANRAL Regulations, the minimum spacing between direct access rest and service facilities on national roads with traffic volumes such as at the study site should be 30 km. It must be noted that similar facilities in major towns and cities along the route (e.g. Port Elizabeth, Jeffreys Bay) cannot be considered in the comparison. Research has shown that long distance road users do not turn off the national routes into cities and towns for the purpose of refuelling, relaxing or use of toilets. Existing facilities in

	Elizabeth – via the Old Cape Road and the surrounding locals coming from Sunnyside, Thornhill, Hankey, etc. on the Old Cape Road. There is existing roads to travel on when building material etc. need to be delivered. The necessary sanitation, water connection and electricity is existing	Jeffreys bay and Port Elizabeth are designed for the needs of urban road users and do not cater for long distance road users. Research has shown that toilets at urban sites cannot cope with the needs of long distance road users • It is a requirement of SANRAL that a bridge must be provided at the facility. The reason is to prevent dangerous U-turn movements of delivery trucks and other road users. The existing bridges are not close enough to the proposed facility to prevent dangerous manoeuvres. The proposal is however to build a facility only on the southern side of the N2. For this purpose a full interchange is therefore proposed to make the facility accessible to both directions of travel • The required infrastructure will be established at the mentioned location. Locations in the close proximity of the Van Stadens pass, R334 Uitenhage interchange will not meet SANRAL's safety requirements • The existing provincial and local road system will be used • Every effort will be made to utilize the local labour force with suitable skills. Specialised work such as fuel installations will be done by specialist contractors • Every effort will be made to source produce sold at the facility from the local community • The waste water treatment technology to be used at the site was originally sourced from Germany and adapted for local conditions. Nine of these plants are currently operational throughout South Africa. Monitoring of effluent quality at these facilities shows that it meets national standards. The Waste Licence application in conjunction with this BAR

		that is being submitted to the National Department of Environmental Affairs has considered the risks that the treatment plant may pose on the surrounding environment, in particular contamination of surface and groundwater, and odour. Emergency measures will be in place in the event of plant failure or electricity shut down, and the plant will be designed to retain effluent for the minimum of amount of time required to remedy the problem so that untreated effluent is not discharged into the surrounding area. A review of available monitoring results of effluent from similar treatment plants used in South Africa shows that effluent quality meets DWA standards for irrigation. • A sewage treatment facility will be established on site and the existing water connection on the farm will be utilized • The facility is designed for long distance road users and will provide access from the N2 only. The facility will not provide access to adjacent properties. Taxis will however be welcome to use the facility • Highway rest and service facilities are well managed facilities with on-site security personnel and should therefore not contribute to safety risks to the local community • Highway rest and service facilities are well maintained facilities and are designed to avoid pollution as best as possible. Mitigation measures have been included in the BAR to address waste managed during construction and operational phases • This has been addressed under surface and groundwater impacts • The applicant did an extensive investigation of the N2 between Port Elizabeth and Jeffreys Bay to determine

		a suitable site for the proposed facility. The investigation concluded that the most suitable site for development of such a facility, in accordance with the needs of long distance road users, is at the proposed site. A 'need and desirability' component has been included in the Basic Assessment report that is available available for public comment
Adriaan Venter Attorneys and Associates	• The dispatch of the BID document over the festive season is viewed as inappropriate and not permissible in terms of the National Environmental Management Act. The process should be properly and duly repeated after the festive season has terminated, schools have re-opened and people have returned to their offices and normal daily activities	• Background Information Documents and posters were sent out and placed for public comment on 25 November 2011 until 13 January 2012. Regulation 54(8) states that no public participation should occur between 15 December and 2 January. We have allowed a 30 day comment period – o 25 November to 15 December = 20 days o 3 January to 13 January = 10 days o Additional Period = 19 days • We extended public participation over the December period to include any potential holiday-makers that travel on the N2 into Port Elizabeth who may be interested in providing comment on the proposed fuel station.
Maartin Friedrich and Andre du Toit on behalf of Engen Petroleum Ltd	• The impact of the proposed facility on the proliferation of similar types of facilities (petroports) and filling stations in the sub-region must be considered • The sustainability of the proposed facility in relation to the sustainability of similar facilities (petroports) and filling stations must be considered	• Currently there are no direct access rest and service facilities on the N2 between Grahamstown and Tsitsikamma, a stretch of road of approximately 260 km in length. The closest similar facility to the west of the site is the Total Petroport at Storms River Bridge (~140 km to the west). To the east, the closest facility with rest areas and toilets is at the Nanaga Farm stall (~80km east) – this facility is however not directly accessible off the N2 and has no filling station.

According to SANRAL regulations, the minimum spacing between direct access rest and service facilities on national roads with traffic volumes such as at the specific site should be 30 km. It is thus clear that there is a need for a facility. Long distance road users do not turn off the national routes into cities and towns for the purpose of refuelling, relaxing or use of toilets. There is a need for long distance road users to relax and use toilet facilities. Existing facilities in Jeffreys bay and Port Elizabeth are designed for the needs of urban road users and do not cater for long distance road users. Toilets at urban sites can clearly not cope with the needs of long distance road users.

- SANRAL's "Policy in Respect of Road Planning and Design" notes the following:

  On National Roads, the minimum allowed spacing between service areas will depend on the Average Annual Daily Traffic in both directions. Spacing less than these limits will not be approved, unless in the sole opinion of SANRAL, the benefits to the road user, the economy and the opportunity for work creation are considered highly desirable.

AADT Veh/day	Spacing Kilometre
<5 000	50
5 000-50 000	30
>50 000	10

The above table has been derived using the estimated traffic volumes required to sustain facilities in the long term. SANRAL thus dictates the

		spacing according to what they deem to be sustainable. There is no similar service and rest facility within 100 km of the site. An application has been submitted for a filling station ~13 km south-east of the site in a mixed-use development. However, the filling station is not designed as a rest facility for highway motorists, but rather as part of a shopping complex and new residential development.
Mazizi Masutu (Bay West Development)	• Concern raised over the co-existence of a wastewater treatment plant and the Bay West City Precinct • What will the visual impacts be of the facility on the Bay West City Development? • Air pollution impacts associated with the project • Health risks associated with the project in relation to residential areas located within the precinct	• The site is location ~13 km west of the Bay West development. Potential concerns regarding wastewater treatment plants include odour and surface and groundwater contamination. Considering the significant distance of the Bay West development from the site, if odours were to be created, they would be sufficiently dissipated before reaching the precinct. Surface water runoff and any potential contamination from the site would drain into the Geduldsriver which is part of the Van Standens River corridor. This is in no way connected with the drainage system that occurs in the Bay West precinct (i.e. the Baakens River system). Therefore if contamination were to occur, it would not impact on the precinct. In addition to the above, the waste water treatment plant has been designed to avoid odours and contamination. A geotechnical study has been done which shows that the site is suitable for a waste water treatment plant and that groundwater is not at risk of contamination in the case of plant failure (please refer to the Waste Licence application). • The facility will be visible for 2 km in either direction, and the Bay West development is ~13 km east of the site. Visual impacts of the facility on the development are therefore not expected.

		• Dust creation has been identified as a potential impact in construction phase. This can be mitigated through standard measures as listed in this BAR and in the Construction EMPR. • Potential health risks associated with wastewater treatment plants and fuel storage include odour, and surface and groundwater contamination, and safety risks (e.g. fires and explosions). These have been assessed in the BAR.
Department of Water Affairs	• commented on the need to apply for a Water Use Authorisation and to supply more detailed information when it is available	• The applicant will apply for a Water Use Authorisation in terms of Section 21 of the National Water Act. DWA is registered as an I&AP and will be sent a copy of the Draft and Final BAR for comment.

1.5 Summary of Predicted Impacts

Section D of the Basic Assessment Report details the assessment of impacts.
The table below is a summary of predicted impacts in construction and operational phases:

Impact	**Construction phase**		**Operational Phase**	
	No-go	**Preferred alternative**	**No-go**	**Preferred alternative**
Biodiversity	Short term, Low -	Short term, Low -	Long term, Low -	Long term, Low -
Noise	No impact	Short term, Low -	No impact	No impact
Air quality (dust)	No impact	Short term, Low -	No impact	No impact
Air quality (odour)	No impact	No impact	No impact	Long term, low -
Soil erosion	No impact	Short term, Low -	No impact	No impact (if site

Impact	Construction phase		Operational Phase	
	No-go	**Preferred alternative**	**No-go**	**Preferred alternative**
				successfully rehabilitated)
Surface and groundwater contamination	Long term, Moderate – (alien tree invasion)	Short term, Moderate – (cannot be reduced to low – because of the proximity to the Geduld Rivier) Short term, Moderate + (clearing of alien trees)	No impact	Long term, low – (mostly from sanitation effluent that will be treated on-site and fuel storage)
Waste management	No impact	Short term, low -	To be addressed under provision of services	
Archaeological impacts	No impact	Unlikely impact based on findings of specialist report No impact		
Traffic impacts	No impact	Short term Local and provincial roads: low – National road: moderate -	No impact	Long term, low -
Visual impacts	No impact	No impact	No impact	Long term, moderate reduced -
Odour	No impact	No impact	No impact	Long term, low -

Impact	**Construction phase**		**Operational Phase**	
	No-go	**Preferred alternative**	**No-go**	**Preferred alternative**
Fires and explosions	No impact	No impact	No impact	Long term, low -
Services	No impact	Short term, low -	No impact	Long term, low -
Socio-Economic Impacts				
Employment creation	Short term, low -	Short term, low +	Long term, low -	Long term, low +
Sustainability of the facility and impact on similar facilities in the sub-region	No impact	No impact	No impact	Based on a review of available SANRAL regulations and spacing of facilities on the N2 and other major roads in the sub-region, the facility is needed and will be sustainable. Impacts on similar facilities are not expected based on the spacing distance recommended

Impact	Construction phase		Operational Phase	
	No-go	**Preferred alternative**	**No-go**	**Preferred alternative**
				by SANRAL.
Road safety	Addressed under traffic impacts		Long term, moderate +	Long term, moderate +

1.5.1 Environmental Impact Statement and Recommendations

Several impacts were identified for construction and operational phases and after assessment, none were shown to create impacts that would be unacceptable. It is recommended that all mitigation measures contained in the Basic Assessment report be included in an environmental authorisation, should one be issued.

PROVINCE OF THE EASTERN CAPE
DEPARTMENT OF ECONOMIC DEVELOPMENT
AND
ENVIRONMENTAL AFFAIRS

BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This basic assessment report is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable tick the boxes that are applicable or black out the boxes that are not applicable in the report.

4. An incomplete report may be returned to the applicant for revision.

5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.

6. This report must be handed in at offices of the relevant competent authority as determined by each authority.

7. No faxed or e-mailed reports will be accepted.

8. The report must be compiled by an independent environmental assessment practitioner.

9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES	NO

If YES, please complete form XX for each specialist thus appointed:
Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

The application is for construction and operation of a highway rest and service facility, tourist facilities and commercial mixed uses and associated infrastructure, including a Waste Water Treatment Plant on Ptn 147 of Farm Gedults River No 411 in the Division of Uitenhage. The site is situated south of the N2/Great West Way (approximate GPS location 33°55'11.09"S 25°17'37.16"E) The east-bound on- and off-ramps to access the facility will be located on servitudes to be registered over Ptn 148 and Ptn 86 of Farm Gedults River No 411. The site is currently zoned as Agriculture and an application is being made to rezone it to Business Zone 5.

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- A 6-island fuel installation for light vehicles and 1 island for trucks, with underground storage tanks

- Canopy: 520 m^2
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- Play park, touchfarm and eco-educational facility
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- Parking Area: ~170 vehicle parking bays, 7 caravan parking bays and 3 bus parking bays
- Full interchange consisting of on- and- off ramps and a bridge. Area occupied on site: ~10 500m^2

The total site size is 11.53 ha and the proposed coverage is 75%.

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The Minister of Environmental Affairs and Tourism has in terms of sections 24 and 24D of the National Environmental Management Amendment Act (Act No. 107 of 1998), listed the activities that require an environmental assessment.

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10	The construction of facilities or infrastructure for the transmission and distribution of electricity - (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;
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Activity No. 11: "The treatment of effluent, wastewater or sewage, with an annual throughput capacity of more than 2000 cubic metres but less than 15 000 cubic metres "
Activity No 18: "The construction of facilities for activities listed in Category A of this Schedule".

An application for the Waste Licence is being submitted to the National Department of Environmental Affairs and a copy thereof is included in this application.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

Paragraphs 3 – 13 below should be completed for each alternative.

Alternative sewer treatment plants

Three types of waste water treatment plants were considered - activated sludge, Lilliput and rotating disc systems. The three systems were evaluated in terms of their maintenance requirements and ability to treat sewage effluent from direct access rest and service facilities. All alternatives available were investigated in terms of maintenance requirements and ability to cope with sewage effluent from direct access rest and service facilities. The investigation revealed that a vertical and horizontal flow planted soil filter provides for a low risk technology that can be implemented on remote sites. The waste water treatment technology to be used at the site was originally sourced from Germany and adapted for local conditions. Nine of these plants are currently operational throughout South Africa. Monitoring of effluent quality at these facilities shows that it meets standards specified by DWA for using treated effluent for irrigation purposes (i.e. 100 000 faecal coliform bacteria/100m - refer to monitoring results attached as Appendix D).

Site alternatives

Possible sites along the N2 from Bramlin Road up to the Mondplaas Interchange were investigated for a suitable location for the rest and service station. The preferred site was selected from a safety and traffic volume point of view. The following observations were made:

1. Bramlin to Seaview interchange:

Between these two interchanges sufficient space, with regards to on and off ramp lengths and distance between yellow line break points, is not available for the development of a rest and service facility. Spacing requirements are specified by SANRAL. Furthermore the extension of Walker drive and the proposed construction of the Redhouse Chelsea Arterial make it impossible to fit a facility between these interchanges. There are also residential areas for a significant length of road between the two interchanges. The site is considered unsuitable.

2. Seaview to St Albans

A site that is suitable from a spacing and sight distance point of view is not available. Where spacing requirements are adhered to, the sight distance is insufficient.

3. St Albans to Van Stadens Interchange (preferred site)

There is sufficient space between these two interchanges for on and off ramp lengths and distance between yellow line break points. The site was selected to comply with the required sight distances as well. From an environmental perspective, the site is not part of the NMBM's critical biodiversity network and has no ecological process areas that traverse it. Vegetation cover has been largely transformed from its original status by farming activities, habitat fragmentation and alien vegetation invasion.

4. Van Stadens to the Sunnyside/ Thornhill Interchange

There is an overpass just to the west of the Van Stadens interchange. It is clear that a facility could not be placed between the interchange and the overpass. The distance between the overpass and the Van Stadens river bridge further to the west is not sufficient for the placement of a facility. It is also clear that the distance between the Van Stadens Bridge and the Thornhill Interchange is also not sufficient for placing a rest and service facility according to SANRAL's spacing requirements.

5. Sunnyside/Thornhill to Hankey Interchange

The distance between the interchanges is not sufficient to accommodate required distances between yellow line break points as well the facility and the required on and off ramps.

6. Hankey to Mondplaas Interchange

Due to the geometric design of the N2 between these interchanges it is not possible to place a facility here. The vertical and horizontal alignment of the road is not suited for the development of a facility and severe side slopes will also make it very expensive to develop a facility at this site.

7. Mondplaas Interchange to Humansdorp.

Traffic volumes are too low in this area to make a development of this nature feasible.

Direct Rest and Service Facilities are crucial elements of road systems. This is evident from research that indicates interception rates of between 15 and 20% at similar locations. Further research indicates that less than 50% of vehicles turning into Rest and Service Facilities refuel at the facility. The facilities are primarily used for relaxation and use of the toilets, convenience stores and food offering. The South African National Roads Agency Limited (SANRAL) acknowledges the need for direct access rest and service facilities. In Paragraph 4.4.1 of their Policy in Respect of Road Planning and Design it states that "Road users travelling on the network have a need for roadside services and rest areas along the

network of national roads at reasonable intervals, in balance with road safety and sound traffic management. To this end, the private sector may take the initiative to identify and acquire service area sites." Currently there are no direct access rest and service facilities on the N2 between Grahamstown and Tsitsikamma, a stretch of road of approximately 260 km in length. According to SANRAL Regulations, the minimum spacing between direct access rest and service facilities on national roads with traffic volumes such as at the study site should be 30 km.

It must be noted that similar facilities in major towns and cities along the route (e.g. Port Elizabeth, Jeffreys Bay) cannot be considered in the comparison. Research has shown that long distance road users do not turn off the national routes into cities and towns for the purpose of refuelling, relaxing or use of toilets. Existing facilities in Jeffreys bay and Port Elizabeth are designed for the needs of urban road users and do not cater for long distance road users. Research has shown that toilets at urban sites cannot cope with the needs of long distance road users.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. List alternative sites if applicable.

Alternative:

	Latitude (S):		Longitude (E):	
Alternative S1[1] (preferred or only site alternative)	33°	55'11.09"	25°	17'37.16"
Alternative S2 (if any)	°	'	°	'
Alternative S3 (if any)	°	'	°	'

In the case of linear activities: N/A

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

[1] "Alternative S.." refer to site alternatives.

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	Size of the activity:
Alternative A1[2] (preferred activity alternative)	Site: ~ 11.5 ha Activity size: • WWTW: 2000 m² • A 6 island fuel installation for light vehicles and 1 island for trucks, with underground storage tanks • Canopy: 520 m² • Covered walkways: 500 m² • Building: maximum 4000 m² (convenience store, toilets, restaurant, take away shops, information centre, storage area and offices). • Parking Area: ~170 vehicle parking bays, 7 caravan parking bays and 3 bus parking bays • Full interchange consisting of on-and-off ramps and a bridge: ~ 10 500 m²
Alternative A2 (if any)	m²
Alternative A3 (if any)	m²
or, for linear activities:	

5. SITE ACCESS

Does ready access to the site exist?	YES	NO
If NO, what is the distance over which a new access road will be built	m	

Describe the type of access road planned:

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

The site is currently accessible from an existing gravel road that turns off of the R102. In operational phase, the site will only be accessible from the N2 – no access will be provided to vehicles or pedestrians from the back of the facility. An interchange will be built on the N2 to access the site. East-bound On- and off-ramps on the northern side of the N2 to access the site will be built across parts of Ptn 148 and Ptn 86 of Farm Gedults River No 411 (see Figure 2 below). The interchange will be designed according to the SANRAL Geometric Design Guidelines and Toegang van en na Fasiliteite langs Nasionale Deurpaaie, September 1991.

Figure 2: A Google Earth Image with a schematic layout of the interchange and petroport facility (blue rectangle).

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

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

6.1 the scale of the plan which must be at least a scale of 1:500;
6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all trees and shrubs taller than 1.8 metres;

6.7 walls and fencing including details of the height and construction material;
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- rivers;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

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

7. SITE PHOTOGRAPHS

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

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R65 million
What is the expected yearly income that will be generated by or as a result of the activity?	R105 million
Will the activity contribute to service infrastructure?	YES / NO
Is the activity a public amenity?	YES / NO
How many new employment opportunities will be created in the development phase of the activity?	70
What is the expected value of the employment opportunities during the development phase?	4.5 million
What percentage of this will accrue to previously disadvantaged individuals?	70%
How many permanent new employment opportunities will be created during the operational phase of the activity?	65
What is the expected current value of the employment opportunities during the first 10 years?	40 million
What percentage of this will accrue to previously disadvantaged individuals?	90%

9(b) Need and desirability of the activity

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

Direct Rest and Service Facilities are crucial elements of road systems. This is evident from research that indicates interception rates of between 15 and 20 % at similar locations. Further research indicates that less than 50% of vehicles turning into Rest and Service Facilities refuel at the facility. Research therefore indicates that these facilities are primarily used for relaxation and use of the toilets, convenience stores and food offering.

The South African National Roads Agency Limited (SANRAL) acknowledges the need for direct access rest and service facilities. In Paragraph 4.4.1 of their Policy in Respect of Road Planning and Design it states that "Road users travelling on the network have a need for roadside services and rest areas along the network of national roads at reasonable intervals, in balance with road safety and sound traffic management. To this end, the private sector may take the initiative to identify and acquire service area sites."

Currently there are no direct access rest and service facilities on the N2 between Grahamstown and Tsitsikamma, a stretch of road of approximately 260 km in length. The closest similar facility to the west of the site is the Total Petroport at Storms River Bridge (~140 km to the west). To the east, the closest facility with rest areas and toilets is at the Nanaga Farm stall (~80km east) – this facility is however not directly accessible off the N2 and has no filling station. According to SANRAL regulations, the minimum spacing between direct access rest and service facilities on national roads with traffic volumes such as at the specific site should be 30 km. It is thus clear that there is a need for a facility.

Long distance road users do not turn off the national routes into cities and towns for the purpose of refuelling, relaxing or use of toilets. There is a need for long distance road users to relax and use toilet facilities. Existing facilities in Jeffreys bay and Port Elizabeth are designed for the needs of urban road users and do not cater for long distance road users. Toilets at urban sites can clearly not cope with the needs of long distance road users.

The table below estimates the number of persons expected to use the toilet and shops per year:

9 000	average daily traffic
365	days per annum
3 285 000	total number of vehicles passing the facility per annum
15 %	interception rate
492 750	annual number of vehicles expected to turn into site
1.7	expected number of passengers per vehicle
837675	total number of persons in vehicles turning into facility per annum
60 %	percentage of persons disembarking
502 605	total number of persons expected to utilise the facility per annum
55 %	% of persons utilising toilets

276 433	number of persons utilising toilets per annum

60 %	% of persons utilising convenience store
301 563	number of persons utilising convenience store per annum
25 %	% of persons utilising restaurant and take away
125 651	number of persons utilising restaurant and take away per annum

The desirability of the proposed development has been motivated by Urban Dynamics in the town planning report (refer to Appendix D). The report concludes that the development is desirable and would have a positive impact on the precinct.

Indicate any benefits that the activity will have for society in general:
These facilities are crucial for road safety and the convenience of long distance road users. Worldwide the need of direct rest and service facilities are acknowledged.

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

The facility will create jobs for the community and every effort will be made to source produce sold at the facility from the local community

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
• National Environmental Management Act	• DEAET	• 1998
• National Environmental Management Act: Waste Act (Act 59 of 2008)	• DEAET	• 2008
• National Environmental Management Act: Biodiversity Act (Act 10 of 2004)	• DEAET	• 2004
• Environmental Conservation Act (Act 73 of 1989)	• DEAET	• 1989
• Nature and Environmental Conservation Ordinance No 19 of 1974	• DEDEA	• 1974
• National Water Act 36 of 1998	• DWA	• 1998
• National Heritage Resources Act 25 of 1999	• SAHRA	• 1999
• Environmental Impact Assessment Regulations	• DEAET	• 2006, 2010

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the

YES	NO

construction/initiation phase?	
If yes, what estimated quantity will be produced per month?	10 m^3

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

Construction waste will be removed from site by the appointed contractor to a registered waste disposal site. Where possible, construction waste material must be used as fill material. It is recommended that the contractor register on the NMBM's waste exchange project where construction rubble can be recycled and/or re-used.

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

Closest registered waste disposal site (Fairview)

Will the activity produce solid waste during its operational phase?	YES
If yes, what estimated quantity will be produced per month?	Solids from WWTP: Information obtained from operators of sewage plants at similar facilities indicates that almost all solids in the sewage are digested by anaerobic digesters. The total expected volume of inert material that cannot be digested is approximately 40 m^3 per year (3.33 m^3 per month). Waste from the rest stop and restaurant is estimated at 75m^3 per month.

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

Solid waste from the waste water treatment plant will be removed by a commercial honey sucker and disposed of at a municipal site.
General waste from the facility will be stored in normal wheelie bins and will be disposed of by the operator of the facility at a waste disposal site twice a week.

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

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES	■

If yes, inform the competent authority and request a change to an application for scoping and EIA.

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

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

NOTE: treatment of sanitation effluent in an on-site package plant triggers a Waste Licence application under Category A of the listed activities published in terms of the Waste Act. This application is being submitted to National DEA.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO
Note: only sewage will be produced, but this will not be disposed of in a municipal system. Sewage will be treated on-site (see details of proposed system in Appendix D).		
If yes, what estimated quantity will be produced per month?	m^3	
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	■

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Treating sanitation effluent on site triggers a Waste Licence Application – Category A activities require a Basic Assessment be done and submitted to National DEA. This is being done in conjunction with this BAR.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	■	NO

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

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

Treated effluent will comply with irrigation standards and will be used for site irrigation.

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

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

There is a possibility that dust will be generated during construction phase, particularly during high wind conditions. Mitigation measures suggested to control dust generation in subsequent sections will ensure that the concentration is insignificant

11(d) Generation of noise

Will the activity generate noise?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

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

Noise generated will mostly be from construction activities. All machinery will be within sound working order and will meet the necessary noise level requirements. Construction activities will be limited to daylight hours. Noise in operational phase will be generated by persons utilizing the facility and vehicles.

12. WATER USE

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

municipal	[redacted]	[redacted]	[redacted]	Other: treated sanitation effluent will be used for irrigation	[redacted]

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:	N/A	
Does the activity require a water use permit from the Department of Water Affairs?	YES	[redacted]

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.
Treating sanitation effluent on site and using effluent for irrigation requested a water use authorisation.

13. ENERGY EFFICIENCY

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

Measures have been considered in the design of buildings to promote energy efficiency: natural ventilation, building frontage to allow for direct sunlight in winter but not in summer, and building insulation

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

As above. Photovoltaic panels were considered but found not to be economically feasible. Standard energy efficient options will be used at the facility (e.g. low energy light bulbs, solar geysers).

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

Section C Copy No. (e.g. A): [ ]

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES [ ] NO [ ]

If YES, please complete form XX for each specialist thus appointed:
All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

The site is generally flat and slopes gently in a southerly direction.

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline
2.2 Plateau
2.3 Side slope of hill/mountain
2.4 Closed valley

2.5 Open valley
2.6 Plain
2.7 Undulating plain / low hills
2.8 Dune
2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

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

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

4.1 Natural veld – good condition [E]
4.2 Natural veld – scattered aliens [E]
4.3 Natural veld with heavy alien infestation [E]
4.4 Veld dominated by alien species [E]
4.5 Gardens
4.6 Sport field
4.7 Cultivated land
4.8 Paved surface
4.9 Building or other structure
4.10 Bare soil

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

[redacted]	[redacted]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	[redacted]
[redacted]	Cultivated land	[redacted]	Building or other structure	[redacted]

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area
5.2 Low density residential
5.3 Medium density residential
5.4 High density residential
5.5 Informal residential
5.6 Retail commercial & warehousing
5.7 Light industrial
5.8 Medium industrial [AN]
5.9 Heavy industrial [AN]
5.10 Power station
5.11 Office/consulting room
5.12 Military or police base/station/compound
5.13 Spoil heap or slimes dam[A]
5.14 Quarry, sand or borrow pit
5.15 Dam or reservoir
5.16 Hospital/medical centre
5.17 School
5.18 Tertiary education facility
5.19 Church
5.20 Old age home
5.21 Sewage treatment plant[A]
5.22 Train station or shunting yard [N]
5.23 Railway line [N]
5.24 Major road (4 lanes or more) [N]
5.25 Airport [N]
5.26 Harbour
5.27 Sport facilities
5.28 Golf course
5.29 Polo fields
5.30 Filling station [H]
5.31 Landfill or waste treatment site

5.32 Plantation
5.33 Agriculture
5.34 River, stream or wetland
5.35 Nature conservation area
5.36 Mountain, koppie or ridge
5.37 Museum
5.38 Historical building
5.39 Protected Area
5.40 Graveyard
5.41 Archaeological site
5.42 Other land uses (describe):

If any of the boxes marked with an "N "are ticked, how will this impact / be impacted upon by the proposed activity.

A major road (i.e. the N2) borders the site which is one of the prime motivating factors for selecting the site. A Traffic Impact Assessment has been done for the study which concluded that the proposed facility and the interchange complies with SANRAL's Geometric Design Standards and the impact on the operation along the N2 is within standards. With an anticipated interception rate of between 15 and 25 % the proposed facility will enhance road safety and road user convenience.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.
N/A
If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.
N/A
If YES, specify and explain:
If YES, specify:

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?	■	NO
		Uncertain
If YES, explain:		

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:	Dr Johan Binneman was appointed to do a Level 1 Heritage Impact Assessment (report attached as Appendix D). During the investigation, no archaeological sites/materials were found and it is unlikely that any *in situ* archaeological remains will be exposed during the development. The report recommends that the development be exempt from a full Phase 1 Archaeological Impact Assessment. The report has been submitted to SAHRA.

Will any building or structure older than 60 years be affected in any way?		NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	■	NO

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION

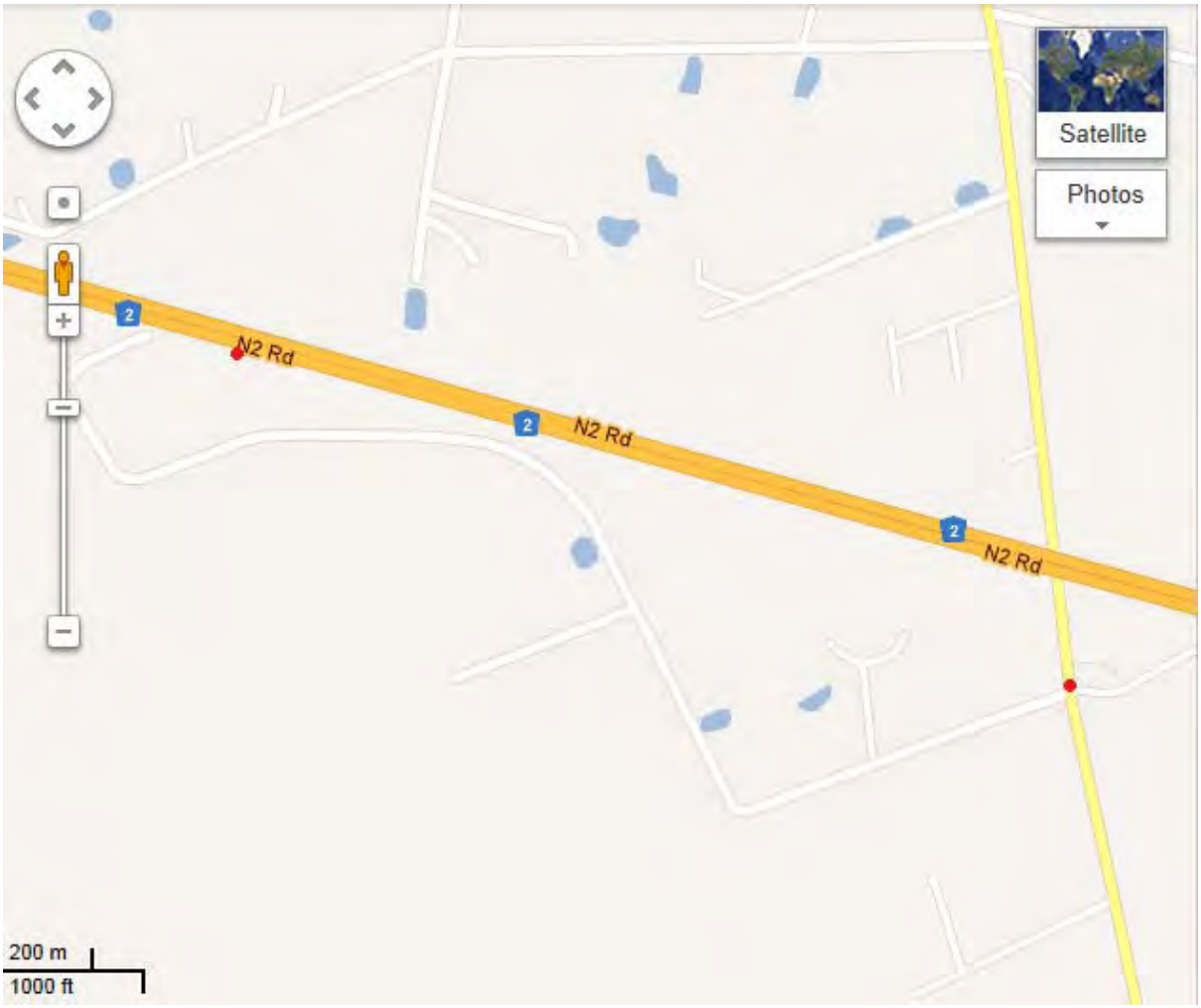
1. ADVERTISEMENT

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

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;

Two notice boards were placed on site ((see map below – positions marked in red):

1) On the northern boundary of the site along the N2
2) At the start of the gravel access road as it branches off the R102



Photos of site notices:

(b) giving written notice to—

(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;

(ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;

(v) the municipality which has jurisdiction in the area;

(vi) any organ of state having jurisdiction in respect of any aspect of the activity; and

(vii) any other party as required by the competent authority;

Background Information Documents were sent to the following:

Government and municipal	Official/Responsible Person
NMBM Environmental Management Sub-Directorate	Abigail Kamineth (akamineth@mandelametro.gov.za), Jill Miller (jmiller@mandelametro.gov.za), W Berrington
NMBM Infrastructure and Engineering Directorate	Barry Martin, A. Snyman, Stan Groenewald, Tony Arthur
NMBM Planning/Housing/Human Settlements Department	Dawn McCarthy (DMccarth@mandelametro.gov.za), Nadia Wessels (nwessels@mandelametro.gov.za), Schalk Potgieter
NMBM Electricity and Energy Directorate	Dennis Johns, K Beme
Department of Forestry	Thabo Nokoyo, Theo Stehle
South African Heritage Resources Agency	Mariagrazia Galimberti
Department of Economic Development and Environmental	Jeff Govender, Andries Struwig

Affairs	
Department of Agriculture	L Boutha
Department of Water Affairs	M. Bloem, P Retief, P. Tshatshu, J. Jacobs, C Swarts
Eskom	Tom Smith, Mavis Sitole
SANRAL	R Thompson
WESSA	M. Griffiths
East Cape Conservancies	Megan Hope
Ward Councillor	V Knoetze

1) Neighbours and other stakeholders in the area
   a. CDA Boerdery – J Boshoff
   b. Adolph Nel
   c. Clive Tait
   d. Rina Gerber
   e. Andre Pienaar
   f. Terence Liebenberg
   g. Van Stadens River Farmers Association – J Rademeyer

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

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

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
   (i) illiteracy;
   (ii) disability; or
   (iii) any other disadvantage.

Adverts were placed in *The Herald* and *Die Burger* on 29 November 2011 (see below).

Die Burger 29.11.11

KENNISGEWING

van Omgewingsimpakproses

Kennis geskied hiermee, kragtens Regulasie 56 van die Omgewingsimpakregulasies gepubliseer in Staatskennisgewing R.543 in Staatskoerant Nr. 3306 van 10 Desember 2010, kragtens Artikel 24(5) van die Wet op Nasionale Omgewingsbestuur, 1998 (Wet Nr. 107 van 1998), soos gewysig in 2006, dat Suwenda 40 (Pty) Ltd van voorneme is om 'n Petroport en verwante infrastruktuur, insluitend 'n afvalwater-behandelingsaanleg, op te rig en te bedryf.

Die aktiwiteite vereis die volgende evaluasies en magtigings: 1) 'n Basiese evaluasie en afvallisensie-aansoek aan die Nasionale Departement van Omgewingsake vir aktiwiteite gelys onder die Wet op Nasionale Omgewingsbestuur: Afval, Nr. 59 van 2008; en 2) 'n Basiese evaluasie aan die Provinsiale Departement van Ekonomiese Ontwikkeling en Omgewingsake vir aktiwiteite gelys kragtens die Wet op Nasionale Omgewingsbestuur, 107 van 1998.

Ligging:

Gedeelte 86, 147 en 148 van die Plaas 411, Uitenhage (geskatte GPS-koördinate: 33°55'11.09"S 25°17'37.16"O)

Konsultant:

Dr. Mike Cohen
CEN Integrated Environmental Management Unit
Riverweg 36, Walmer
Port Elizabeth, 6070
Telefoon: 041 581 2983 / Faks: 086 504 2549
E-pos: steenbok@aerosat.co.za

Belangstellende en geaffekteerde partye word genooi om aan die proses deel te neem deur gedetailleerde geskrewe kommentaar rakende die verwagte gelyste aktiwiteite binne 30 dae van hierdie advertensie (d.w.s. teen 17 Januarie 2012) in te dien.

Datum: 30 November 2011

4399038(1B6A6KQ) 29/11(180)

The Herald 29.11.11

NOTICE OF ENVIRONMENTAL IMPACT PROCESS

Notice is given in terms of Regulation 56 of the Environmental Impact Regulations published in Government Notice R.543 in Government Gazette No 3306 of 10 December 2010, under Section 24(5) of the National Environmental Management Act, 1998 (Act No 107 of 1998), as amended in 2006, that SUWENDA 40 (PTY) LTD is proposing to construct and operate a Petroport and associated infrastructure including a waste water treatment plant.

The activities require the following assessments and authorisations:

1) A Basic Assessment and Waste Licence application to the National Department of Environmental Affairs for activities listed under the National Environmental Management: Waste Act No 59 of 2008; and

2) A Basic Assessment to the Provincial Department of Economic Development and Environmental Affairs for activities listed in terms of the National Environmental Management Act 107 of 1998.

LOCALITY: Ptn 86, 147 and 148 of the Farm 411, Uitenhage (approximate GPS co-ordinates: 33°55' 11.09"S 25 °17'37.16"E

CONSULTANT:

Dr Mike Cohen
CEN Integrated Environmental Management Unit
36 River Road, Walmer
Port Elizabeth, 6070
Tel: (041) 581-2983
Fax: 086-504-2549

E-mail:
steenbok@aerosat.co.za

Interested and Affected Parties are invited to participated in the process by submitting detailed written comment on the anticipated listed activities within 30 days of this advertisement (17 January 2012)

Date: 29 November 2011

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and
(b) state—
  (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
  (ii) whether basic assessment or scoping procedures are beingapplied to the application, in the case of an application for environmental authorisation;
  (iii) the nature and location of the activity to which the application relates;
  (iv) where further information on the application or activity can be obtained; and
  (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

- NMBM Human Settlements Directorate
- NMBM Environmental Business Unit
- NMBM Department of Infrastructure and Engineering
- NMBM Department of Energy
- Department of Water Affairs
- Department of Agriculture, Forestry and Fisheries
- South African Heritage Association (Cape Town office)
- ESKOM
- SANRAL

List of authorities from whom comments have been received:

- NMBM Human Settlements Directorate (Schalk Potgieter) – request to be registered
- Department of Water Affairs – commented on the need to apply for a Water Use Authorisation and to supply more detailed information when it is available

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	■	NO

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

SECTION D: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

• The impact of the proposed facility on the proliferation of similar types of facilities (petroports) and filling stations in the sub-region must be considered
• The sustainability of the proposed facility in relation to the sustainability of similar facilities (petroports) and filling stations must be considered
• The BID states that notice boards have been placed in the vicinity of the site. We did not see these?
• The site falls within an area that is a 'farming community'
• The site is within the reception area of the Geduldsrivier
• A request was submitted for a detailed project description – i.e. what structures and infrastructure is planned
• A query was raised regarding the suitability of the site selected based on its location in a farming community and also the relatively close proximity of Jeffreys Bay and Port Elizabeth
• Why is it necessary to build a new on-and-off ramp when there are other sites nearby to two existing bridges over the freeway?
• The infrastructure in this particular location is not sufficient as it is a farming community, where further down the road is a better suitable area (towards Jeffreys Bay) – The Van Standens River bridge / Uitenhage interception
• What roads will be used to carry the building material etc. in construction phase? Currently, the local roads are not in good condition and are not regularly maintained. If heavy trucks use it on a daily basis, the roads will deteriorate.
• Will the local people receive the benefit of jobs – building and working at the proposed Petroport?
• Will the local people be able to sell their fresh products etc. in the proposed Petroport or can their products be market there?
• How will you ensure that the waste water treatment plant will be successful where it has not been anywhere else in the country?
• The area is not connected to municipal services
• The location will evolve in a Taxi Rank for the unemployed locals
• There is a squatter camp 1 km from this location and bring more safety hazards and concerns
• Pollution will not only affect and occur in and around the located area, but for kilometres along the N2: o Who will clean this area on a regular basis? o Where will you find the man power for that?
• What will be done if sanitation spills etc. flow into the river? o Who will clean the spills? o Monitor the spills? o Maintain the situation? o If a problem occurs, who can be called out and how long will it take for the situation to be

stabilised and resolved?
• Why don't you consider building this Petroport at the existing on-and-off ramp to Van Stadens River bridge / Uitenhage? • The infrastructure is already there; there is a bridge, on-and-off ramps, there is also incoming traffic from Uitenhage, Port Elizabeth – via the Old Cape Road and the surrounding locals coming from Sunnyside, Thornhill, Hankey, etc. on the Old Cape Road. There is existing roads to travel on when building material etc. need to be delivered. The necessary sanitation, water connection and electricity is existing
• The dispatch of the BID document over the festive season is viewed as inappropriate and not permissible in terms of the National Environmental Management Act. The process should be properly and duly repeated after the festive season has terminated, schools have re-opened and people have returned to their offices and normal daily activities
• Concern raised over the co-existence of a wastewater treatment plant and the Bay West City Precinct
• What will the visual impacts be of the facility on the Bay West City Development?
• Air pollution impacts associated with the project
• Health risks associated with the project in relation to residential areas located within the precinct

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

- Currently there are no direct access rest and service facilities on the N2 between Grahamstown and Tsitsikamma, a stretch of road of approximately 260 km in length. The closest similar facility to the west of the site is the Total Petroport at Storms River Bridge (~140 km to the west). To the east, the closest facility with rest areas and toilets is at the Nanaga Farm stall (~80km east) – this facility is however not directly accessible off the N2 and has no filling station. According to SANRAL regulations, the minimum spacing between direct access rest and service facilities on national roads with traffic volumes such as at the specific site should be 30 km. It is thus clear that there is a need for a facility.
- Long distance road users do not turn off the national routes into cities and towns for the purpose of refueling, relaxing or use of toilets. There is a need for long distance road users to relax and use toilet facilities. Existing facilities in Jeffreys bay and Port Elizabeth are designed for the needs of urban road users and do not cater for long distance road users. Toilets at urban sites can clearly not cope with the needs of long distance road users.

SANRAL's "Policy in Respect of Road Planning and Design" notes the following:

On National Roads, the minimum allowed spacing between service areas will depend on the Average Annual Daily Traffic in both directions. Spacing less than these limits will not be approved, unless in the sole opinion of SANRAL, the benefits to the road user, the economy and the opportunity for work creation are considered highly desirable.

AADT Veh/day	Spacing Kilometre
<5 000	50
5 000-50 000	30
>50 000	10

The above table has been derived using the estimated traffic volumes required to sustain facilities in the long term. SANRAL thus dictates the spacing according to what they deem to be sustainable. There is no similar service and rest facility within 100 km of the site.

	An application has been submitted for a filling station ~13 km south-east of the site in a mixed-use development. However, the filling station is not designed as a rest facility for highway motorists, but rather as part of a shopping complex and new residential development.
• Two notice boards were placed on site on 25 November 2011: On the northern boundary of the site along the N2 At the start of the gravel access road as it branches off the R102	
• Noted, thank you. The site falls within an area classified as 'rural zone 2' in the Nelson Mandela Bay Spatial Development Framework Plan (see extract from the SDF in Appendix G). The desirability of the proposed development has been motivated by Urban Dynamics in the town planning report (refer to Appendix D). The report concludes that the development is desirable and would have a positive impact on the precinct.	
• Noted, thank you. We have consulted various environmental guideline documents available for the study area (e.g. the East Cape Biodiversity Conservation Plan, the NMBM Metropolitan Open Space System, and a 1:50 000 topographical map – refer to Appendix G). All maps extracted show that no drainage areas traverse the site boundary or occur within at least 300 m of the site boundary. However, surface water runoff from the site may drain into the Geduldsrivier and impacts associated have been addressed in the environmental assessment. Recommendations have been given to avoid risks of contaminating both surface and groundwater. A geotechnical study has also been done for the site which showed that the site is suitable for underground storage tanks and that based on soil type and depth and the absence of shallow groundwater, treating sanitation effluent should pose a low risk on groundwater.	
• This was sent to the I&AP and is included in this Draft BAR	
• An investigation of the section of N2 between Port Elizabeth and Humansdorp was done to determine the best location for the facility. The preferred site was selected from a safety and traffic volume point of view. Direct Rest and Service Facilities are crucial elements of road systems. This is evident from research that indicates interception rates of between 15 and 20% at similar locations. Further research indicates that less than 50% of vehicles turning into Rest and Service Facilities refuel at the facility. The facilities are primarily used for relaxation and use of the toilets, convenience stores and food offering. The South African National Roads Agency Limited (SANRAL) acknowledges the need for direct access rest and service facilities. In Paragraph 4.4.1 of their Policy in Respect of Road Planning and Design it states that "Road users travelling on the network have a need for roadside services and rest areas along the network of national roads at reasonable intervals, in balance with road safety and sound traffic management. To this end, the private sector may take the initiative to identify and acquire service area sites." Currently there are no direct access rest and service facilities on the N2 between Grahamstown and Tsitsikamma, a stretch of road of approximately 260 km in length. According to SANRAL Regulations, the minimum spacing between direct access rest and service facilities on national roads with traffic volumes such as at the study site should be 30 km. It must be noted that similar facilities in major towns and cities along the route (e.g. Port Elizabeth, Jeffreys Bay) cannot be considered in the comparison. Research has shown that long distance road users do not turn off the national routes into cities and towns for the purpose of refuelling, relaxing or use of toilets. Existing facilities in Jeffreys bay and Port Elizabeth are designed for the needs of urban road users and do not cater for long distance road users. Research has shown that toilets at urban sites cannot cope with the needs of long distance road users	

• It is a requirement of SANRAL that a bridge must be provided at the facility. The reason is to prevent dangerous U-turn movements of delivery trucks and other road users. The existing bridges are not close enough to the proposed facility to prevent dangerous manoeuvres. The proposal is however to build a facility only on the southern side of the N2. For this purpose a full interchange is therefore proposed to make the facility accessible to both directions of travel
• The required infrastructure will be established at the mentioned location. Locations in the close proximity of the Van Stadens pass, R334 Uitenhage interchange will not meet SANRAL's safety requirements
• The existing provincial and local road system will be used
• Every effort will be made to utilize the local labour force with suitable skills. Specialised work such as fuel installations will be done by specialist contractors
• Every effort will be made to source produce sold at the facility from the local community
• The waste water treatment technology to be used at the site was originally sourced from Germany and adapted for local conditions. Nine of these plants are currently operational throughout South Africa. Monitoring of effluent quality at these facilities shows that it meets national standards. The Waste Licence application that is being submitted to the National Department of Environmental Affairs will consider the risks that the treatment plant may pose on the surrounding environment, in particular contamination of surface and groundwater, odour and health impacts. Emergency measures will be in place in the event of plant failure or electricity shut down, and the plant will be designed to retain effluent for the minimum of amount of time required to remedy the problem so that untreated effluent is not discharged into the surrounding area. The suitability of the effluent for use as irrigation water will also be assessed based on standards and the soil and geological conditions on site. Details will be included in the Basic Assessment report.
• A sewage treatment facility will be established on site and the existing water connection on the farm will be utilized
• The facility is designed for long distance road users and will provide access from the N2 only. The facility will not provide access to adjacent properties. Taxis will however be welcome to use the facility
• Highway rest and service facilities are well managed facilities with on-site security personnel and should therefore not contribute to safety risks to the local community
• Highway rest and service facilities are well maintained facilities and are designed to avoid pollution as best as possible. Mitigation measures have been included in the report to address waste managed during construction and operational phases
• This has been addressed under surface and groundwater impacts
• The applicant did an extensive investigation of the N2 between Port Elizabeth and Jeffreys Bay to determine a suitable site for the proposed facility. The investigation concluded that the most suitable site for development of such a facility, in accordance with the needs of long distance road users, is at the proposed site. A 'need and desirability' component has been included in the Basic Assessment report that is available for public comment
• Background Information Documents and posters were sent out and placed for public comment on 25 November 2011 until 13 January 2012. Regulation 54(8) states that no public participation should occur between 15 December and 2 January. We have allowed a 30 day comment period – o 25 November to 15 December = 20 days o 3 January to 13 January = 10 days o Additional Period = 19 days • We extended public participation over the December period to include any potential holiday-makers that travel on the N2 into Port Elizabeth who may be interested in providing comment on the proposed fuel station.

• The site is location ~13 km west of the Bay West development. Potential concerns regarding wastewater treatment plants include odour and surface and groundwater contamination. Considering the significant distance of the Bay West development from the site, if odours were to be created, they would be sufficiently dissipated before reaching the precinct. Surface water runoff and any potential contamination from the site would drain into the Geduldsriver which is part of the Van Standens River corridor. This is in no way connected with the drainage system that occurs in the Bay West precinct (i.e. the Baakens River system). Therefore if contamination were to occur, it would not impact on the precinct. In addition to the above, the waste water treatment plant has been designed to avoid odours and contamination. A geotechnical study has been done which shows that the site is suitable for a waste water treatment plant and that groundwater is not at risk of contamination in the case of plant failure (please refer to the Waste Licence application).
• The facility will be visible for 2 km in both directions, and the Bay West development is ~13 km east of the site. Visual impacts of the facility on the development are therefore not expected.
• Dust creation has been identified as a potential impact in construction phase. This can be mitigated through standard measures as listed in this BAR and in the Construction EMPR.
• Potential health risks associated with wastewater treatment plants and fuel storage include odour, and surface and groundwater contamination, and safety risks (e.g. fires and explosions). These have been assessed in the BAR.

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

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

Planning and Design Phase:
Alternative (preferred alternative)

Direct impacts: none *Indirect impacts:* none *Cumulative impacts:* none

Construction Phase
Alternative (preferred alternative)

Direct impacts: Negative: • Impacts on flora and fauna: Generally, potential impacts of construction in natural areas on vegetation include damage to, or destruction of, indigenous vegetation and potential loss of intact communities or species of conservation significance, as well as the possible introduction of alien species. Impacts associated with fauna primarily relate to disturbance and the loss of habitat and the limitation of free movement. According to the NMBM MOSS Plan (2009), the pre-transformation vegetation on site is classified as mostly Rowallan Park Grassy Fynbos while a section of the on-and-off ramp will traverse an area classified as Colleen Glen Grassy Fynbos. Vegetation on site has been largely transformed by human activity (e.g.

cultivation, excavation, grazing). The site where the service and rest facility and waste water treatment plant (WWTP) is proposed is mostly covered by dense stands of alien trees with remnants of grassy fynbos in open patches, and the site on the northern side of the N2 where the on-an-off ramp is planned has been cleared for cultivated lands and pastures. A general list of floral species occurring on the site where the service facility and WWTP are proposed was made during a site visit. The list of flora recorded and their corresponding protection status in terms of the National Red Data List (2009) and the East Cape Nature and Environment Conservation Ordinance (1974) is given in Appendix G. Rowallan Park Grassy Fynbos is described in the NMBM Conservation Assessment (2009) as follows:

"... characterised by indicator species such as *Lanaria lanata, Microlaena tenuifolia, Cyrtanthus obliquus* and *Gasteria nitida*. *Podalyria calyptrate* is also common..."

On a broader scale, Mucina and Rutherford (2006) describe vegetation on site as Algoa Sandstone Fynbos. Important taxa include:

Endemic taxa: *Agathosma gonaquensis* (critically endangered), *Cyclopia pubescens* (critically endangered), *Erica etheliae* (data deficient) and *Holothrix longicornu* (critically endangered).

Tall shrubs: *Protea eximia, Protea neriifolia* and *Protea repens.*

Low shrubs: *Agathosma hirta, Agathosma ovata, Erica zeyheriana* (vulnerable), *Euryops ericifolius* (endangered), *Helichrysum appendiculatum, Helichrysum teretifolium, Leucadendron salignum, Leucadendron spissifolium* subsp. *phillipsii, Leucospermum cuneiforme, Protea cynaroides* (critically endangered), *Protea foliosa* and *Tephrosia capensis.*

Succulent herbs: *Crassula pellucida* subsp. *Marginalis.*

Graminoids: *Andropogon eucomus, Brachiaria serrata, Cymbopogon pospischilii, Cynodon dactylon, Digitaria eriantha, Ehrharta calycina, Eustachys paspaloides, Ischyrolepis capensis, Pentaschistis heptamera, Pentaschistis pallida, Thamnochortus cinereus, Themeda triandra* and *Tristachya leucothrix.*

When these descriptions are compared to the list of species occurring on site, it can be seen that vegetation cover is not representative of the original vegetation type.

Based on the location of the site adjacent to the N2 and the transformed nature of the vegetation, a high diversity of faunal species is not expected.

The site is not part of a critical biodiversity area or ecological process area in the NMBM MOSS Plan (2009) and is classified as 'cultivated lands' on the East Cape Biodiversity Conservation Plan (2007). Construction impacts on conservation networks are therefore not anticipated. However, surface water from the site will ultimately drain to the Maitlands River corridor to the south – if surface water is contaminated by construction activities, this may impact on biodiversity beyond site boundaries. This will be addressed under surface and groundwater impacts in the section that follows.

Other construction activities that may impact on flora and fauna are:

1) Heavy construction vehicles and machinery may disturb or kill fauna, especially reptiles.
2) Cooking on open fires creates a fire risk, which could impact on flora and fauna
3) Disturbance often results in further encroachment and dense establishment of alien vegetation

These impacts can be prevented by good construction management.

The site where the service and rest facility and WWTP are planned is ~11.5 ha in site. It is suggested that areas of the site that will not be developed be rehabilitated and used as part of the 'rest' centre (i.e. dog walking, picnic area, education signboards etc).

Mitigation measures will be suggested to minimize the severity of impacts during construction phase.

Based on the above, significance biodiversity impacts in construction phase are not anticipated.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Short term	Probable	Low -	Low – (biodiversity on the site is poorly managed and the area is infested with alien vegetation)
Preferred alternative	Short term	Probable	Moderate -	Low – (assuming successful rehabilitation of the undeveloped portion of the site)

- Noise:

Noise will be created during construction phase by heavy machinery and construction staff. This may impact on fauna and surrounding land users. The surrounding area has very low noise levels because of low occupancy and low intensity land uses (e.g. mostly open space, agriculture and rural residential). The most significant source of noise in the area is currently from vehicles on the N2. The severity of the impact can be reduced to low significance by limiting the working hours of construction staff to between 07:00 and 17:00 on weekdays and every alternative Saturday until 13:00; ensuring that construction vehicles adhere to speed limits and are in sound working order; and educating staff about the sensitivity of the area and the need for sensitive work methods. The preferred layout plan limits development to a relatively small section of the site and open areas will serve as noise 'absorbers'.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Preferred alternative	Short term	Probable	Moderate -	Low -

- Dust:

As vegetation is cleared and soil is exposed in construction phase, the potential of dust creation increases. Dust creation will be exacerbated during high wind conditions. Dust may affect the visual and air quality of the area, and may smother vegetation if generated in sufficient quantities. Mitigation measures will be given that should prevent dust creation.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Preferred alternative	Short term	Probable	Moderate -	Low -

- Destabilisation of soil

Clearing of vegetation will expose soils and make them vulnerable to destabilisation by wind and water. This may result in erosion and impact on areas beyond the site boundary. The site is however relatively flat and does not have areas that present a high erosion risk. This impact can be avoided by good work practices and prompt rehabilitation. Rehabilitating the undeveloped portion of the site and maintaining a good vegetation cover will assist in preventing erosion. Measures will be suggested below to reduce the probability of erosion from occurring.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Preferred alternative	Short term	Probable	Moderate -	Low -

- Surface and ground water contamination via construction-related activities (e.g. fuel and cement)

Activities that may impact on surface and groundwater during construction include:

1. Contamination from fuels, oils, cement and other construction materials
2. Erosion and sedimentation of drainage areas

There are no permanent water features on site; however, surface water runoff from the site would ultimately drain into the Geduld River which drains east, west and south of the site. According to available maps (e.g. 1:50 000 topographical map, NMBM MOSS riverine corridor areas, ECBCP drainage features), the closest point of the river to the site is ~300 m. It is important that construction activities do not result in sediment and surface water contamination. Floral species such as *Cyperus* spp. and *Schoenoplectus* sp. are natural filters and considering the relatively large distance to the nearest point of the river (~300 m); it is likely that if any contamination does occur, it will be filtered prior to it reaching the river. However, mitigation measures will be given below to reduce the possibility of contamination from occurring.

A geotechnical investigation was done of the site, including soil percolation tests (report attached as Appendix D). Eight test pits were excavated to a maximum depth of ~ 6.4 m (refusal depth or the maximum reach of the excavator). Two samples were collected for consolidation and permeability testing. Groundwater seepage did not occur in any of the test pits. Permeability results showed that soils have a very low permeability which can mostly be attributed to the dense and very dense consistency of the soil as well as the intact soil structure. The risk of groundwater contamination from construction activities is therefore low.

The site is currently infested with dense stands of alien trees which utilise vast volumes of water that should be draining to the Geduld River. Clearing these trees in construction phase and rehabilitation of the site with appropriate vegetation should enhance the site's filtration capacity and result in increased flow to the river which are positive impacts.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Long term	Probable	Moderate – (alien trees	Moderate -

			reduce the site's filtration capacity and starve the Geduld River of flow)	
Preferred alternative	Short term	Probable	High -	Moderate - (cannot be reduced to low – because it is in a reception area which increases the risk to the river) Moderate + (with clearing of alien trees)

- Dumping of building rubble and other construction wastes

A common construction impact is poor waste management, resulting in dumping of rubble and other wastes in open space areas. It is vital that all solid waste, including excavated material that is not re-used as fill material, be removed from site to a registered waste disposal site. If properly controlled, this impact would be of low significance.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Preferred alternative	Short term	Probable	High -	Low -

- Destruction of and/or disruption to heritage and/or cultural resources

Dr Binneman did a Level 1 Archaeological Impact Assessment of the site (report attached as Appendix D). The study concluded that based on previous disturbances, the site is of low cultural sensitivity and it is unlikely that any archaeological material of contextual significance will be uncovered during construction phase. Recommendations from the report will be included as mitigation measures.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Preferred alternative	Unlikely impact based on outcomes of specialist investigation			

- Traffic Impacts

Traffic associated with the development in construction phase will be limited to construction vehicles. It is expected that an average of 5 trucks per day and a maximum of 10 trucks per day will access the site using the access route shown in Figure 3. Local residents and farmers that utilise the proposed access route will be impacted on by construction vehicles. The red line in Figure 3 shows the section of the access route that is a gravel road (approximately 4

residences/agri-industries use this access) – this area will be susceptible to erosion and dust creation which will impact on local road users if not controlled. Mitigation measures will be suggested to reduce these impacts. An average of 5 trucks per day is not expected to create significantly high traffic impacts that would disrupt local road users. Safety issues (e.g. accidents involving cars and pedestrians) must also be considered. If construction vehicles adhere to speed limits this should not be a high impact.

➢ Figure 3: Access route to be used by construction vehicles (yellow line).

Construction vehicles will not access the site from the N2, thereby limiting traffic flow on the major freeway. However, traffic on the N2 may be impacted when constructing the on-and-off ramps and bridge across the N2. Precast concrete beams will be used in the construction of the bridge to minimize the impact on traffic on the N2. Columns will be erected each side of the road and in the median - traffic will be unaffected in this stage. The only time when traffic will be disturbed is when the precast beams are put into position across the carriage way, onto the columns. Traffic will be disturbed for half an hour at a time in off-peak hours. Traffic signs as prescribed by the Road Traffic Signs manual will be used when traffic is disturbed. The traffic authorities will be notified of any disturbance and their assistance will be requested.

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	-	-	-	-
Preferred alternative	Short term	Probable	Local and provincial roads: Moderate – National road: High -	Local and provincial roads: Low – National road: Moderate -

Positive:
Employment creation: construction phase will generate a certain number of short-term jobs

Impact	Duration	Probability	Significance before mitigation	Significance after mitigation
No-go Option	Short term	Probable	Low -	Low -
Preferred alternative	Short term	Probable	Low +	Low +

Indirect impacts:
None
Cumulative impacts:
None

Mitigation Measures
Flora and Fauna impacts:

- During construction phase, work areas must be clearly demarcated with danger tape so that construction workers limit their impact to these areas alone.
- In areas to be disturbed, indigenous vegetation must be removed and stored in a nursery area for site rehabilitation. Any necessary permits must be obtained prior to the removal of protected and threatened species
- All construction vehicles must stay on single demarcated access tracks to avoid compaction of soil and roots.
- A rehabilitation programme for cleared areas around structures must be developed and implemented
- Rehabilitation should be undertaken in a progressive manner. Re-vegetation of the disturbed areas with indigenous material should be undertaken as soon as construction activities at an individual site have been completed.
- Until such time as vegetation has established, temporary soil stabilization measures must be used. These can include the use of gravel bags, straw and other matting materials, hay bales, siltation fences, sedimentation basins, grassy swales, hydro-seeding, and straw mulching.
- Only indigenous vegetation that occurs naturally on site is to be planted in site rehabilitation and in landscaping activities
- All alien vegetation must be removed from site and a maintenance programme for continual removal and/or follow-up actions must be developed
- Provide an information programme for contractors and site staff about the need to conserve the fauna and flora of the area. All construction staff must receive training on environmentally safe work methods.
- Safe cooking areas must be provided for staff and no open fires must be allowed on site

Noise:

- All construction vehicles must be in sound working order
- Construction times must be limited to weekdays between 07:30 and 17:00 and alternate Saturdays until 13:00
- If blasting is to occur, neighbours must first be informed

- A noise complaints register must be kept at the site office
- The normal municipal by-laws with regards to noise control must apply
- Construction staff must be informed about the ecological sensitivity of the surrounding area, as well as the sensitivity of neighbours to noise.
- Construction staff should not be housed on site.
- Use should be made of local labour

Dust:

- Prompt rehabilitation and wetting down of recently cleared areas should minimize dust creation
- All work must stop during high wind conditions
- Construction vehicles must adhere to speed limits
- If fine building materials/sands are to be transported at the back of trucks, they must be adequately covered

Soil impacts:

- Disturbance and clearing of natural vegetation should be kept to the minimum required for construction.
- Newly cleared and exposed areas must be promptly rehabilitated with indigenous vegetation to avoid soil erosion. Where necessary, temporary stabilization measures must be used until vegetation establishes.
- Minimise the total amount of bare soil exposed to erosive forces by (1) controlling the amount of ground that is cleared at one time in preparation for construction, and (2) limiting the amount of time that bare ground may remain exposed before rehabilitation measures are put into place
- Erosion control is particularly important along access roads. Drainage structures should be incorporated into roads, where run-off water must be well-dissipated to prevent erosion at discharge points
- During construction phase, all soil stockpiles should be located on level areas, which are not susceptible to erosion. Where possible stockpile sites should be located on already disturbed areas where the site rehabilitation programme will be beneficial after all work has been completed. If necessary, stockpiles should be surrounded by silt curtains or some stabilizing measure.
- Soil stockpiles must not exceed 1.5 m in height and should not be stored for longer than 6 months. If alien material sprouts in stockpiles, this should be removed immediately.
- Overburden must not be mixed with topsoil stockpiles. Topsoil should not be stripped or stockpiled when wet, as compaction will occur.
- Sediment fencing should be erected downslope of all stockpiles to intercept any sediment, and upslope runoff should be diverted away from stockpiles.
- Plan for the worst case, that is, for heavy rainfall and runoff events, or high winds.
- Appropriate erosion control measures must be implemented on and adjacent to the access tracks and all construction areas and a monitoring programme established to ensure that no erosion is taking place. At the first sign of erosion the necessary remedial action must be taken.
- Care must be taken to ensure that runoff is well dispersed so as to limit erosion.
- Special attention should be paid to storm water control over the site. Site drainage must prevent ponding near structures and roads, and ensure that uncontrolled surface run-off does not encourage unwanted surface erosion and scour

- When constructing erosion-control structures, it is important that the structure should trap silt, but allow for continued flow of water. Solid structures divert, rather than slow down, water flow. The effect of water diversion is to initiate a new erosion area/donga. This must be avoided.

Surface and groundwater contamination:

- Ensure all construction machinery is in sound working to prevent oil and fuel leaks and excessive exhaust fume emissions.
- No rock, silt, cement, grout, asphalt, petroleum product, timber, vegetation, domestic waste, or any deleterious substance should be placed or allowed to disperse into any drainage line or areas that will not be developed
- Establish a site office with a dedicated area for construction vehicles to refuel and where cement can be mixed. Vehicle refuelling and cement mixing must only take place on impervious surfaces
- No fuel is to be stored on site.
- Toilet facilities must be made available to construction staff
- Adequate waste disposal bins must be positioned on site. These must be properly secured and covered to prevent scavengers from tipping them.
- Educate all construction staff on sound environmental work practices.

Dumping of building rubble and other construction wastes:

- All building rubble and other construction wastes must either be recycled (i.e. used on site in the building process) or removed from site to a registered waste disposal site. Environmentally acceptable work practice methods will be built into the contractor's code of conduct that will include the importance of good housekeeping on site. A suitably qualified company will conduct construction audits during which dumping will be strictly monitored.
- Litter must be controlled during construction – adequate bins must be made available on site at all times. These must be made scavenger proof and must be emptied on a regular basis.
- Prior to site closure, all building rubble and other wastes must be removed from site
- Construction materials stored at the camp site must be secured – i.e. plastics must be covered to prevent being blown off site. Skips must be regularly emptied and must be covered
- Any hazardous materials that need to be stored on site must be done so under lock and key

Destruction and/or disruption of heritage resources

- If human remains and/or other archaeological and historical material is uncovered during the development, such material must be reported to the nearest museum, archaeologist or to the South African Heritage Resources Agency, so that a systematic and professional investigation can be undertaken.
- Sufficient time should be allowed to remove/collect such material

Traffic Impacts

- Construction vehicles must adhere to a speed limit of 60 km/hr on tar roads ad 40 km/hr on gravel roads.
- Vehicles transporting fine materials must be covered using tarps to prevent dust creation.

- The traffic department must notified and involved when construction activities along the N2 take place. The required safety signs must be used.
- The public must be notified of any road closures ahead of time.
- Roads must be monitored for signs of erosion, especially after wet periods. If roads are damaged by construction vehicles, they must be rehabilitated immediately.
- The developer should be responsible for the condition of the road during construction phase within reasonable measures – i.e. any damage caused as a result of construction vehicles must be rectified by the developer
- Access to businesses and residences must not be affected.
- A community liaison officer must be on site at all times to receive comments from residents. These must be recorded in a complaints register along with follow-up action for review by an external auditor.

Employment creation

- Use should be made of local labour
- Materials should be sources from local suppliers
- Transport should be provided for labour to-and-from site on a daily basis
- Construction staff must not be housed on site

Operational Phase

Alternative (preferred alternative)

Direct impacts:

- Biodiversity Impacts:

Vegetation on site has been transformed and is not representative of the pre-transformation vegetation type. Owing to the fragmented nature of the site, and the adjacent N2, a high diversity of fauna is not expected to utilise the area. The intention is to rehabilitate sections of the site that will not be developed and allow visitors to utilise the area for resting, walking, picnicking etc. Information boards will be erected that explain the vegetation type and its ecological importance.

The site is not part of the NMBM critical biodiversity area network, and no ecological corridors traverse it. In terms of the ECBCP (2007), the site is classified as 'cultivated land'. Development of the site will therefore not impact on biodiversity persistence in the long term.

Potential impacts on biodiversity management in the surrounding area could be:

1) Fire
2) Poor Waste management
3) Trampling of vegetation in open space areas designated for resting, walking and picnicking

These impacts can all be prevented by continuous management in operational phase. Provided that mitigation measures suggested below are successfully implemented, operational impacts on biodiversity should be of low significance.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	Long term	Probable	Low -	Biodiversity is currently not managed and the site is heavily invaded with alien vegetation
Preferred alternative	Long term	Probable	Moderate -	Low -

Traffic Impacts:

A Traffic Impact Assessment (TIA) was done by Infrastructure Consulting Engineers (attached as Appendix D). The report considered traffic volumes, the status of the N2, traffic safety aspects, and level of service for merges and diverges. Due to the location of the service facility, it is highly unlikely that it will attract primary traffic and it is only likely to attract passer-by traffic from the N2. The facility will only be accessible from the N2. No access will be provided to vehicles or pedestrians from the back of the facility.

A summary of the report findings is given below:

- Visibility of the facility is not only important from a road safety point of view but is also an important commercial consideration. Good visibility promotes early decision making and prevents last minute decisions. The proposed new bridge for the facility will be visible for a distance of more than 2 km in each direction. The general visibility of the site is very good. The anticipatory sight distance to off ramps to the proposed facility complies with SANRAL's standards.
- The ramp lengths comply with the requirements of SANRAL Geometric Design Guidelines and Toegang van en na Fasiliteite langs Nasionale Deurpaaie.
- The distances between yellow line breakpoints of existing interchanges and the proposed facility are in compliance with the prescribed distances of the SANRAL Geometric Design Guidelines (refer to Table 7.1 in Appendix D).
- The anticipated level of service for merge and diverge influence areas will remain at an acceptable level.

In summary, the analysis of the proposed facility concluded that it complies with SANRAL's Geometric Design Standards and the impact on the operation along the N2 is within standards. With an anticipated interception rate of between 15 and 25%, the proposed facility will enhance road safety and road user convenience. Impacts on traffic are therefore predicted to be of low significance.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	-	-	-	-
Preferred alternative	Long term	Probable	Low -	Low -

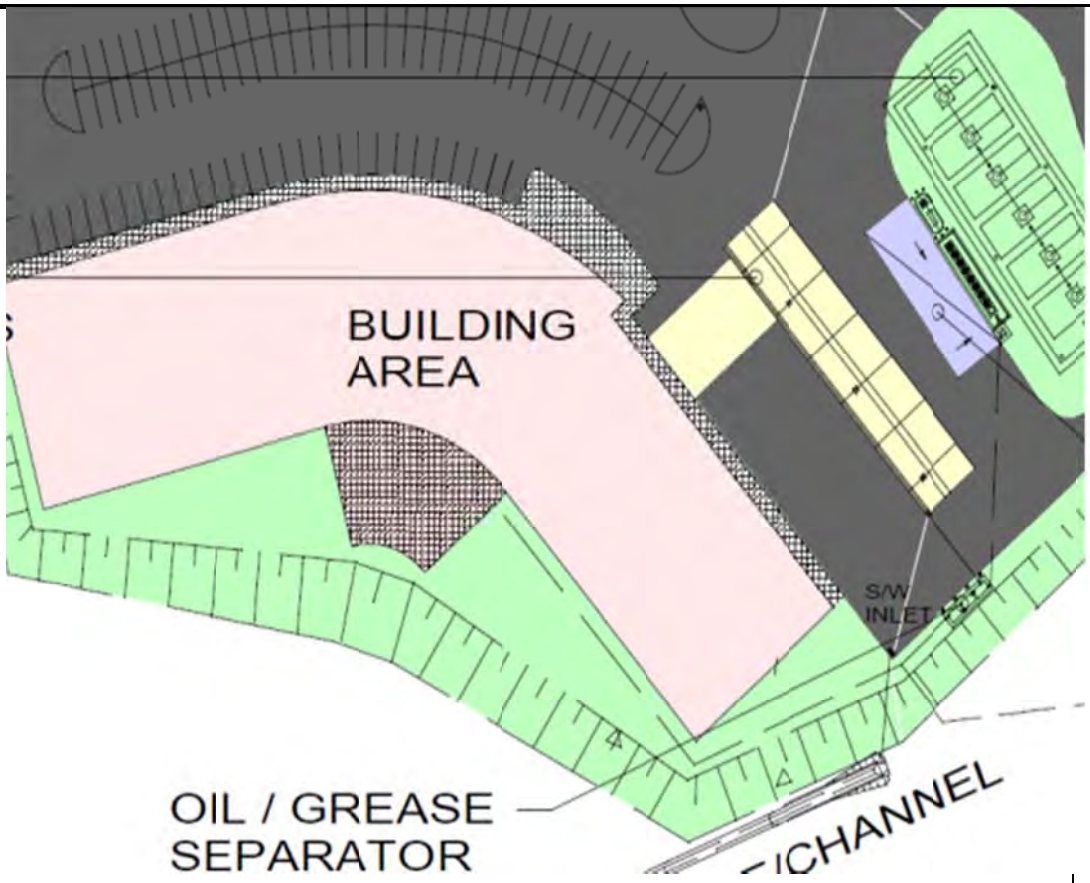
Surface and Groundwater Impacts:

The primary impact on surface and groundwater in operational phase will be via potential contamination from fuel and oil leaks, and the on-site waste water treatment plant. Various environmental guideline documents available for the study area (e.g. the East Cape Biodiversity Conservation Plan, the NMBM Metropolitan Open Space System, and a 1:50 000 topographical map) have been consulted. All maps extracted (see Appendix G) show that no drainage areas traverse the site boundary or occur within at least 250 m of the site boundary. However, surface water runoff from the site may drain into the Geduldsrivier - impacts associated with this are addressed below.

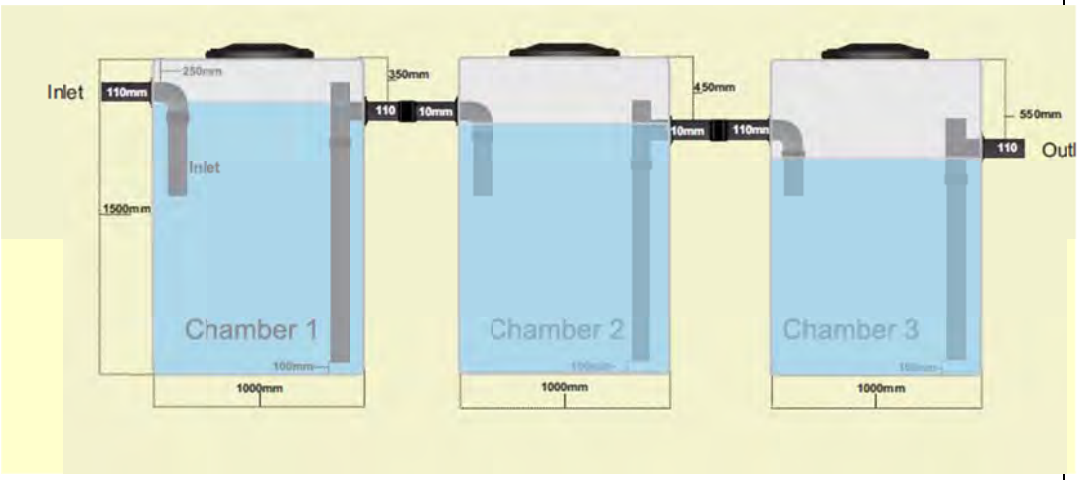
- Impacts related to fuel and oils:

Sources of fuel contamination include leaks from underground tanks and small leaks when transferring fuel from delivery trucks to storage tanks and when dispensing fuel to vehicles. The former would ultimately permeate into the groundwater system, while the latter may enter the stormwater system or the surrounding areas (and ultimately the Geduldsrivier) via surface water runoff. Sources of oil would be from vehicle leaks. To reduce the risk of fuel and oil leaks on the surface, a spill slab that slopes to a low point will be installed at filler points (i.e. where the fuel trucks fill underground tanks). Any spillage (which is uncommon) will drain to the low point from where it flows to an oil separator where the oil is separated from the water. The oil is separated from the water in the chambers of the oil separator. When the oil separator has reached its capacity it is pumped out by a commercial contractor for disposal at a registered waste disposal site. The maximum volume of oil that can be contained in the oil separator is 2.85m^3.
From the oil separator the water will flow into the sewage system and not into the stormwater system. Any spillages on the forecourt at the pumps will also flow into a low point and into the oil separator and then to the sewage system. Figure 4 shows the location of the oil separator on site and Figure 5 illustrates how the oil separators operate:

In the oil separator the water and the oil or fuel gets separated because of differences in the density of the different liquids. Oil and fuel has a lower density than water and accumulates on top of the water. The outlet pipes from each of the chambers are at the bottom of the chambers. The oil stays behind in the oil separator and the water flows into the sewage system.



➢ Figure 4: Location of the oil/grease separator on site.



➢ Figure 5: Operation of oil separators.

A geotechnical investigation (refer to Appendix D) has been done for the site to test the suitability of the underlying geology and soil type for underground fuel storage tanks. Eight test pits were excavated to a refusal depth or to the maximum reach of the machine. The permeability of soils was also tested. No groundwater seepage or bedrock was encountered in the trial pits and soil permeability is low. This makes the site suitable for underground fuel storage tanks and reduces the risk of groundwater contamination should leaks occur.

- Impacts related to sanitation effluent:

Potential risks associated with treating sanitation effluent on site include contamination of soils, surface and groundwater with untreated effluent containing pathogens, and elevated chlorine and nutrient levels. This may happen if the plant leaks, is poorly managed or if unexpected shut-down occurs (e.g. power failures) and untreated effluent overflows into the surrounding environment. The selected plant does not utilise chlorine to disinfect effluent, therefore elevated chlorine levels in the soil are not an issue. The proposed waste water treatment plant has the capacity to treat 42 m^3 of sanitation effluent per day. The plant is a combination of a vertical flow planted soil filter and a horizontal flow planted soil filter. A description of the works is attached as Appendix D. It is proposed to utilise treated effluent for irrigations purposes, therefore the quality of the final effluent must comply with general standards issued by the Department of Water Affairs. Monitoring of effluent quality at other facilities that utilise the same type of waste water treatment technology shows that it meets standards specified by DWA for using treated effluent for irrigation purposes (i.e. 100 000 faecal coliform bacteria/100 ml - refer to monitoring results attached as Appendix D). The plant has been designed to manage/contain effluent in the event of plant failure or shutdown – this should mean that untreated effluent will not dissipate into the surrounding environment and impacts on ground and surface water will be prevented. This will be achieved in the following manner:

The plant consists of a septic tank with 3 chambers and a planted soil filter. The last chamber in the septic tank is called the pump chamber. Water is pumped from the pump chamber to the planted soil filter. Two pumps will be installed, so in the event of one pump failing the second pump will start. The capacity of the pump chamber will also be sufficient to store a full day's water in the event that both pumps fail. A high water alarm will be installed so that failures can be detected. The septic tank and filter will be positioned so that should the septic tank overflow, it would overflow into the planted soil filter wetland for further treatment.

The soil characteristics on site (i.e. thickness and low permeability) and the lack of shallow groundwater mean that should leaks from the treatment plant occur, groundwater will not be at risk of contamination since the effluent will be retained for a sufficient time for pathogens to be remediated.

Mitigation measures will be suggested below (in line with operational procedures specified by the project engineers) – if these are successfully implemented for the life time of the project, impacts on surface and groundwater should be low.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	-	-	-	-
Preferred alternative	Long term	Probable	Moderate -	Low -

Health impacts (odour from the waste water treatment plant):

Waste water treatment plants are traditionally associated with bad odours which can impact on surrounding land users. In the past, the Department of Health set a buffer distance of 800 m from residential areas. However there are no longer any regulated buffers, and the impact has to be evaluated based on the technology proposed and local site conditions (e.g. wind direction, surrounding land uses). The prevailing wind in Port Elizabeth is usually from the south west, but easterly winds may become significant in spring and summer and north westerlies in autumn and winter. The windiest conditions occur from August to January and the calmest wind periods occur from March to July (SA Weather Bureau). Figure 6 is a wind rose for Port Elizabeth.

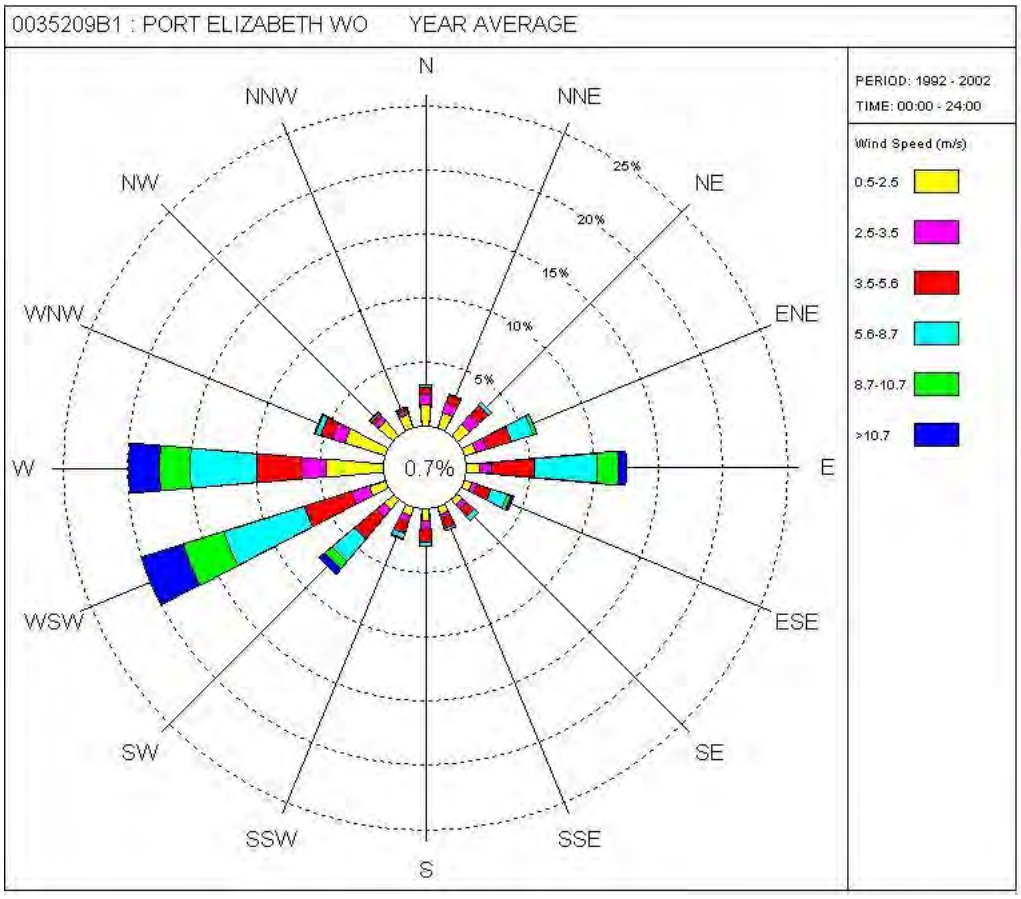


Figure 6: Wind rose for Port Elizabeth (Source: SA Weather Bureau).

The selected treatment plant uses a three chamber septic tank where anaerobic processes and separation of solids and wastes will occur below ground. This, together with efficient management of the plant, reduces the risk of odour. The applicant currently maintains 8 similar plants at petroports in South Africa illustrating capability to maintain the proposed plant. Surrounding land uses within 500 m of the site in the direction of the dominant winds are predominantly agricultural lands, which means that should odour be created, there will be few potentially sensitive receptors.

With continuous plant maintenance, impacts of odour are expected to be of low significance. Considering the relatively close proximity of the petroport and associated stores and public facilities, it is in the best interests of the applicant to maintain the treatment works.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	-	-	-	-
Preferred alternative	Long term	Probable	Moderate -	Low -

Visual impacts:

The site will be visible for 2 km in either direction on the N2 to promote accessibility and for safety reasons. Petroports are recognised facilities along major transportation routes and a visual impact on road users is not expected. Surrounding land uses are mostly agricultural lands and rural-residential areas, and the N2. The total size of the facility, including the interchange on the N2, will be ~3.5 ha. The proposed service facility will change the visual character of the site from its current status and residents that look over the site will have their viewshed altered. Residences that occur within 1 km of the proposed facility are circled in red in Figure 7 – the residence north of the N2 looks over the site onto the N2 and a visual impact is expected. The residence south of the site is at a lower altitude than the proposed facility and its viewshed is predominantly in a south, east and westerly direction. However, the facility will still be visible within a relatively close distance and a visual impact is expected. The current view of the two residences includes the N2 and traffic, agricultural lands, grass farm, agri-industrial facilities etc. – this, together with the relatively small disturbance footprint of the facility in relation to the total site size makes the visual impact moderate.

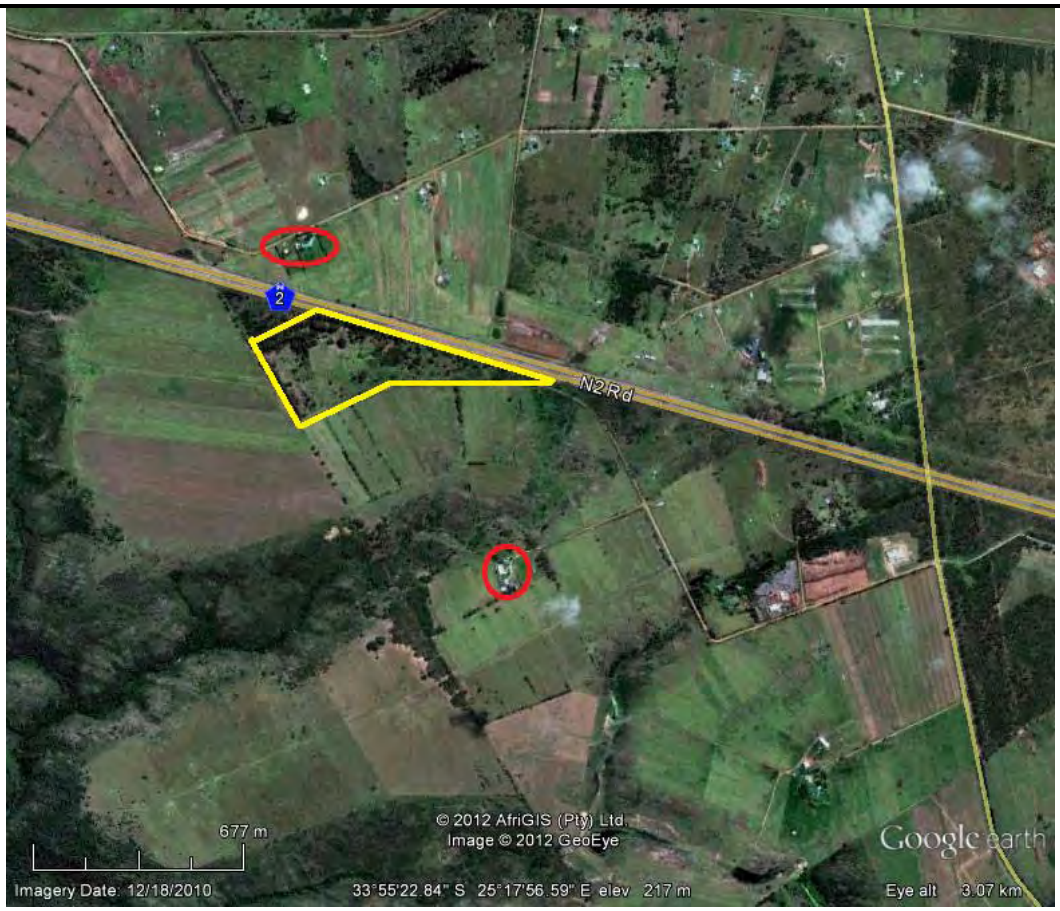


Figure 7: Residences (circled in red) within 1 km of the site (outlined in yellow).

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	-	-	-	-
Preferred alternative	Long term	Probable	Moderate -	Moderate reduced -

Indirect impacts:

Fire and explosions

Storage of fuel presents a fire and explosion risk. Mitigation measures are listed below to reduce the safety risks - if these are implemented, risks should be significantly minimsed. The surrounding area is not densely inhabited which makes potential emergencies easier to control.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	-	-	-	-

Preferred alternative	Long term	Probable	High -	Low -

Socio-economic impacts

The following social and economic impacts have been identified primarily through the public participation process:

- **Impact on filling stations in the sub-region and the sustainability of the proposed facility in relation to the sustainability of similar facilities (petroports) and filling stations**

  Currently there are no direct access rest and service facilities on the N2 between Grahamstown and Tsitsikamma, a stretch of road of approximately 260 km in length. The closest similar facility to the west of the site is the Total Petroport at Storms River Bridge (~140 km to the west). To the east, the closest facility with rest areas and toilets is at the Nanaga Farm stall (~80km east) – this facility is however not directly accessible off the N2 and has no filling station. According to SANRAL regulations, the minimum spacing between direct access rest and service facilities on national roads with traffic volumes such as at the specific site should be 30 km. It is thus clear that there is a need for a facility. Long distance road users do not turn off the national routes into cities and towns for the purpose of refuelling, relaxing or use of toilets. There is a need for long distance road users to relax and use toilet facilities. Existing filling stations in Jeffreys bay and Port Elizabeth are designed for the needs of urban road users and do not cater for long distance road users. Toilets at urban sites are not designed to cope with the needs of long distance road users. The proposed facility is therefore not expected to impact on similar facilities in the sub-region.

  Regarding the sustainability of the proposed facility in relation to similar facilities and filling stations, SANRAL's "Policy in Respect of Road Planning and Design" notes the following:

  On National Roads, the minimum allowed spacing between service areas will depend on the Average Annual Daily Traffic in both directions. Spacing less than these limits will not be approved, unless in the sole opinion of SANRAL, the benefits to the road user, the economy and the opportunity for work creation are considered highly desirable.

AADT Veh/day	Spacing Kilometre
<5 000	50
5 000-50 000	30
>50 000	10

  The above table has been derived using the estimated traffic volumes required to sustain facilities in the long term. SANRAL thus dictates the spacing according to what they deem to be sustainable. There is no similar service and rest facility within 100 km of the site.

  An application has been submitted for a filling station ~13 km south-east of the site in a mixed-use development (Bay West development). However, the filling station is not designed as a rest facility for highway motorists, but rather as part of a shopping complex and new residential development. Based on available regulations, the proposed facility will be sustainable and is needed in the sub-region.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	-	-	-	-
Preferred alternative	The facility is not expected to impact on similar facilities and other filling stations in the sub-region. Based on available regulations, the proposed facility at the selected location will be sustainable.			

- Local employment opportunities

Opportunities will be created for local farmers to see their produce to eateries and at outlets at the facility.
To operate the filling station (including facilities such as convenience store with bakery, car wash and restaurant), the following employment can be generated : pump attendants, cashiers, merchandiser, kitchen staff, car wash staff, admin clerks and domestic workers. It is expected that 65 permanent employment opportunities will be created during the operational phase of the proposed development.

The proposed development will not only provide employment opportunities but will also :

- Contribute to the municipal rate base
- Provide economic stability and promote economic sustainability.

It is expected that the proposed development will generate a yearly income of approximately R105 million.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	Long term	Probable	Low -	Low -
Preferred alternative	Long term	Probable	Low +	Low +

- Road safety

Direct Rest and Service Facilities are crucial elements of road systems. This is evident from research that indicates interception rates of between 15 and 20% at similar locations. Further research indicates that less than 50% of vehicles turning into Rest and Service Facilities refuel at the facility. Research therefore indicates that these facilities are primarily used for relaxation and use of the toilets, convenience stores and food offering.

The South African National Roads Agency Limited (SANRAL) acknowledges the need for direct access rest and service facilities. In Paragraph 4.4.1 of their Policy in Respect of Road Planning and Design it states that “Road users travelling on the network have a need for roadside services and rest areas along the network of national roads at reasonable intervals, in balance with road safety and sound traffic management.”

Rest and service facilities are crucial for road safety and the convenience of long distance road users. The proposed facility is therefore expected to have a positive social impact in

this regard.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	Long term	Probable	Moderate +	Moderate + (based on SANRAL's regulations, a facility is required in the area to promote road safety and driver relaxation).
Preferred alternative	Long term	Probable	Moderate +	Moderate +

Service availability

Infrastructure Consulting Engineers investigated service availability and supply for the development. Their report is attached as Appendix D.

Water

The facility will generate a daily demand of 31.5 m^3. The average anticipated flow is thus 0.365 l/s. A peak demand factor of 5 has been used to determine the peak instantaneous demand - thus peak demand = 0.365*5= 1.825l/s.

The water demand can be split into two categories:

- potable water
- water for toilets and urinals

A separate fire fighting system is proposed, where 72 m^3 will have to be stored on site.

Water will be supplied via a municipal trunk main adjacent to the site (refer to Figure 3 in Appendix D) and a borehole system. Treated sewage will also be used for irrigation.

Borehole water will be used for toilet, urinal and fire fighting purposes and will be stored in an 80 m^3 tank.

Sewer

Sanitation effluent will be treated on-site in a Subterra Vertical Flow natural filter (as discussed and ground and surface water impacts).

Energy

The electrical department at the NMBM has confirmed that a electrical point of supply of 315kVA / 400 Volt can be made available (letter attached as Appendix D).

Solid waste

Solids from the WWTP: Information obtained from operators of sewage plants at similar facilities indicates that almost all solids in the sewage are digested by anaerobic digesters. The total expected volume of inert material that cannot be digested is approximately 40 m^3 per year (3.33 m^3 per month). Solid waste from the waste water treatment plant will be

removed by a commercial honey sucker and disposed of at a municipal site.

Waste from the rest stop and restaurant is estimated at 75m ^{3} per month. General waste from the facility will be stored in normal wheelie bins and will be disposed of by the operator of the facility at a waste disposal site twice a week.

To summarise, the development can be serviced.

Impact	Duration	Probability	Significance without mitigation	Significance with mitigation
No-go option	No impact			
Preferred alternative	Long term	Probable	Moderate -	Low -

Cumulative impacts:
Negative:
None expected

Mitigation Measures:
Direct Impacts
Biodiversity:

- A fire management plan must be developed for the site
- The portion of the site that will not be developed must be rehabilitated and used for educational purposes (e.g. with signboards).
- Access to the portion of the site that will not be developed but that is proposed for rehabilitation must be controlled using sign boards and with designated walking and picnic areas.
- Waste must be managed in operational phase to prevent any littering on site and in open-space areas. Adequate bins must be made available especially in picnic areas. Bins must be covered and scavenger-proof.
- Landscaping must be done with indigenous plants only that would naturally occur on site. Use can be made of species removed in the search and rescue operation during construction phase.

Traffic Impacts:
Recommendations of the Traffic Impact Assessment must be implemented.

Surface and groundwater contamination:

- The waste water treatment plant must be adequately maintained to ensure proper treatment of effluent.
- Mobile independent diesel generators must be available in case of power failures.
- An alarm system must be included in the plant to alert plant operators of shut down or other problems in the plant
- A suitably qualified person must be employed to maintain and operate the waste water plant for the lifetime of the project.
- To monitor the effective working of the waste water treatment plant, it is

recommended to have samples of the final treated water tested on a biweekly basis by the laboratory of the Nelson Mandela Bay Municipality: Port Elizabeth over the first 3 months. Thereafter, samples should be taken on a monthly basis to test compliance with DWA standards.

- Final effluent must meet DWA's standards for irrigation. Irrigation must not occur within the 1:100 year floodlines of any rivers or within 100 m of a borehole that is used for potable water extraction. The quality of borehole water must be tested prior to the treatment works becoming operational and on a bi-monthly basis thereafter to detect any possible leaks or inefficient treatment of effluent.
- A clear reporting structure should be in place in the event of a spill or plant failure and a responsible person designated for clean-up action.
- Filling of storage tanks and collection of fuel by trucks must only take place on hard surfaces that are bunded. Stormwater must be controlled in these areas (i.e. potentially contaminated surface water from leaks must not be allowed to flow into the stormwater system)
- If fuel or oil spills do occur, contaminated material must be timeously removed
- The condition of the fuel reticulation system will have to be checked regularly and repaired to prevent leakages
- Tank fuel levels must be monitored and a record must be kept of daily discharges to determine if there are any leaks
- A tank overfill prevention system must be put in place
- A procedure must be developed for dealing with spills and other emergencies that must be made available to all staff.
- The oil chambers at filler points must be checked from time-to-time to determine efficient oil and water separation. The maximum oil storage capacity must not be exceeded (i.e. a schedule for contractor removal must be established).
- The facility should adopt a principle of environmentally-friendly operational practice:
    - No inorganic fertilizers and/or sprays may be used in landscaped areas
    - The use of organic cleaning products should be promoted.
    - Prior to washing dishes at eateries, excess fats and grease must be wiped off crockery and cutlery and disposed of in the waste bin rather than flushed into the sewer system

Odour:

- Efficient maintenance and operations of the wastewater treatment plant should prevent odour creation

Visual Impacts:

The design of the facility must consider the sense of place and visual character of the area. Lighting in and around the facility and along roadsides must be directed downwards (e.g. bollard lights) to prevent light pollution at night.

If fencing and walling are to be used, these must be visually permeable. Entrances must include soft landscaping to prevent them from being hard and visually intrusive features.

Fire and explosions

- Fuel storage vessels must meet the requirements of the NMBM Fire and

Emergency Services department (i.e. fuel must not be stored in vessels exceeding 20 000 litres)

- Tank fuel levels must be monitored and a record must be kept of daily discharges to determine if there are any leaks
- A tank overfill prevention system must be put in place
- The fuel storage area should not have any sources of ignition (e.g. litter, dead or dry vegetation) and none should be brought into the area (e.g. compressors, electrical switching)
- Filling of storage tanks and collection of fuel by trucks must only take place on hard surfaces that are bunded. Stormwater must be controlled in these areas (i.e. potentially contaminated surface water from leaks must not be allowed to flow into the stormwater system)
- If spills do occur, contaminated material must be timeously removed
- The condition of the fuel reticulation system will have to be checked regularly and repaired to prevent leakages
- All staff must receive adequate training required to carry out their duties in a safe manner
- First aid treatment must be readily available and there must be a trained health practitioner on site at all times
- Staff must wear protective clothing at all times
- Manuals and training regarding the correct handling of materials and packages should be in place and updated as new or updated material safety data sheets becomes available
- Monitoring must be done on a regular basis (air, stormwater, health of workers) and a record must be kept of all incidences (e.g. accidents, spills, exposure to fumes etc)
- A fire management plan must be developed prior to the site being operational

Social impacts

- As far as practically possible, use must be made of local labour in construction and operational phases
- Materials required for construction and operational phase must be locally sourced
- Opportunities must be made for local communities to provide fresh produce to food outlets at the facility

Indirect Impacts

Provision of Services:

- Water conservation measures must be implemented at the facility (e.g. rainwater harvesting)
- The proposed borehole must be registered with the Department of Water Affairs
- Solid waste should be separated at source for recycling purposes
- Treated effluent used for irrigation must comply with DWA general standards, and the area to be irrigated must be outside of the 1:100 year floodline and 100 m away from any borehole used for potable purposes
- Solid waste from the waste water treatment plant must be managed according to DEA's sludge handling guidelines
- The facility must be designed to meet the most recent requirements of energy efficient

policies and legislation in South Africa. The following energy efficient measures be should be used:

- Energy efficient light fittings
- Automatic lighting control
- Solar water heaters

3. ENVIRONMENTAL IMPACT STATEMENT

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

Seven site alternatives were investigated – the preferred site was selected from a safety and traffic volume perspective for the location of a rest and service facility. From an environmental perspective, the site is not part of the NMBM's critical biodiversity network and has no ecological process areas that traverse it. Vegetation cover has been largely transformed from its original status by farming activities, habitat fragmentation and alien vegetation invasion. Three waste water treatment technologies were considered - activated sludge, Lilliput and rotating disc systems. The three systems were evaluated in terms of their maintenance requirements and ability to treat sewage effluent from direct access rest and service facilities. The selected treatment options provides for a low risk technology that can be implemented on remote sites.

Several impacts were identified for construction and operational phases and after assessment, none were shown to create impacts that would be unacceptable. The table below summarises the significance and duration of impacts assessed.

Impact	Construction phase		Operational Phase	
	No-go	Preferred alternative	No-go	Preferred alternative
Biodiversity	Short term, Low -	Short term, Low -	Long term, Low -	Long term, Low -
Noise	No impact	Short term, Low -	No impact	No impact
Air quality (dust)	No impact	Short term, Low -	No impact	No impact
Air quality (odour)	No impact	No impact	No impact	Long term, low -
Soil erosion	No impact	Short term, Low -	No impact	No impact (if site successfully rehabilitated)

Surface and groundwater contamination	Long term, Moderate – (alien tree invasion)	Short term, Moderate – (cannot be reduced to low – because of the proximity to the Geduld Rivier) Short term, Moderate + (clearing of alien trees)	No impact	Long term, low – (mostly from sanitation effluent that will be treated on-site and fuel storage)
Waste management	No impact	Short term, low -	To be addressed under provision of services	
Archaeological impacts	No impact	Unlikely impact based on findings of specialist report No impact		
Traffic impacts	No impact	Short term Local and provincial roads: low – National road: moderate -	No impact	Long term, low -
Visual impacts	No impact	No impact	No impact	Long term, moderate reduced -
Odour	No impact	No impact	No impact	Long term, low -
Fires and explosions	No impact	No impact	No impact	Long term, low -
Services	No impact	Short term, low -	No impact	Long term, low -
Socio-Economic Impacts				
Employment creation	Short term, low -	Short term, low +	Long term, low -	Long term, low +
Sustainability of the facility and impact on similar facilities in the sub-	No impact	No impact	No impact	Based on a review of available SANRAL regulations and

region				spacing of facilities on the N2 and other major roads in the sub-region, the facility is needed and will be sustainable. Impacts on similar facilities are not expected based on the spacing distance recommended by SANRAL.
Road safety	Addressed under traffic impacts		Long term, moderate +	Long term, moderate +

No-go alternative (compulsory)

The 'no-go' option assumes the site remains in its current state, i.e. open space with transformed vegetation and dense alien vegetation invasion, and two structures. There are no critical biodiversity areas or ecological process areas that traverse the site in terms of the NMBM MOSS Plan (2009). The site therefore currently provides limited value in terms of biodiversity conservation. In its current state, the site provides no economic or social benefits to the surrounding community. The proposed facility will create jobs in construction and operational phase, and will allow for the selling of locally produced goods in operational phase as well as employment at the facility (petrol attendants, shop managers, cleaning staff, restaurant staff etc). The greatest benefit of the facility is in terms of the improved road safety. The facility will use a relatively small portion of the site, while the remainder will be rehabilitated and used as picnic and educational areas. Based on the above, the no-go option is not viewed to be the best option for the site.

SECTION E. RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES	NO
Is an EMPr attached?	YES	NO

The EMPr must be attached as Appendix F.

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

All mitigation measures listed in this report should be contained in an authorisation An environmental control officer must be appointed to monitor construction activities

SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

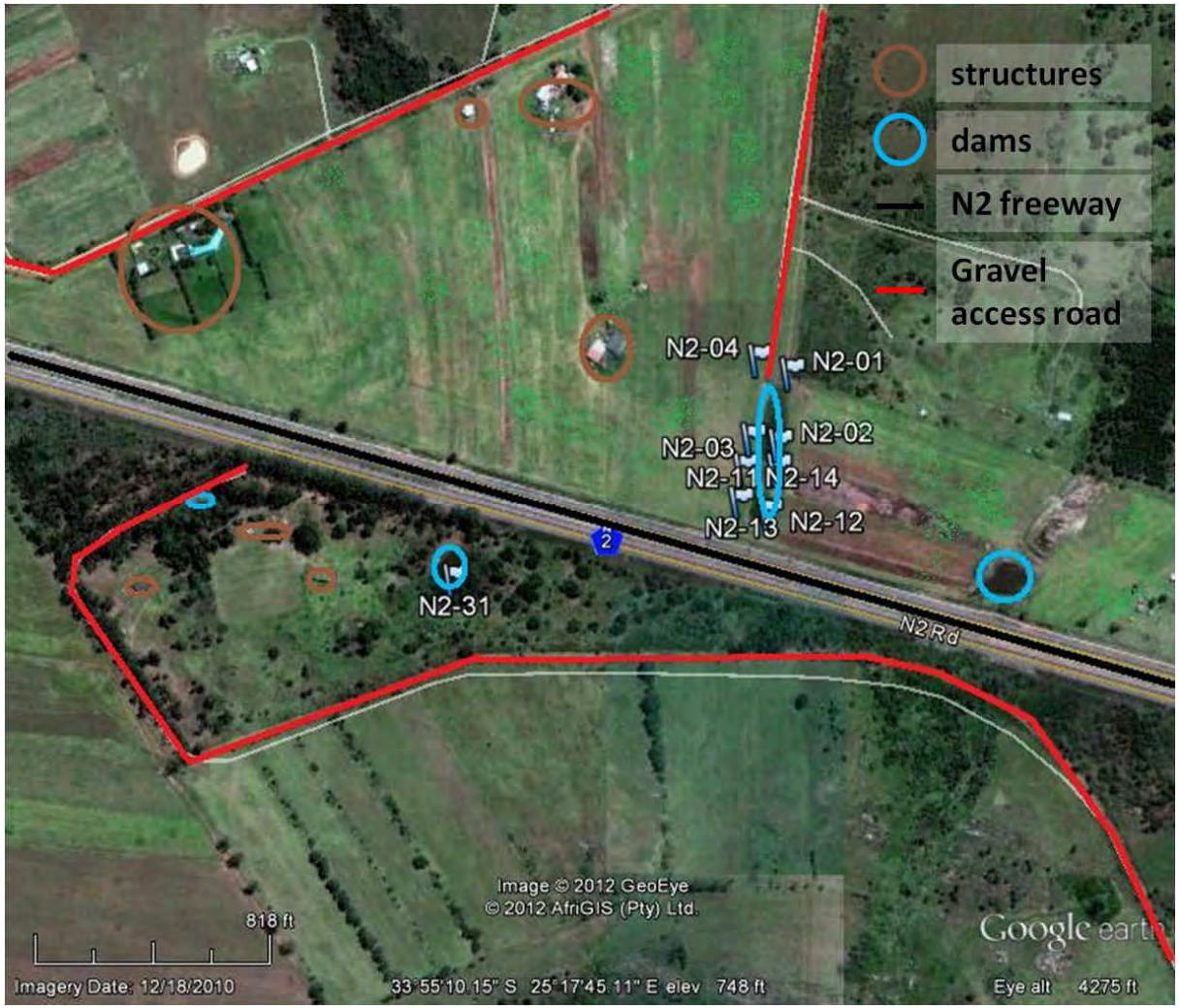
Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix A: Site plan(s)



➢ **Figure 1: Site Plan**

Appendix B: Photographs

Figure 2: A view of the site in a north-easterly direction. The N2 is behind the tall trees (*Eucalyptus* sp.) in the background.

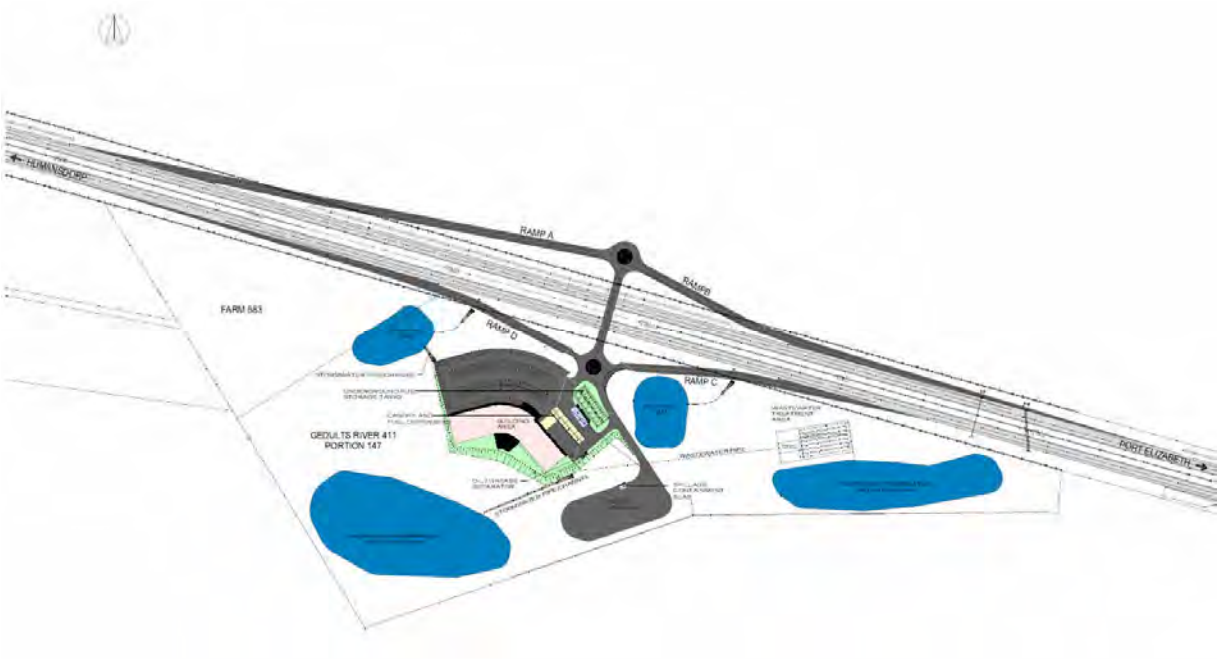
Figure 3: A closer view of the northern part of the site adjacent to the N2.

Figure 4: A view of the central portion of the site. Note the dense infestation of *Acacia saligna* saplings in the foreground.

Figure 5: An existing homestead on the western portion of the site.

Figure 6: A view of the southern end of the site looking in a southerly direction at neighbouring farms.

Appendix C: Facility illustration(s)



- **Figure 7: A schematic plan of the proposed highway rest and service facility and the Waste Water Treatment Plant (Source: Infrastructure Consulting Engineers, 2012).**

- **Figure 8: Pump and Tank Details (Source: Infrastructure Consulting Engineers, 2012)**

- **Figure 9: A Google Earth image with a schematic layout of the interchange and petroport facility (blue rectangle).**

Appendix D1: Services Report

REPORT ON CIVIL INFRASTRUCTURE FOR PROPOSED N2 REST AND SERVICE FACILITY ON PORTIONS 86, 147 AND 148 OF FARM GEDULTSRIVIER NO 411, UITENHAGE RD, EASTERN CAPE

Report by: JF Joubert
Infrastructure
Consulting Engineers
PO Box 186
Persequor Park
0020

Date: May 2012

Table of Contents

1. Introduction

This report discusses the provision of water, access, stormwater and sewage treatment for the proposed direct access rest and service facility on portion 147 of the farm Gedultsrivier no 411.

Suwenda Trading 40 (Pty) Ltd have secured portions 86, 147 and 148 of the farm Gedultsriver no 411 within registration division Uitenhage RD, Province of the Eastern Cape (see diagram below). The land is adjacent to the N2 between the St. Albans and Van Stadens pass interchanges. The properties were secured with the intention to develop a direct access rest and service facility to serve the traveling public along the N2. The position is indicated on figure 1 and figure 2.

Figure 1 : Locality Map