



VISUAL IMPACT ASSESSMENT

OCGT POWER PLANT ADDITIONAL UNITS

Mossel Bay Municipality
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Document prepared on behalf of
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Visual Resource Management
GIS & Mapping
3D Modelling

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1 EXECUTIVE SUMMARY

VRM AFRICA CC

VRM Africa CC is a Visual Impact Study and Mapping organisation located in George, Western Cape. We make use of the well-documented visual impact analysis methodology developed by the Bureau of Land Management in the USA in order to accurately and objectively quantify visual impact. For this purpose we make extensive use of GIS and 3D modelling technology.

Over the last 3 years VRM Africa CC has been involved with over 40 Visual Impact Assessments (VIA) throughout the country. The majority have been based in the Western Cape ensuring we have extensive practical experience assessing projects in terms of the planning policies stipulated by the DEA&DP Guidelines and the Western Cape PSDF.

For this project input regarding the mitigations and recommendations was gained from Liesel Stokes of Brink, Stokes, Mkhize (BSM), registered Landscape Architects.

Terms of Reference

VRM Africa was tasked by Ninham Shand with assessing the significance of the Visual Impact of the proposed development of three additional units at the Mossel Bay OCGT power plant, Portion 1 of Farm Patryfontein, Number 228, using the criteria stipulated in the terms of reference. (See full terms of reference on page 6).

In order to comply with Visual Resource Management requirements it is necessary to take into account all the relevant planning documentation and guidelines pertaining to this area. The Department of Environmental Affairs and Development Planning's (DEA&DP) "Guideline for involving Visual and Aesthetic Specialists in EIA processes" identifies visual triggers which are used to define the scope and extent of a Visual Impact Assessment. An initial visit to the property was undertaken and the following potential 'triggers' were identified which would require further investigation.

- Areas of proclaimed heritage sites or scenic routes
- Areas with intact wilderness qualities, or pristine ecosystems,
- Areas with a recognised special character or sense of place,
- Areas of important tourism or recreation value,
- Areas with important vistas or scenic corridors,
- Areas with visually prominent ridgelines or skylines,
- A significant change to the fabric and character of the area,
- Possible visual intrusion in the landscape¹

Methodology

The **VRM methodology** is a systematic process developed by the United States Bureau of Land Management (BLM) to measure contrast in order to analyse the potential visual impact of proposed projects and activities. The basic philosophy underlying the system is: The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape.

The VRM system consists of two stages:

- **Inventory** (Viewshed and Visual Resource Inventory)
- **Analysis** (Visual Resource Contrast Rating)

¹ Oberholzer, B. 2005. Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

SPECIFIC VISUAL IMPACT CRITERIA from DEA&DP Visual and Aesthetic Guideline²		
Visibility of the project	HIGH	The project viewshed covers an area greater than several square kilometres and is thus defined in terms of the Visual Guideline as high.
Visual Exposure	MODERATE TO HIGH	The N2 and the road from Vleesbaai are approximately one and half kilometres from the site and the proposed landscape modifications would be noticeable. In terms of the Visual Guidelines, the Visual Exposure is defined as High.
Visual Sensitivity	MODERATE	Although located in a flat topographic area with limited natural screening, the location of the site within the existing industrial settlement pattern would result in the proposed landscape modifications being moderately visible in the landscape.
Visual Sensitivity of the receptors	HIGH	The... N2 ... national roads which link Cape Town and the Western Cape to the surrounding provinces have in their totality also been identified as scenic routes as these roadways are the main carriers of road vehicle visitors to the Province and traverse the valleys, mountains and plains of the Province. (WCPSDF, Ch 4, Pg 25)
Visual Absorption Capacity	MODERATE	(Comment as for Visual Sensitivity)
Visual Intrusion	MODERATE	The level of compatibility of the project with the particular visual character of the surrounds is high. The landscape modification would be noticeable but fits into the surroundings and the intrusion would be moderate.

NATURE OF THE IMPACT		
EXTENT	REGIONAL	The extent of the impact would be regional due to the extent of the views of the project in relation to the flat topography and limited nature screening. The extent of the impact will not be affected by the implementation of the mitigation measures.
DURATION	PERMANENT	The OCGT additional units would be a long term project and impacts would be permanent.
INTENSITY	MODERATE	Due to the location of the project within the visual context of PetroSA, Mossdustria, the Waste Disposal Site and the existing OCGT plant, the intensity of the project would be moderate.
PROBABILITY	HIGH	Distinct possibility that the impact will occur.
SIGNIFICANCE	MODERATE	With successful implementation of the mitigations, the visual significance would be moderate. Should the stacks of the eastern two OCGT plants be limited in size, so as not to create a skyline against the ridge behind the plant, the significance would be low to moderate.

² Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town. Page 18

DESCRIBING THE DISTRIBUTION OF IMPACTS

Potential Opportunities	<ul style="list-style-type: none"> ○ Primarily the construction industry who will benefit from economic type development and related job opportunities ○ Public access to improved electricity supply.
Potential Risks	<ul style="list-style-type: none"> ○ Short term impact of dust during construction. ○ Scenic routes into the area, especially the N2, will be within the viewshed area. ○ The potential impact of light pollution at night.

KEY UNCERTAINTIES AND RISKS

<ul style="list-style-type: none"> ○ Due to limited availability of digital mapping of the proposed OCGT site, preliminary form modelling could not be undertaken in order to increase the accuracy of the photo montages.

RECOMENDATION

Recommendations regarding overall visual impacts are based on the fact that the OCGT additional units are located alongside the existing OCGT units under construction and will therefore be seen as an extension of those units. The proposed landscape modifications are also located within the visual entity of PetroSA which has already created very high levels of contrast in the area. The project area has been identified by the Mossel Bay Municipality as an area suitable for future industrial expansion. Our recommendation is that the Best Practicable Environmental Option would be the implementation of the OCGT extension. The overall impact is defined as Moderate. Should the stacks of the eastern two OCGT plants be limited in size so as not to create a skyline against the ridge behind the plant as seen from the N2 travelling eastwards, the significance would be Moderate to Low. It is recommended that a visual monitoring program is implemented to ensure that visual intrusion during construction phase is adequately managed and that the long term objectives are met.

The previous landscaping mitigations, with regard to tree planting, have not been adequately implemented. We recommend that more emphasis is placed on planting in larger, looser groups. Trees should appear to be growing in natural looking bands of greenery, spreading from ground level up towards the berm apex. For establishment purposes it should be ensured that they are able to be hand watered at regular weekly or two weekly intervals. For good tree growth a period of establishment of up to at least two years is recommended.

2 INTRODUCTION

The manner in which the built environment is developed has an immense impact on the intrinsic and systemic value of that environment. Thus developmental integrity is determined by the level of sensitivity practiced in integrating development into the environment in which it is to be located.

The intention of this report is to present and assess the visual impacts and management methods through the process of evaluating, qualifying, and then quantifying, through rating the proposals for the proposed extension to the Eskom Open Cycle Gas Turbine Power Plant in Mossel Bay.

3 TERMS OF REFERENCE

Specialist Terms of Reference from Mossel Bay OCGT EIA: Plan of Study for EIR:

The Terms of Reference for the visual impact assessment would be to assess the visual impact of the Eskom OCGT power plant extensions of an additional three OCGT generating units adjacent to the presently being constructed OCGT plant. This report would be a new, independent, "stand alone" report and not just an addendum to previous reports. It needs to ensure that there is effective interaction and communication between the various specialists including those involved in the Atlantis OCGT.³

The Terms of Reference for the original OCGT visual impact study are as follows:

- Describe the existing visual characteristics of the site and its surroundings including any geology/landform features that influence them.
- Describe the visual significance of the area in terms of its history and present utilisation.
- Fully describe the proposed development.
- Determine the potential visual risks and opportunities presented by the proposed development.
- Determine the entire area from which the various elements of the proposed development will be visible (i.e. the viewshed.)
- Determine the important viewpoints from which the development will be visible and determine the nature of the visual impacts at these points.
- Prepare graphics that will aid the process of the assessment, (e.g. simulations of the development superimposed, to scale, on photographs taken from important viewpoints.)
- Assess the significance of the visual impact of the proposed development in terms of its scale, type, and character, including services and any ancillary structures pertaining to the development etc.
- Propose possible mitigation measures to minimise visual impact including changes to the design, alternative finishes and visual screening.
- Propose monitoring and review measures that will ensure long-term maintenance of visual standards.

The original visual impact assessment was undertaken by Tanya de Villiers of Chittenden Nicks de Villiers. (CNdV) However, the revised study will be undertaken by Stephen Stead of Visual Resource Management Africa.

VRM Africa was tasked with undertaking a Visual Assessment of this property including:

- Assessing the significance of the Visual Impact on the surrounding landscape.
- Assessing the significance of the impacts regarding the layout plan
- Making suggestions, where relevant, with regards to the layout plan.

³ Correspondence from Charles Norman, Ninham Shand. Sent: 22 December 2006

- Providing a detailed breakdown of any mitigation measures and management recommendations: to reduce the significance of any anticipated impact.
- Assessment of the above in terms of the Visual and Aesthetic Specialist in EIA processes.
(Source DEA&DP Visual Guideline)

3.1 DEA&DP GUIDELINE INVOLVING VISUAL AND AESTHETIC SPECIALISTS IN EIA PROCESS⁴

The document defines 'visual' in terms of the following criteria:

- Awareness that 'visual' implies the full range of visual, aesthetic, cultural and spiritual aspects of the environment that contribute to the area's sense of place.
- The consideration of both the natural and the cultural landscape, and their inter-relatedness.
- The identification of all scenic resources, protected areas and sites of special interest, together with their relative importance in the region.
- An understanding of the landscape processes, including geological, vegetation and settlement patterns, which give the landscape its particular character or scenic attributes.
- The need to include both quantitative criteria, such as 'visibility', and qualitative criteria, such as landscape or townscape 'character'.

The DEA&DP visual guideline identifies visual triggers which are used to define the scope and extent of the impact study. An initial visit to the property was undertaken and the following potential 'triggers' were identified which would require further investigation.

- Areas of important tourism or recreation value,
- Areas with important vistas or scenic corridors,
- A significant change to the fabric and character of the area,⁵

The nature of the project:

- A significant change to the fabric and character of the area,
- Possible visual intrusion in the landscape,

Specific criteria for visual impact assessments:

- **Visual exposure of the area** – the geographic area from which the project will be visible, or view catchment area. (The actual zone of visual influence of the project may be smaller because of screening by existing trees and buildings).
- **Visual absorption capacity (VAC)** – the potential of the landscape to conceal the proposed project.
- **Landscape integrity** – the compatibility or congruence of the project with the qualities of the existing landscape, or the 'sense of place'.
- **Visibility of the project** – based on distance from the project to selected viewpoints
- **Nature of the impact** – an appraisal of the visual effect the activity would have on the receiving environment. This description should include visual and scenic resources that are affected, and the manner in which they are affected, (both positive and negative effects).
- **Extent** – the spatial or geographic area of influence of the visual impact.
- **Duration** – the predicted life-span of the visual impact:
- **Intensity** – the magnitude of the impact on views, scenic or cultural resources.
- **Probability** – the degree of possibility of the visual impact occurring:
- **Significance** – The significance of impacts can be determined through a synthesis of the aspects produced in terms of their nature, duration, intensity, extent and probability,

⁴ Oberholzer, B. 2005. Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

⁵ Ibid

The guideline also recommends that the VIA process identifies the **Best Practicable Environmental Option (BPEO)** based on the following criteria:

- Long term protection of important scenic resources and heritage sites;
- Minimisation of visual intrusion in scenic resources;
- Retention of wilderness or special areas intact as far as possible;
- Responsiveness to the area's uniqueness, or sense of place.⁶

4 METHODOLOGY

4.1 PUBLIC COMMENT

4.1.1 RAISING OF KEY ISSUES (PUBLIC INPUT)

A scoping process was undertaken by Ninham Shand and visual impact was identified as a potential issue which resulted in the implementation of a VIA.

Necessary comment was obtained from I&AP's during an organised meeting. (See Annexure G: Notes and minutes from ELC meeting of 12 October 2006 in Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report for detailed comments)

Necessary comment needs to still be obtained from Heritage Western Cape, the Department of Water Affairs and Forestry, the Mossel Bay Municipality and the Air Pollution Control Officer (APCO): Western Cape. These authorities will be provided with copies of this Final Scoping Report, as a precursor to their needing to comment on the Final EIA Report when it becomes available.⁷

4.2 VISUAL RESOURCE MANAGEMENT (VRM)

The **VRM methodology** is a systematic process *developed by the Bureau of Land Management (BLM) from the United States Department of Internal Affairs* to measure contrast in order to analyse potential visual impact of proposed projects and activities. It is not intended to be the only means of resolving these impacts. It should be used as a guide, tempered by common sense, to ensure that every attempt is made to minimise potential visual impacts. The basic philosophy underlying the system is: The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape.

The VRM system consists of two stages:

- **Inventory** (Viewshed and Visual Resource Inventory)
- **Analysis** (Visual Resource Contrast Rating)

The **inventory stage** involves the identification of the visual resources of the area, assigning them to inventory classes. The process involves rating the visual appeal of the property, measuring public concern for scenic quality through public scoping meetings, and determining whether the tract of land is visible from travel routes or observation points. Through the inventory process Objective Classes are assigned to each defined land parcel.

⁶ Oberholzer, B. 2005. Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

⁷ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report Page 5

4.2.1 VISUAL INVENTORY

Viewshed Analysis

- General Landscape Description
- Location Mapping.
- Generation of a Triangulated Irregular Network (TIN) for the area that extends for a 20km radius from the centre of the property making use of 20m contour data (Survey General).
- Make use of the TIN to generate an approximate Viewshed to determine the visual relationship between the property and the area surrounding the property.
- Viewshed Analysis to determine the area from which the property will be visible.
- Verify on the ground the probable Viewshed.
- Undertake a site survey to capture a photographic record of the current landscape where the proposed development is to be located.
 - View Corridors
 - Sense of Place
- Selection of Key Observation Points based on the Viewshed Analysis.
- A skyline analysis to map out which area (if any) of the property would create a skyline.
- Identification of Location Landscape Character.
- Specific Location Assessment including Vegetation and Topography analysis.

Inventory

- Delineation of Physiographic Rating Units (PRU) which are defined as areas within the property which have physical as well as graphic similarities.
- Identify and evaluate scenic values of each of the PRU.
- Scenic Quality Evaluation questionnaire to be completed regarding the scenic quality of the property.
- Sensitivity Level Analysis questionnaire to be completed regarding the sensitivity of the property.
- Distance Zone Analysis to be undertaken to determine the distance of the property from major access routes and viewing points.
- Identify Visual Resource Inventory Class objectives for each PRU based on the above questionnaires.
- Define Visual Resource Management Objectives for each PRU taking into consideration Planning Policy for the area.

4.2.2 CONTRAST RATING

The **analysis stage** involves determining whether the potential visual impacts from proposed surface-disturbing activities or developments would meet the management objectives established for the area, or whether design adjustments will be required. A visual contrast rating process is used for this analysis, which involves comparing the proposed features with the major features in the existing landscape using the basic design elements of form, line, colour, and texture. Based on this analysis, mitigation measures are suggested which could be used as a **guide for resolving visual impacts**.

Steps in the Contrast Rating Process.

1. Obtain a **detailed project description**.
2. Define the VRM Classes. This step involves adjusting the Inventory Classes in accordance with policy guiding planning for the area.
3. Identify VRM Class Objectives.
4. Measure the Degree of Contrast that the proposed landscape modifications would create to each of the Physiographic Rating Units from each of the KOP's.

The following Degree of Contrast Rating Table is used to document the Contrast Rating process:

Degree of Contrast	Criteria
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

The suitability of the Degree of Contrast is assessed in conjunction with the VRM Classes for the defined area.

4.2.3 VRM CLASS OBJECTIVES

The VRM Class objectives define the type of landscape modification suitable for different sections of the property. These class objectives are defined by the Bureau of Land Management.

The **Class I** objective is to preserve the existing character of the landscape where the level of change to the characteristic landscape should be very low and must not attract attention.

The **Class II** objective is to retain the existing character of the landscape and the level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer and should repeat the basic elements of form, line, colour and texture found in the predominant natural features of the characteristic landscape.

The **Class III** objective is to partially retain the existing character of the landscape where the level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer and changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The **Class IV** objective is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the landscape can be high and these management activities may dominate the view and be the major focus of the viewer attention.

Physiographic rating units must be defined to rate the visual quality of a scenic resource. This rating allows the scenic resource then to be assigned to a class. The physiographic rating units consist of:

- Like physiographic characteristics such as landform, vegetation, etc.
- Similar visual patterns, texture, colour, variety, etc.

- Areas which have a similar impact from cultural modifications i.e. roads, historical and other structures, mining operations or other surface disturbances⁸

To isolate the physiographic areas the specialist reports and mapping were utilised.

In summary the process consists of two stages:

1. Delineation of Rating Units in order to:
 - Isolate specialist **Class I** areas using available specialist reports:
 - i. Vegetation Report by Conservation Management Services.
 - ii. Heritage/Cultural Report
 - Evaluating the remaining areas of the proposed property using the following VRM questionnaires:
 - i. A scenic quality evaluation
 - ii. A sensitivity level analysis
 - iii. A delineation of distance zones

Assessing scenic values and determining visual impacts can be a subjective process. In order to ensure that objectivity and consistency are maintained, the basic design elements of **form, line, colour, and texture**, are used to describe and evaluate landscapes in the questionnaires, and to also describe the proposed project.
 - These three separate evaluations are then mapped. Based on these three factors, land parcels are placed into one of the above four visual resource inventory classes that represent the relative value of the visual resources.
 - i. **Classes I and II** being the most valued
 - ii. **Class III** representing a moderate value
 - iii. **Class IV** being of least value
2. Modification, if necessary, of the above classes would take into consideration the sense of place and what the property area is zoned for. These classes then govern the extent of landscape modification for each of the areas, i.e. Management Classes.

4.2.4 IMPACT ASSESSMENT

Impact as defined by the DEA&DP Visual Guideline document is, "A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space ..."⁹

Impacts were gauged by taking into account the Vegetation study and Heritage/Cultural Report. Visually the property takes its character (colour and texture) from the existing landscape modifications, flora and topography; understanding that flora and fauna have a symbiotic relationship.

4.2.5 POTENTIAL MANAGEMENT ACTIONS

Proper management actions ensure that the lowest possible impact is created by the project. Management not only depends on mitigation and efforts to 'fix' what has been broken but a continual effort to educate, and to regulate land use and future modification.

DEA&DP Guideline for involving visual and aesthetic specialists in EIA processes Management Actions Include:¹⁰

⁸ Bureau of Land Management, U.S. Department of Interior. 2004. Visual Resource Management Manual 8400

⁹ Oberholzer, B. 2005. Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

- **Avoidance:** “Consideration should be given to avoiding potential impacts altogether...”
- **Mitigation:** “These may include adjustments to the siting and design of the project, the careful selection of finishes and colours, the use of earthworks (such as berms) and planting to provide visual screening, as well as dust control where required. Penalties for non-compliance should be considered.”
- **Compensation and offsets:** “Where avoidance and mitigation cannot achieve the desired effect, various forms of compensation could be considered. These may include land swaps, appropriation or financial compensation.”
- **Rehabilitation and restoration:** “Both on-site and off-site landscape rehabilitation of areas affected by the project should be considered...This may include re-instating landforms and natural vegetation, provision of landscaped open space, or other agreed upon facilities.”
- **Enhancement:** “Where the proposed Project is located in run-down areas, or degraded landscapes, the improvement of these areas could form part of the visual management actions for the project.”

4.3 PLANNING POLICY RESEARCH

In order to comply with the Visual Resource Management requirements it is necessary to:

- Clarify which planning policies govern the property area relating to environmental resilience and visual screening capabilities of the landscape.
- Ensure that the scale, density and nature of activities or developments are harmonious and in keeping with the sense of place and character of the area.
- Development must be located to prevent structures from being a visual intrusion (i.e. to retain open views and vistas

4.3.1 FACTORS FROM MOSSEL BAY SPATIAL DEVELOPMENT FRAMEWORK

1. Visual Impact

In order to minimise the visual impact of development, the following policies are suggested:

- Roads should follow existing contours to minimise the extent of cut- and- fills.
- The maximum amount of natural vegetation on each site should be preserved.
(Mossel Bay SDF. D – 16)

2. The following (infrastructure) guidelines. .. should be adhered to:

- Locate buildings in disturbed areas, or where existing infrastructure exits.
(Mossel Bay SDF. E - 4)
- A safety radius of two kilometres around Moss gas which could potentially impact on future growth directions. (Mossel Bay SDF. C-8)

3. Industrial Development in Mossel Bay

- Industrial development concentrated in Voorbaai (±129Ha), between Hartenbos and Dias Beach as well as Moss Industria (±97Ha) and around the harbour in the CBD (2Ha).... These activities tend to have a negative visual impact and should therefore be carefully controlled. (Mossel Bay SDF. C-8)

¹⁰ Oberholzer, B. 2005. Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

4. Minimising environmental effects

To ensure that new and existing developments meet acceptable environmental standards:

- The utilisation of agricultural land for non- agricultural development must in all instances be subjected to the applicable EIA requirements prescribed in terms of ECA and NEMA. (Mossel Bay SDF. D-18)
-clear objectives should be set for minimising negative environmental effects, such as ... resource degradation, excessive waste generation, pollution and degradation of the aesthetic qualities of the environment. (Mossel Bay SDF. E - 10)

4.3.2 FACTORS FROM WESTERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK

1. Scenic Quality Policy: N2

- This route section and the adjacent countryside are memorable gateways ... and urban development has already substantially detracted from their visual quality. No further deterioration should be permitted. (WCPSDF, Ch 8, Pg 29, policy HR23)
- The N1, N2, N7 and N12 national roads which link Cape Town and the Western Cape to the surrounding provinces have in their totality also been identified as scenic routes as these roadways are the main carriers of road vehicle visitors to the Province and traverse the valleys, mountains and plains of the Province. (WCPSDF, Ch 4, Pg 25)
- Areas with exposure to large numbers of people, especially passing tourist traffic, require special consideration; (WCPSDF, Ch 4, Pg 28)

2. Visual Impact

- Large- scale developments such as... power lines ... are having a significant impact on the natural landscape in areas such as the Southern Cape. Controls need to be put into place to manage the impact and the extent of these types of developments (WCPSDF, Ch 4, Pg 26)

5 GENERAL DESCRIPTION OF THE MOSSEL BAY AREA

5.1 LOCALITY

Within the regional context the property is located in the Garden Route area, extending from Mossel Bay in the west to Nature's Valley in the east. The region's most predominant feature is the Outeniqua Mountain range which creates an east-west border to the north of the region. The southern boundary of the region is defined by the Indian Ocean



Figure 1. Topographical Landuse Map

As depicted on Figure 2 on the following page, the proposed additional units at the Mossel Bay OCGT power plant are situated immediately to the west of the existing power plant site under construction, on Portion 1 of Farm Patrysfontein, Number 228 and is located approximately 1 km northwest of the PetroSA facility and 13 km west of the coastal town of Mossel Bay. The area forms an industrial node between the N2 and the Kleinberg-Mossdustria railway line to the north and is surrounded by agriculture. The closest residential area to the property is Danabai which is located approximately 6.5km southeast of the property. The N2, which is the main transport route through the Garden Route area, lies approximately 1.5km south of the property.

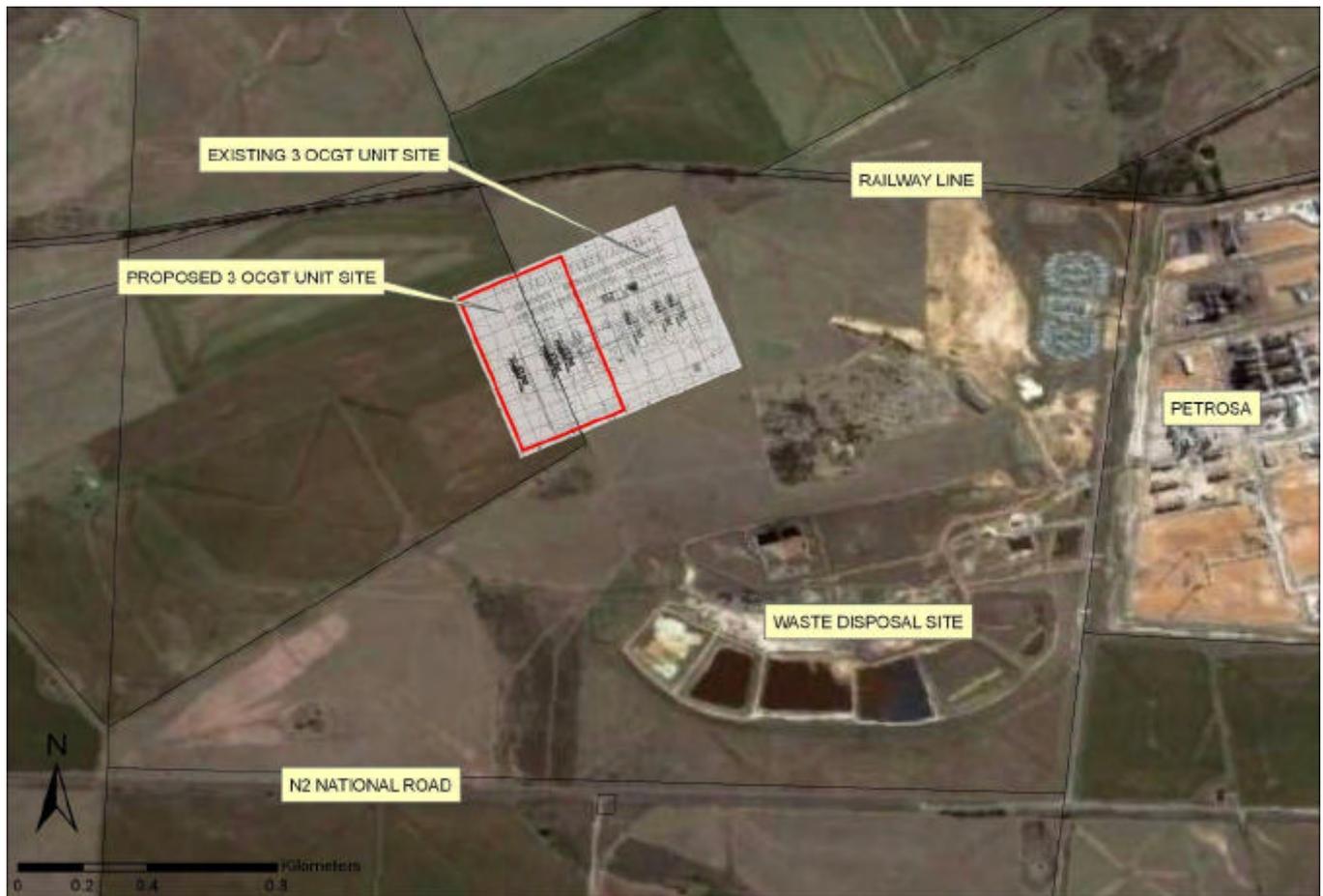


Figure 2. Site Location Map

5.1.1 SENSE OF HISTORY

Research in the Mossel Bay area has revealed extensive archaeological deposits dating from 200 000 years ago (Middle Stone Age) to the relatively recent shell middens of pre-colonial San and/or Khoekhoen herders. However on the property area the expectation is that the kind of archaeological material that will be found will consist of open scatters of Early and Middle Stone Age artefacts. These are not expected to be frequent.¹¹

The history of the South African oil industry goes back to 1884 when the first company was established in Cape Town to manage the importation and sale of petroleum products. The industry grew with the growth in both the motoring industry and the move to industrial enterprises powered by liquid fuels. Finally, towards the end of the 1980s, construction of Mossgas commenced to produce liquid fuels from natural gas in the Bredasdorp basin. (www.mbendi.co.za)

Since the merger of Mossgas, Soekor and Strategic Fuel Fund assets into PetroSA (registered in January 2002), the company has established itself as a commercially driven gas and oil corporation. PetroSA is a pioneer in the field of gas to liquids (GTL) technology and is responsible for producing and marketing synthetic fuels produced from offshore gas at its Mossel Bay refinery, which is the world's largest commercial gas to liquids plant. This plant supplies about 7 percent of South Africa's liquid-fuel needs. (PetroSA website)

¹¹ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report Page 13

5.1.2 SENSE OF NATURE

Most of the land around the site (other than the enclosed PetroSA site) has been disturbed by ploughing, grazing and other agricultural activities with sections of unploughed fence-line belts of relatively natural vegetation.¹² There is also evidence of highly degraded and disturbed areas, e.g. the waste disposal site, in the area. "There are however narrow, sometimes winding depressions which have retained their natural Fynbos vegetation. These increase both in size and density as they approach the ridge along which the R327 runs."¹³ An established line of Eucalyptus trees, historically used as a wind break in agriculture, creates potential screening.

According to the available data from South African Bird Atlas Project (SABAP) there are approximately 157 bird species known to be in that area of which 22 are known to be breeding.¹⁴ According to the Biodiversity Study completed by Ken Coetzee of Conservation Management Services, the very restricted nature of the study area is unlikely to permanently and exclusively provide habitat for any sensitive fauna.¹⁵

5.1.3 SENSE OF LIMITS

Although OCGT technology is considered to be a 'clean' technology, it does produce emissions ... discharged into the atmosphere through the stacks.¹⁶ One of the potential limitations to the building of additional units in this area would be the smoke plumes which could potentially have a visual impact on the surrounding areas.

5.1.4 SENSE OF PLACE

For each region in the area there is a predominant sense of place. To determine the region's character, a study into the sense of place was undertaken. The aim of this study is to broadly determine the factors that have over time influenced the character of the existing landscape of the property. The visual assessment needs to make reference to the historic landscape and its effects on the current landscape as well as the scenic resources of the area that affect the economy of the region.



Mossel Bay and the N2 have been described by the DEA&DP Visual and aesthetic Guidelines to the EIA processes as a "gateway into the Garden Route" with the characteristic view of the region's most predominant feature, the Outeniqua Mountain range that creates a border to the north of the region with green, agricultural and nature-covered undulating landscape between mountains and ocean. The proposed landscape modifications do take place within visual proximity of the N2 which carried high volumes of tourist traffic between Cape Town and the Garden Route. The location of the project will not influence the signature views of entering into Mossel Bay. The nature of the terrain surround the site is one of flat plains, stark and undulating low hills, and distant mountain peaks with the sense of place of the area is

¹² Ken Coetzee. Conservation Management Services. Impact Assessment for Biodiversity Jan 2007

¹³ CNDV 2005-08-05 OCGT Mossel Bay VIA page 5

¹⁴ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report

¹⁵ Ken Coetzee. Conservation Management Services. Impact Assessment for Biodiversity Jan 2007

¹⁶ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report Page 18

influenced by the strong industrial character of PetroSA, the existing OCGT plant and the Waste Dump which all create high levels of contrast.



Existing OCGT site under construction



PetroSA

6 RESULTS

6.1 VISUAL INVENTORY

6.1.1 VIEWSHED ANALYSIS

The viewshed defines the extent to which the property is visible to the surrounding areas. This area is generated making use of computer technology. A Digital Elevation Model (DEM) was generated making use of the 20 contours (1:50 000 SG) for the surrounding areas. The computer technology does not take into consideration existing structures and vegetation.

Ground verification would include:

- Photographic survey.
- Identify existing regional landscape character.
- Identification of View Corridors. View corridors are linear geographic areas that are visible to users of the route, usually situated along movement routes.¹⁷

The viewshed indicated in green on Figure 3 below overlaid onto a Topographical Map is a rough indication of the extent to which the project would be visible to the surrounding area. The character of the viewshed is extensive but fragmented and, predominantly located to the north and east. The areas to the east would not be as solid as indicated on the map due to the structural screening created the PetroSA site. A site visit found that visibility of the project would not be seen from Danabaai as indicated on the map. Landuse types within the viewshed are infrastructural, industrial and agricultural areas. The visibility of the project would extend over several square kilometers and is thus defined in terms of the VIA guidelines as HIGH.

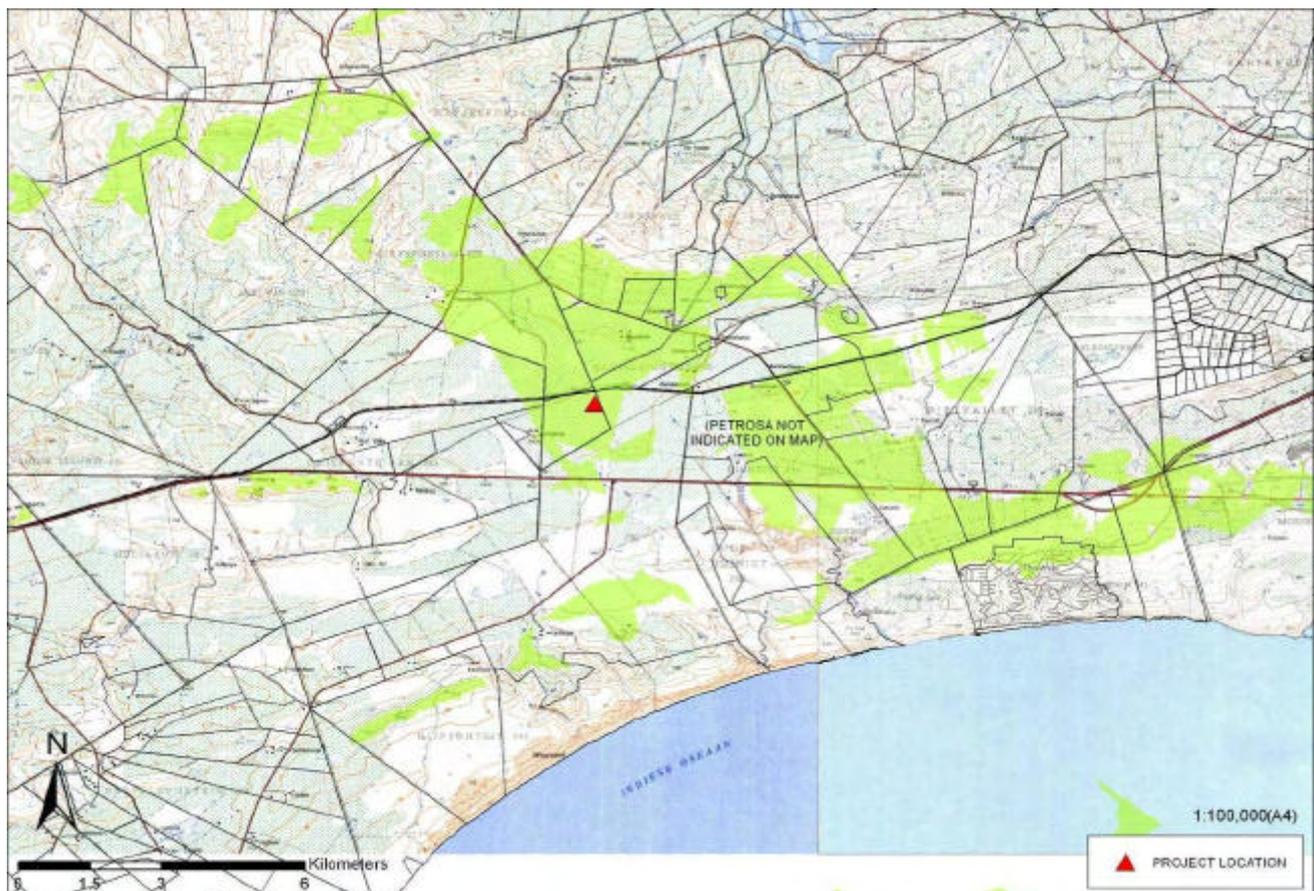
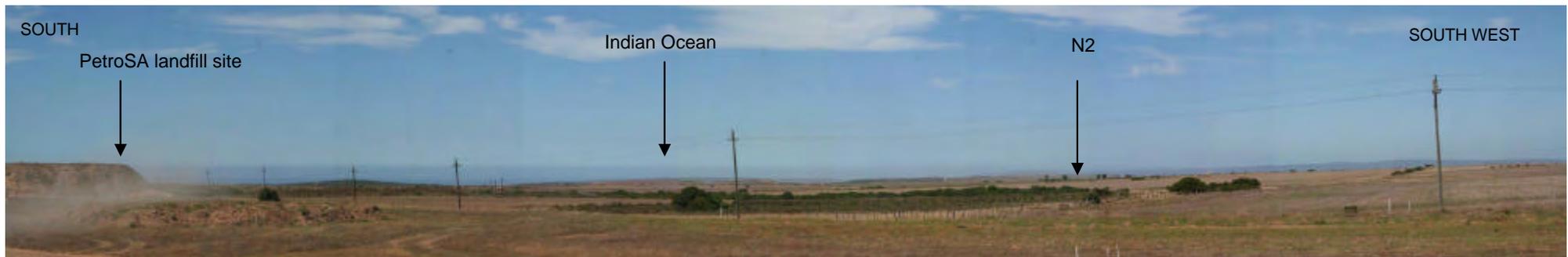


Figure 3. Viewshed Map on 50 000 Topographic Map

¹⁷ Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

6.1.2 PHOTOGRAPHS FROM SITE

Views of the site towards the east are screened by existing PetroSA structures. The main visual receptors from the site are predominantly to the north, east and south.



6.1.3 OBSERVATION POINTS

The degree of contrast that the proposed landscape modifications will make to the existing landscape is measured from locations surrounding the property. The selection criterion for the Observation Points is their location within the defined viewshed where they would have a clear view of the property. The following factors were taken into consideration:

1. Angle of observation
2. Number of viewers
3. Length of time the project is in view
4. Relative project size
5. Season of use
6. Critical viewpoints, e.g. views from communities, road crossings
7. Distance from Property

From the viewshed and on-site photographic survey six Observation Points were chosen and evaluated in terms of the criteria defined in the DEA&DP visual guideline¹⁸

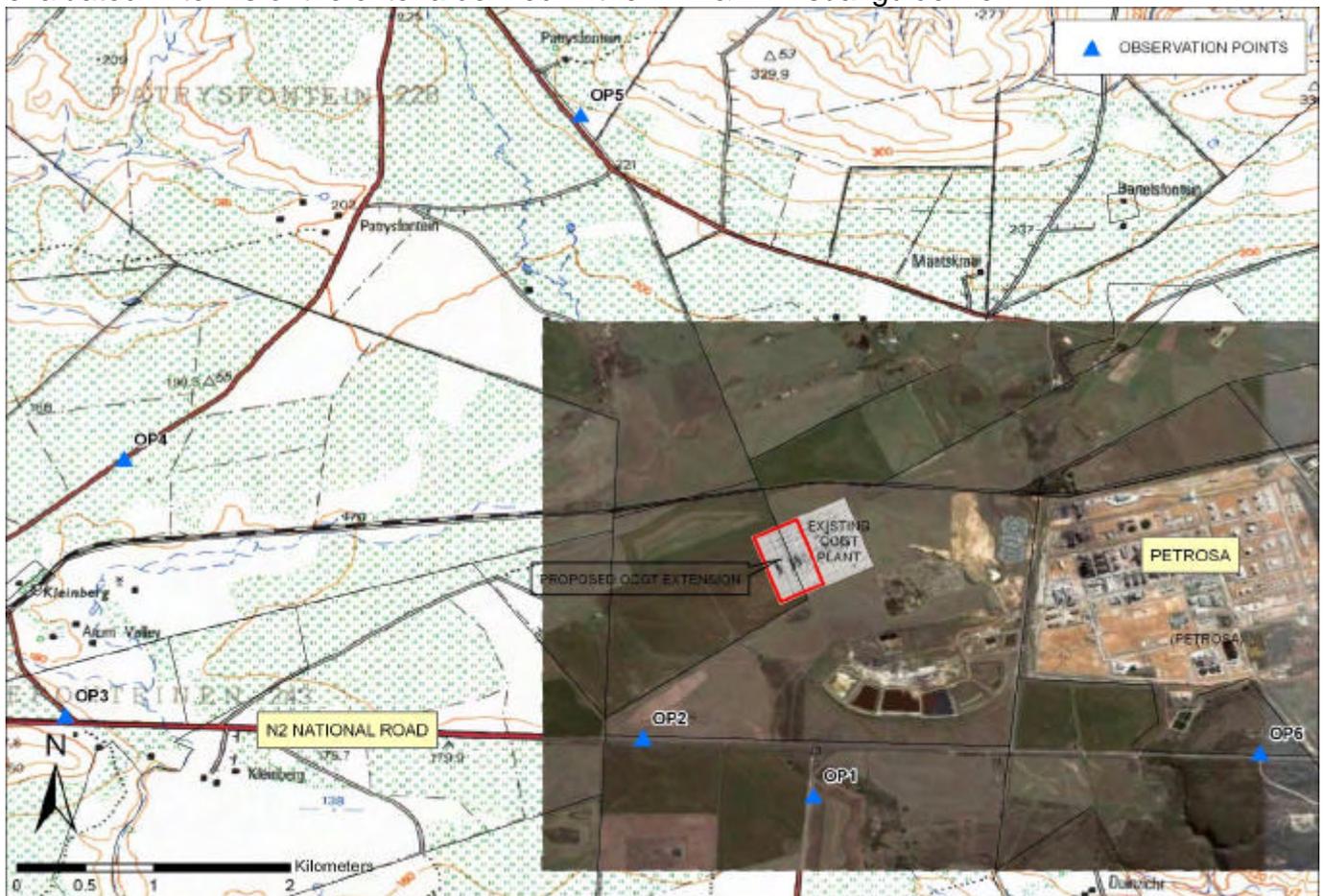


Figure 4. Observation Points

¹⁸ Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

6.1.3.1 *DEA&DP Guideline for involving visual & aesthetic specialists in EIA processes*
Specific criteria for visual impact assessments (pg 18)

OP	Description	Visual Exposure	Sensitivity/Significance of Area	Sensitivity of Receptors	Rating
1	Road to Vleesbaai	High	Moderate	Moderate	Moderate to High
2	N2 west of the site	Moderate	Moderate	High	Moderate to High
3	N2/turn off to Kleinberg Station	Low	Moderate	High	Moderate
4	Road linking N2 and R327 west of the site	Low	Low	Low	Low
5	R327 north of the site	Moderate	Low	Low	Low
6	N2 east of the site	Moderate	Low	High	Moderate

6.1.3.2 *KOP Rating Criteria Summary*

MOTIVATION
<p>The nature of the receiving environment:</p> <ul style="list-style-type: none"> ○ Areas of proclaimed heritage sites or scenic routes ○ Areas with intact wilderness qualities, or pristine ecosystems, ○ Areas with a recognised special character or sense of place, ○ Areas of important tourism or recreation value, ○ Areas with important vistas or scenic corridors, ○ Areas with visually prominent ridgelines or skylines, <p>The nature of the project:</p> <ul style="list-style-type: none"> ○ A significant change to the fabric and character of the area, ○ Possible visual intrusion in the landscape,

Based on the DEA&DP's Visual and Aesthetic Guidelines and the Visual Trigger's associated with the proposed development, the OP's were assessed and Key Observation Points selected and evaluated in terms of the criteria defined in the visual guideline.¹⁹ Two KOP's were selected.

KOP	Description	Motivation
KOP 1	Road to Vleesbaai	Areas with important vistas or scenic corridors
KOP 2	N2 travelling eastwards	Areas of proclaimed heritage sites or scenic routes

¹⁹ Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

KOP	Description	Approximate Project Extent indicated on photographs by arrows.
1	Road from Vleesbaai	 <p>A photograph showing a paved road leading towards a distant industrial site. A black bracket with two downward-pointing arrows is positioned above the road, indicating the project extent in the distance.</p>
2	N2 west of the site	 <p>A photograph showing a wide view of a landscape with a road in the foreground. A black bracket with two downward-pointing arrows is positioned above the landscape, indicating the project extent in the distance.</p>

6.1.4 PROPERTY CHARACTER

Existing Landuse

The majority of the proposed site, which is zoned for industrial use, is currently owned by PetroSA, with an estimated 25 hectares of the proposed site extending into adjacent land zoned as agricultural. This land is at present being leased to a farmer for agricultural activities primarily pastures and cultivated wheatlands.²⁰

(See Figure 2 Site Location Map)

Existing area modifications

The N2 National Road is located approximately 1.5 km south of the OCGT power plant, whilst the R327 is located to the north. The Kleinberg-Mossdustria railway line is located immediately north of the site. The Proteus substation is located 10 km northwest of the proposed power plant site and two 132 kV transmission lines run in a northwesterly direction between the PetroSA facility and the Proteus substation. Two new 400 kV transmission lines were approved as part of the original OCGT project and are presently under construction.²¹

Screening

Screening berms have already been constructed for the existing structures at PetroSA. The photograph below indicates the height of the berm in relation to the ground and the height of the OCGT units currently under construction. In terms of vegetation there are existing rows of established Eucalyptus trees previously used as wind breaks for agriculture.



6.1.4.1 Other Specialist Reports

In terms of the DEA&DP Guideline for involving Visual and Aesthetic Specialists in EIA Processes the “information typically required from other specialist assessments, before the visual assessment can be completed, is included below:

- A description of the vegetation cover, and the possibility of vegetation cover being removed through alien vegetation clearing or fire (from the biodiversity or vegetation specialist);
- The nature and location of any cultural heritage sites, and areas of special or historical interest (from the heritage specialist)”

Vegetation

An on-site biodiversity impact assessment of the conservation value and sensitivity of the vegetation was conducted by Ken Coetzee of Conservation Management Services.

²⁰ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report. Page 14

²¹ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report. Page 12

According to the report the vegetation on site consists mainly of cultivated wheatlands and pastures and sections of unploughed fence-line belts of relatively natural vegetation. Within the general study area around the site there are isolated Renosterveld and wetlands remnants and highly transformed/disturbed/cleared land. ²² (See *Biodiversity Impact Assessment for more details.*)

Type of Vegetation	Description	Sensitivity
Wheatlands and pastures	Ploughed over to prepare for grain crops.	Very low local and regional value
Unploughed fence-line belts	Unploughed belt, 3-4m wide, of relatively natural vegetation	Low botanical significance but of local importance as a corridor for fauna in the area.

6.2 PHYSIOGRAPHIC RATING UNITS

The following criteria are used to define the physiographic units within a property.

- Similar visual patterns, texture, colour, variety (Vegetation)
- Like geographic character (KOP Viewsheds)
- Similar impacts from man-made modifications (Landuse)
- Steeper slopes due to excessive scarring of the landscape.
- The landuse map based on the Vegetation Report.
- Areas of high prominence.
- Topography

One physiographic unit was defined for the property using the above criteria from the specialist reports and GIS data. Physiographic rating unit, seen in the table below, must be defined to rate the visual quality of a scenic resource. This rating allows the scenic resource then to be assigned to a class. The physiographic rating units consist of:

- Like physiographic characteristics such as landform, vegetation, etc.
- Similar visual patterns, texture, colour, variety, etc.
- Areas which have a similar impact from cultural modifications i.e. roads, historical and other structures, mining operations or other surface disturbances ²³

These physiographic areas refer back to the Topography, Viewshed and Vegetation maps.

PHYSIOGRAPHIC UNIT	TYPE
1	<i>Wheatlands and pastures: Low sensitivity vegetation</i>

The VRM Class objectives define the type of landscape modification suitable for different sections of the property. These class objectives are defined by the Bureau of Land Management.

Class I is defined using specialist information such as the vegetation and heritage reports. Based on the specialist reports there are no Class I areas in this project area.

Classes II, III & IV are assigned to the physiographic regions by cross referencing scenic quality, distance zones and sensitivity combined values, making use of the table below developed by the Bureau of Land Affairs, USA. (See *appendix for copies of questionnaires*).

²² Ken Coetzee. Conservation Management Services. Impact Assessment for Biodiversity Jan 2007

²³ Bureau of Land Management, U.S. Department of Interior. 2004. Visual Resource Management Manual 8400

It must be noted that these classes are **informative in nature** and would have to be modified to take into consideration a management decision. A summary of the Visual Inventory Classes is depicted in the table on page 27.

The **Class I** objective is to preserve the existing character of the landscape where the level of change to the characteristic landscape should be very low and must not attract attention.

The **Class II** objective is to retain the existing character of the landscape and the level of change to the characteristic landscape should be low.

The **Class III** objective is to partially retain the existing character of the landscape where the level of change to the characteristic landscape should be moderate.

The **Class IV** objective is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the landscape can be high.

CLASS II, III & IV ASSIGNMENT TABLE

		VISUAL SENSITIVITY LEVELS								
		HIGH			MEDIUM			LOW		
SPECIAL AREAS		I	I	I	I	I	I	I	I	I
	A	II	II	II	II	II	II	II	II	II
SCENIC QUALITY	B	II	III	III / IV *	III	IV	IV	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV	IV	IV
DISTANCE ZONES		fore/middle ground	background	seldom seen	fore/middle ground	background	seldom seen	fore/middle ground	background	seldom seen

o If adjacent areas are Class III or lower assign Class III, if higher assign Class IV

6.2.1 ASSESSMENT OF CLASSES TABLE

SCENIC QUALITY										TOTAL	SENSITIVITY					TOTAL	DIST	CLASS		
PHYSIOGRAPHIC AREA	MOTIVATION	LANDFORM	VEGETATION	WATER	COLOUR	ADJ. SCENERY	SCARCITY	CULT. MOD.	TOTAL	SCENIC	TYPE OF USER	AMOUNT OF USE	PUBLIC INT.	ADJ. LANDUSE	SUSTAINABILITY	SENSITIVITY	DIST	CLASS		
																			VISUAL INVENTORY	VISUAL MANAGEMENT
LOW SENS. VEG			2	1	0	1	1	1	-2	4	C	H	H	L	L	M	M	FG	IV	IV

As the proposed landscape modifications take place within and adjacent to a land zoned for industry, there are not modifications from the Visual Inventory to the Visual Management Classes. In terms of the Class Objectives this allows for a change to the landscape that can be high.

7 PROJECT DESCRIPTION

In terms of the DEA&DP Guideline for involving Visual and Aesthetic Specialists in EIA processes essential information with regards to the architectural guidelines of the project need to be provided.²⁴

The OCGT units produce electricity by means of hot gas turning a turbine that powers a generator. The decision to pursue an expansion of Eskom's electricity generation capacity was based on national policy. In order to generate additional power resources for the increasing national demand for electricity two OCGT power plants were authorised by the provincial Department of Environmental Affairs and Development Planning (DEA&DP) in December 2005 and construction commenced in February 2006, one unit in Mossel Bay and one in Atlantis near to Cape Town. Three additional units are proposed to extend the existing OCGT plant, currently under construction, in order to increase the power output from Mossel Bay. In terms of specific sites, the area to the west of the OCGT power plant is seen as the only feasible option as it would consolidate the impacts and create no additional transmission lines.²⁵

7.1 PROPOSED PROJECT

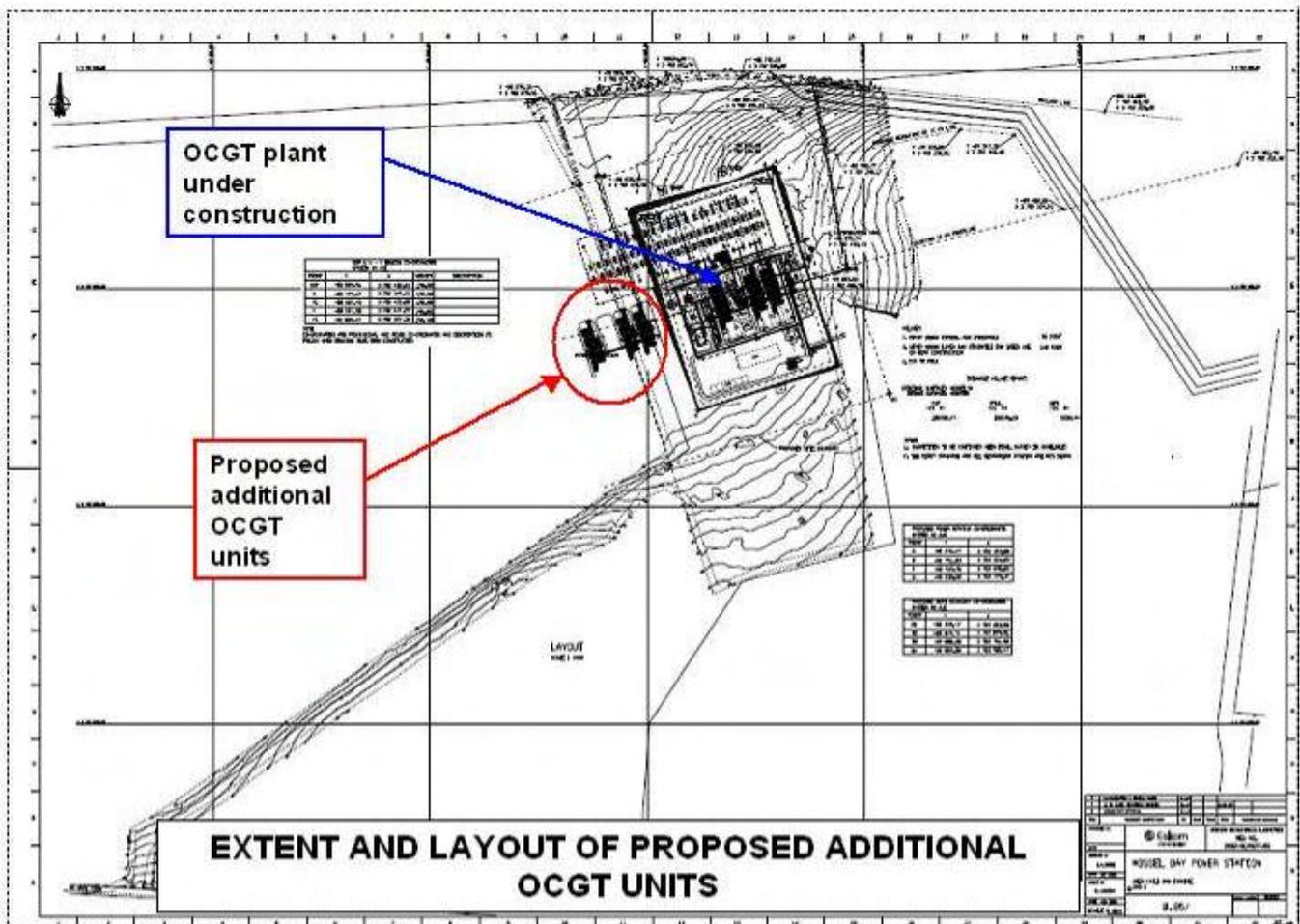


Figure 5. Additional Units Layout Map

The layout above shows the site of the proposed three additional units and of the existing OCGT power plant under construction. The proposed modifications to the site include:

²⁴ Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes. Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Western Cape, DEA&DP, Cape Town. Page 17

²⁵ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report Page 4/20

- Three additional units adjacent to and to the west of the existing OCGT plant
- Fuel storage and conservancy tanks located between the existing OCGT units and the proposed additional units with a total storage capacity of 25.4 million litres. Fuel and water supply will be continuations of the existing pipelines within the OCGT precinct.
- Conservancy tanks with a total storage capacity of 6000 litres.
- A control room
- The High Voltage yard, located immediately north of the proposed two units, transfers power to the approved 400 kV transmission lines currently under construction and then into the Proteus substation
- Access would be via the access road to the existing OCGT power plant.
- The highest points of the proposed units would be the 30 m high emission towers
- Electricity would be transported to the Proteus substation via the authorised, and presently being constructed, 400 kV transmission lines. No new transmission lines would need to be constructed²⁶

Examples of modelling done for the Atlantis OCGT project can be seen on the following page.

²⁶ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report Page 16



Figure 6. 3D Model of existing Atlantis site development

7.2 ALTERNATIVES

The identification of Mossel Bay as a location for additional OCGT generating units was undertaken as part of an Eskom internal site screening exercise prior to this EIA.

Seven sites were initially investigated... The Atlantis and Mossel Bay sites were found to be most preferable, based on the following:

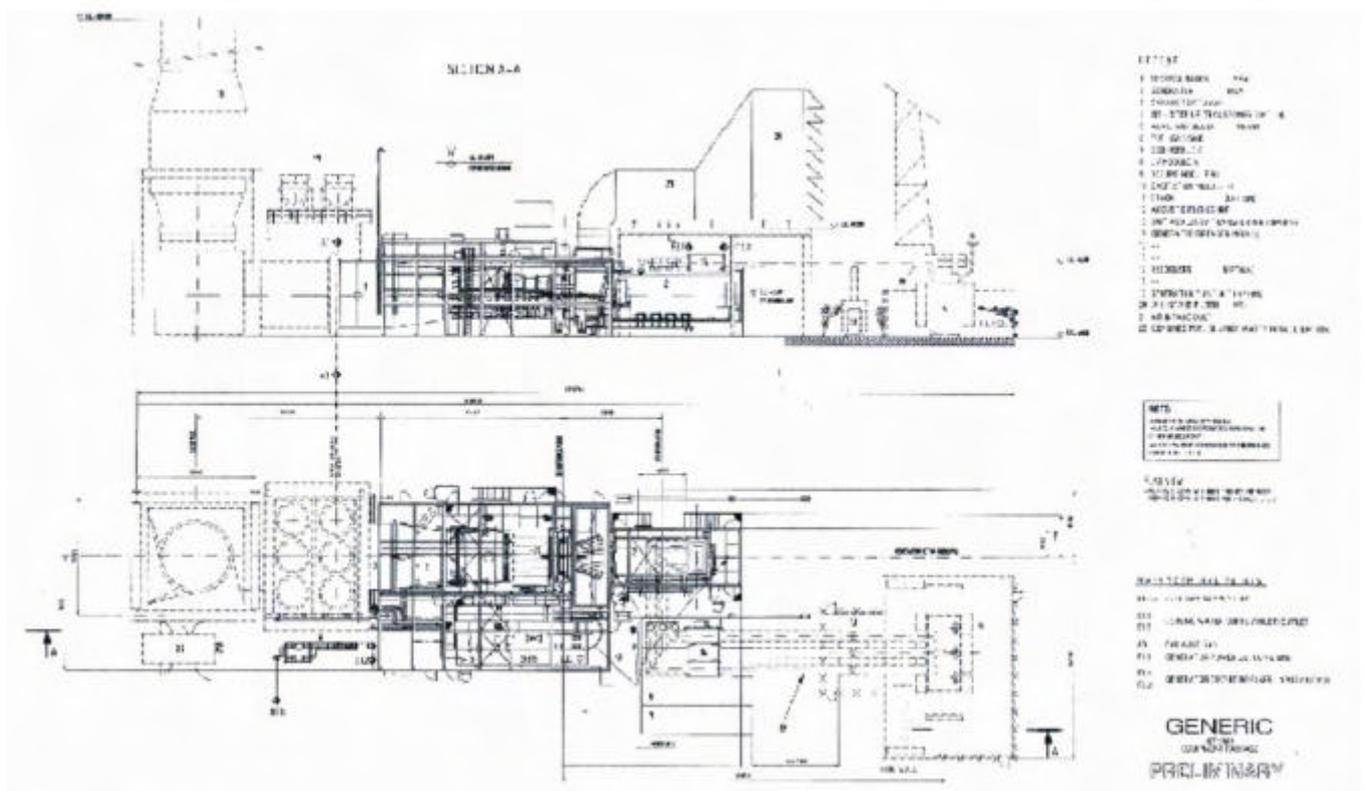
- *RoDs have been received for these OCGTs in December 2005.*
- *Mossel Bay would receive its fuel from the nearby PetroSA Gas-to-Liquids plant and Atlantis from a nearby refinery.*
- *Regarding transmission integration, generating units at Atlantis and Mossel Bay can be fairly easily integrated into the national transmission network. At both sites, no new transmission lines, for example, would be needed for this integration.*
- *Regarding design and construction schedules, OCGTs are currently being constructed at both sites, hence from a design and construction schedule perspective, the additional units would be "added" to the existing schedule, to be commercially operational by winter 2008.*

Hence no site alternatives will be further investigated as part of this Scoping and EIA process.²⁷

This visual impact assessment will assess two options: no change to the existing landuse and the construction of the additional OCGT units.

7.2.1 ALTERNATIVE 1: PROPOSED THREE ADDITIONAL OCGT UNITS

The layout plan of the proposed additional three units for the Mossel Bay OCGT can be seen below.



75m x 25m x 25m

Figure 7. Proposed Unit size and Generic Plan

²⁷ Ninham Shand: Mossel Bay OCGT Additional Units: Final Scoping Report Page 17

7.2.2 ALTERNATIVE 2: NO GO OPTION

No go refers to the status quo, where the property remains undeveloped and remains as is. It is currently zoned for industrial use, with an estimated 25 hectares of the proposed site extending into adjacent land zoned as agricultural. The agricultural land is used primarily for wheat and grazing.

The general surrounding areas have been isolated by the Mossel Bay Municipality as suitable for large scale industrial development where the “bulk of the available industrial land is located.” (Mossel Bay SDF. E - 32) This area has also been earmarked for the “development of an industrial corridor between Voorbaai and Moss Industria based on the existing railway link as well as the proposed heavy goods vehicle route link. (Mossel Bay SDF. E - 31)

7.3 PHOTO MONTAGE

The Photo Montages are based on the Collaboration of Advanced Landscapers and Planners' Proposed Interim Code of Ethics for Landscape Visualisation (July 2003) which states that professional presenters of realistic landscape visualisations are responsible for promoting full understanding of proposed landscape changes; providing an honest and neutral visual representation of the expected landscape, by seeking to avoid bias in responses and demonstrating the legitimacy of the visualisation process.

Presenters of landscape visualisations should adhere to the principles of:

- Access to Information
- Accuracy
- Legitimacy
- Representative ness
- Visual Clarity
- Interest²⁸

²⁸ C.A.L.P. (Collaboration of Advanced Landscapers and Planners)

KOP 1: Road to Vleesbaai – Current view



KOP 1: Road to Vleesbaai – Proposed development option



KOP 2: N2 – Current view



KOP 2: N2 – Proposed development option



7.4 CONTRAST RATING

In order to assess the Visual Resource Impact the contrast rating system is used. The basic philosophy underlying the system is:

The degree to which development management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. In order for one to fully assess the assessment, contrast rating tables are completed for each of the alternatives from the four Key Observation Points. (*Detailed assessments can be found in Appendix B.*)

Contrast Rating Results

The contrast rating results have been quantified and evaluated according to each alternative. This is a crucial part of the visual process as it allows one to evaluate the alternatives based on contrast to the existing landscape and in reference to the Key Observation Points. The Alternatives were rated as follows:

Degree of Contrast	Criteria
--------------------	----------

None (0) The element contrast is not visible or perceived.

Weak (1) The element contrast can be seen but does not attract attention.

Moderate (2) The element contrast begins to attract attention and begins to dominate characteristic landscape.

Strong (3) The element contrast demands attention, will not be overlooked, and is dominant in landscape.

7.4.1 CONTRAST RATING SUMMARY TABLE

SHORT TERM		ALTERNATIVES	
KOP	ELEMENT	1 Proposed Option	2 No Go Option
1	LAND	1	N/A
	VEG	0	N/A
	STRUCTURES	2	N/A
	TOTAL	3	N/A

KOP		1	2
2	LAND	1	N/A
	VEG	0	N/A
	STRUCTURES	2	N/A
	TOTAL	3	N/A
SHORT TERM TOT.		6	1

LONG TERM (10 years)		ALTERNATIVES	
KOP	ELEMENT	1 Proposed Option	2 No Go Option
1	LAND	0	N/A
	VEG	0	N/A
	STRUCTURES	2	N/A
	TOTAL	2	N/A

KOP		1	
2	LAND	0	N/A
	VEG	0	N/A
	STRUCTURES	2	N/A
	TOTAL	2	N/A
LONG TERM TOT.		4	N/A

7.4.2 CONTRAST RATING DISCUSSION

Alternatives	Contrast Rating Comment
No Go Option	Due to the limited size of the project area in relation to the KOP's, any modifications to the site would be agricultural in nature and would not attract attention.
Proposed Development Option	In summary, impact created by the proposed landscape modification does not change over time due to the size and scale of the project in relation to the nature of the receiving environment. The long term impacts do decrease but this is due to the rehabilitation of the screening berms. The initial impact would be to the land due to the creation of the screening berms. The size and scale of the modification would be noticeable due to the difference in colour of the earth to the vegetation. This would be for a limited period as intensive planting of grass species on the banks would take place within a short period of time.

7.4.3 IMPACT ASSESSMENT

SPECIFIC VISUAL IMPACT CRITERIA		
Visibility of the project	HIGH	The project viewshed covers an area greater than several square kilometres and is thus defined in terms of the DEA&DP Visual and Aesthetic Guideline as high. ²⁹
Visual Exposure	MODERATE TO HIGH	The N2 and the road from Vleesbaai are approximately one and half kilometres from the site and the proposed landscape modifications would be noticeable. In terms of the Guidelines, the Visual Exposure is defined as High.
Visual Sensitivity	MODERATE	Although located in a flat topographic area with limited natural screening, the location of the site within the existing industrial settlement pattern would result in the proposed landscape modifications being moderately visible in the landscape.
Visual Sensitivity of the receptors	HIGH	The... N2 ... national road which links Cape Town and the Western Cape to the surrounding provinces have in their totality also been identified as scenic routes as these roadways are the main carriers of road vehicle visitors to the Province and traverse the valleys, mountains and plains of the Province. (WCPSDF, Ch 4, Pg 25)
The Visual Absorption Capacity	MODERATE	(Comment as for Visual Sensitivity)
Visual Intrusion	MODERATE	The level of compatibility of the project with the particular visual character of the surrounds is high. The landscape modification would be noticeable but fits into the surroundings and the intrusion would be moderate.

²⁹ Oberholzer, B. 2005. Guideline for involving visual & aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

NATURE OF THE IMPACT		
EXTENT	REGIONAL	The extent of the impact would be regional due to extent of the views of the project in relation to the flat topography and limited nature screening. The extent of the impact will not be affected by the implementation of the mitigation measures.
DURATION	PERMANENT	The OCGT additional units would be a long term project and impacts would be permanent.
INTENSITY	MODERATE	Due to the location of the project within the visual context of PetroSA, Mossdustria, the Waste Disposal Site and the existing OCGT plant, the intensity of the project would be moderate.
PROBABILITY	HIGH	Distinct possibility that the impact will occur.
SIGNIFICANCE	MODERATE	With successful implementation of the mitigations, the visual significance would be moderate. Should the stacks of the eastern two OCGT plants be limited in size, so as not to create a skyline against the ridge behind the plant, the significance would be low to moderate.

DESCRIBING THE DISTRIBUTION OF IMPACTS	
Potential Opportunities	<ul style="list-style-type: none"> ○ Primarily the construction industry who will benefit from economic type development and related job opportunities ○ Public access to improved electricity supply.
Potential Risks	<ul style="list-style-type: none"> ○ Short term impact of dust during construction. ○ Scenic routes into the area, especially the N2 will be within the viewshed area. ○ The potential impact of light pollution at night.

KEY UNCERTAINTIES AND RISKS
<ul style="list-style-type: none"> ○ Due to limited availability of digital mapping of the proposed OCGT site, preliminary form modelling could not be undertaken in order to increase the accuracy of the photo montages.

RECOMENDATION
<p>Recommendations regarding overall visual impacts are based on the fact that the OCGT additional units are located alongside the existing OCGT units under construction and will therefore be seen as an extension of those units. The proposed landscape modifications are also located within the visual entity of PetroSA which has already created very high levels of contrast in the area. The project area has been identified by the Mossel Bay Municipality as an area suitable for future industrial expansion. Our recommendation is that the Best Practicable Environmental Option would be the implementation of the OCGT extension. The overall impact is defined as Moderate. Should the stacks of the eastern two OCGT plants be limited in size so as not to create a skyline against the ridge behind the plant as seen from the N2 travelling eastwards, the significance would be Moderate to Low. It is recommended that a visual monitoring program is implemented to ensure that visual intrusion during construction phase is adequately managed and that the long term objectives are met.</p> <p>The previous landscaping mitigations, with regard to tree planting, have not been adequately implemented. We recommend that more emphasis is placed on planting in larger, looser groups. Trees should appear to be growing in natural looking bands of greenery, spreading from ground level up towards the berm apex. For establishment purposes it should be ensured that they are able to be hand watered at regular weekly or two weekly intervals. For good tree growth a period of establishment of up to at least two years is recommended.</p>

7.5 RECOMMENDATIONS AND MITIGATIONS ³⁰

Recommendations and Mitigations from the Chittenden, Nicks, de Villiers (CNdV) OCGT MOSSEL BAY VIA August 2005 (Page 20) assessing the current OCGT units under construction.

“With a structure the size of the OCGT plant, or with the geographic spread of the transmission lines, it is usually impossible to apply mitigation measures entirely satisfactorily to a point where the significance of the visual impact is greatly reduced. The following recommended mitigation measures are therefore primarily intended to minimise the **intensity** of the visual impacts. The overall **significance** of the entire project should remain unchanged at medium but the significance of the OCGT plant itself, if all mitigation measures are applied could be lowered to medium to low.

7.5.1 THE OCGT PLANT AND ASSOCIATED INFRASTRUCTURE

7.5.1.1 Siting and Earthworks

- The structures are to be sited as close to the PetroSA boundary as possible. The sense of there being a ‘gap’ between the two developments must be minimised and any shielding capabilities of the landfill site to the south must be utilised.
- The natural vegetation in the northeastern corner of the site and along the railway line is to be maintained.
- It is proposed that buffer zones of 50 meters external to the security fencing be secured for the implementation of the mitigation measures for the visual impact of the plant.
- If it is geotechnically and financially feasible the platform within the security fencing must be levelled predominantly by means of cut, rather than by balancing both cut and fill. The excess fill must then be used to create large berms thus enclosing much of the site. (This could have the side effect of aiding with noise abatement.)
- Berms should be created on the southeast and southwest boundaries as this is the direction from which the plant will be most visible along the N2. The existing tree line along the railway line must be retained and will provide a certain amount of shielding from the north.
- The berms can undulate and meander within the buffer zone creating a natural feel rather than an engineered one.
- The slopes of berms should not exceed 1:4 so that erosion is minimised, the planting can easily take hold, and the appearance of ‘natural’ slopes be emphasised.
- A landscape architect should be appointed to work with the engineers in creating an affordable but natural looking environment.
- Within the limits of engineering feasibility structures are to be set as low as possible into the platform. The storage tanks are to be fully or partially below ground level if at all possible from an engineering and safety perspective.

7.5.1.2 Access

Access to the site should be by either alternative one or two, using the existing access off the N2 to the PetroSA landfill site.

7.5.1.3 Finishes and Textures

- To a large extent the finishes and textures used at the plant will be determined by the engineering requirements of the project.

³⁰ CNdV Africa 5 1286 OCGT MOSSEL BAY VIA August 2005

- All painted surfaces are to use muted earth tones or in the case of large surfaces such as roofs, storage tanks and the stacks, medium grey chosen for its ability to blend in to the background. Bright colours are not to be used except for the safety markings as required by the industry. Reds, greens, whites and blues must be avoided.
- The fuel and other pipelines are to be painted grey unless set in a trench in which case muted colours can be used.
- The use of face brick should be avoided.
- Glass surfaces, if there are any, should be shielded to avoid glare and reflections.

7.5.1.4 *Visual Screening of the Structures*

- The berms are to be planted with indigenous Fynbos species and grasses so as to minimise the need for irrigation and maintenance.
- Trees are to be planted where possible, the top and slopes of the berms being ideal for maximum screening capacity.
- Either groups of trees can be used or new tree lines created in imitation of those in the existing landscape.
- Trees can be used provided that their species is not on the invasive aliens list. Although it would be preferable to use indigenous species, gums and other exotic trees found locally have become part of the cultural landscape and provided that they are sensitively used would be in keeping with the visual nature of the existing landscape.
- A landscape architect should be appointed to plan the landscaping so that it looks natural within its environment. i.e. formal flowering gardens on the berms would be unacceptable as there is no precedent in the existing landscape, but the judicious use of tree lines would be acceptable and desirable.
- Kikuyu is not to be used anywhere on site because its particular green is not found naturally in the surrounding landscape and large expanses of it can be visually intrusive.

7.5.1.5 *Lighting*

- If not properly handled, the visual impact of lighting could be significant because it can give a project a far greater zone of visual influence at night than the structures have during the day.
- All lighting is to be kept to a minimum within the requirements of safety and efficiency.
- Where such lighting is deemed necessary low-level lighting, which is shielded to reduce light spillage and pollution, should be used.
- No external up-lighting of any parts of the structures, including the stacks must be allowed.
- External lighting must be by the use of down-lighters shielded in such a way as to minimise light spillage and pollution beyond the extent of the area that needs to be lit.
- Security and perimeter lighting must also be shielded so that no light falls outside the area needing to be lit. Overly tall light poles are to be avoided.
- No naked light sources are to be directly visible from a distance, (except for the aircraft warning lights.) Only reflected light should be visible from outside the site.
- All necessary aircraft warning lights are to be installed as per the government requirements.

7.5.1.6 *Fencing*

- The type and height of the fencing will be determined by the security policy of Eskom.
- Fencing must be visually permeable and in a medium to dark grey colour. The use of razor wire must be avoided. Electrification and isolators to be in matching colour
- The fencing should be shielded by the berms, or failing that, by screen planting along, but away from the fence so as not to allow breaches in security.

7.5.1.7 *Signage*

- No backlit or neon signage is to be allowed.
- All necessary signage should be limited in size, and its colours and finishes should be chosen for their appropriateness to the colours of the site and its semi-rural nature. The use of corporate colours and logos is excluded from this.

7.5.1.8 *Required Infrastructure*

- All infrastructure is to be designed to have as little visual impact as possible.
- The access road and security gates, and if necessary, the guardhouse, are to be unobtrusive and scaled in such a way as to minimise the visual impact.
- If there are any excavations outside the boundaries of the site to install infrastructure, these areas must be fully rehabilitated and fall within the responsibility of the ECO.

7.5.1.9 *Mitigation Measures during Construction*

- An attempt must be made to control dust generation during the excavation and construction stage.
- All stockpiles are to be protected from dispersion to the surrounding terrain by wind or water.
- All substances, such as cement, that could be toxic to the flora and fauna are to be strictly controlled to avoid sterilization or degradation of parts of the surrounding environment.
- Workers must be trained in good environmental practices and such areas as the wetland in the northeastern area of the site are to be off limits to them
- Damage to existing flora and fauna is to be a punishable offence.
- Toilets are to be provided and used by the workers and not the bush.
- Litter is to be strictly controlled.

7.5.2 *CONTROLLING FUTURE DEVELOPMENT*

Any future changes, improvements, additions or enlargements must be subject to a separate visual impact assessment.”

8 APPENDICES

8.1 APPENDIX A

8.1.1.1 C.A.L.P. (*Collaboration of Advanced Landscapers and Planners*)

The Proposed Interim Code of Ethics for Landscape Visualisation (July 2003) states that professional presenters of realistic landscape visualisations are responsible for promoting full understanding of proposed landscape changes; providing an honest and neutral visual representation of the expected landscape, by seeking to avoid bias in responses and demonstrating the legitimacy of the visualisation process.

8.1.1.2 LANDSCAPE VISUALISATION PRINCIPLES

Presenters of landscape visualisations should adhere to the principles of:

- Access to Information
- Accuracy
- Legitimacy
- Representative ness
- Visual Clarity
- Interest

8.1.1.3 ETHICAL CONDUCT

The Code of Ethical Conduct states that the presenter should:

- Demonstrate an appropriate level of qualifications and experience.
- Use visualisation tools and media that are appropriate to the purpose.
- Choose the appropriate level of realism.
- Identify, collect and document supporting visual data available for or used in the visualisation process; conduct an on-site visual analysis to determine important issues and views.
- Seek community input on viewpoints and landscape issues to address in the visualisations.
- Provide the viewer with a reasonable choice of viewpoints, view directions, view angles, viewing conditions and time frames appropriate to the area being visualised.
- Estimate and disclose the expected degree of error and uncertainty, indicating areas and possible visual consequences of the uncertainties.
- Use more than one appropriate presentation mode and means of access for the affected public.
- Present important non-visual information at the same time as the visual presentation, using a neutral delivery.
- Avoid the use or the appearance of “sales” techniques or special effects.
- Avoid seeking a particular response from the audience.
- Provide information describing how the visualisation process was conducted and key decisions taken.

8.1.1.4 Scenic Quality Rating Questionnaire

KEY FACTORS	RATING CRITERIA AND SCORE		
SCORE	5	3	1
Landform	High vertical relief as expressed in prominent cliffs, spires or massive rock outcrops, or severe surface variation or highly eroded formations including or dune systems: or detail features dominating and exceptionally striking and intriguing.	Steep sided river valleys, or interesting erosion patterns or variety in size and shape of landforms; or detail features that are interesting though not dominant or exceptional.	Low rolling hills, foothills or flat valley bottoms; few or no interesting landscape features.
Vegetation	A variety of vegetative types as expressed in interesting forms, textures and patterns.	Some variety of vegetation, but only one or two major types.	Little or no variety or contrast in vegetation.
Water	Clear and clean appearing, still or cascading white water, any of which are a dominant factor in the landscape.	Flowing, or still, but not dominant in the landscape.	Absent, or present, but not noticeable.
Colour	Rich colour combinations, variety or vivid colour: or pleasing contrasts in the soil, rock, vegetation, water.	Some intensity or variety in colours and contrast of the soil, rock and vegetation, but not a dominant scenic element.	Subtle colour variations contrast or interest: generally mute tones.
Adjacent Scenery	Adjacent scenery greatly enhances visual quality.	Adjacent scenery moderately enhances overall visual quality.	Adjacent scenery has little or no influence on overall visual quality.
Scarcity	One of a kind: unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing etc...	Distinctive, though somewhat similar to others within the region.	Interesting within its setting, but fairly common within the region.
SCORE	2	0	-4
Cultural Modification	Modifications add favourably to visual variety while promoting visual harmony.	Modifications add little or no visual variety to the area, and introduce no discordant elements.	Modifications add variety but are very discordant and promote strong disharmony.

8.1.1.5 Sensitivity Level Rating Questionnaire

The following VRM questionnaire was completed.

FACTORS	QUESTIONS	
Type of Users	Maintenance of visual quality is:	
	A major concern for most users	High
	A moderate concern for most users	Moderate
	A low concern for most users	Low

Amount of use	Maintenance of visual quality becomes more important as the level of use increases:	
	A high level of use	High
	Moderate level of use	Moderate
	Low level of use	Low
Public interest	Maintenance of visual quality:	
	A major concern for most users	High
	A moderate concern for most users	Moderate
	A low concern for most users	Low
Adjacent land Users	Maintenance of visual quality to sustain adjacent land use objectives is:	
	Very important	High
	Moderately important	Moderate
	Slightly important	Low
Special Areas	Maintenance of visual quality to sustain Special Area management objectives:	
	Very important	High
	Moderately important	Moderate
	Slightly important	Low

8.1.1.6 *Distance Zones*

Landscapes are subdivided into 4 distance zones based on relative visibility from travel routes or observation points. The 4 zones are:

DISTANCE ZONES	DISTANCE ZONES DEFINITION
Foreground	The foreground (fg) zone includes areas seen from highways, rivers, or other viewing locations that are less than 1 kilometre away.
Middle ground	The middle ground (mg) zone includes areas seen from highways, rivers, or other viewing locations that are greater than 1 kilometre but less than 2 kilometres away.
Background	Seen areas beyond the foreground-middle ground zone greater than 2 kilometres away are in the background (big) zone.
Seldom seen	Areas not seen as foreground-middle ground or background (i.e. hidden from view) are in the seldom-seen (sis) zone

8.2 APPENDIX B

According to DEA&DP Visual and Aesthetic Guidelines (2005) the visual impact assessment must be evaluated based on the following Criteria:³¹

Box 11: Specific criteria for visual impact assessments

Visibility of the project – the geographic area from which the project will be visible, or view catchment area. (The actual zone of visual influence of the project may be smaller because of screening by existing trees and buildings). This also relates to the number of receptors affected.

- *High visibility* – visible from a large area (e.g. several square kilometres).
- *Moderate visibility* – visible from an intermediate area (e.g. several hectares).
- *Low visibility* – visible from a small area around the project site.

Visual exposure – based on distance from the project to selected viewpoints. Exposure or visual impact tends to diminish exponentially with distance.

- *High exposure* – dominant or clearly noticeable;
- *Moderate exposure* – recognisable to the viewer;
- *Low exposure* – not particularly noticeable to the viewer;

Visual sensitivity of the area – the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement pattern. This translates into visual sensitivity.

- *High visual sensitivity* – highly visible and potentially sensitive areas in the landscape.
- *Moderate visual sensitivity* – moderately visible areas in the landscape.
- *Low visual sensitivity* – minimally visible areas in the landscape.

Visual sensitivity of Receptors – The level of visual impact considered acceptable is dependent on the type of receptors.

- *High sensitivity* – e.g. residential areas, nature reserves and scenic routes or trails;
- *Moderate sensitivity* – e.g. sporting or recreational areas, or places of work;
- *Low sensitivity* – e.g. industrial, mining or degraded areas.

Visual absorption capacity (VAC) - the potential of the landscape to conceal the proposed project, i.e.

- *High VAC* – e.g. effective screening by topography and vegetation;
- *Moderate VAC* - e.g. partial screening by topography and vegetation;
- *Low VAC* - e.g. little screening by topography or vegetation.

Visual intrusion – the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.

- *High visual intrusion* – results in a noticeable change or is discordant with the surroundings;
- *Moderate visual intrusion* – partially fits into the surroundings, but clearly noticeable;
- *Low visual intrusion* – minimal change or blends in well with the surroundings.

Note 1: *These, as well as any additional criteria, may need to be customised for different project assessments.*

Note 2: *Numerical weighting of these criteria should be avoided because of their qualitative nature.*

Note 3: *Various components of the project, such as the structures, lighting or powerlines, may have to be rated separately, as one component may have fewer visual impacts than another. This could have implications when formulating alternatives and mitigations.*

³¹ Oberholzer, B. 2005. Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

As the impact assessment tables are formed from criteria listed above, the discussion in regards to each impact will centre on the broader aspects of impacts. See the table below for the criteria used for the assessment of impacts:

Box 12: Criteria used for the assessment of impacts

The assessment of impacts is based on a synthesis of the following assessment criteria:

Nature of the impact - an appraisal of the visual effect the activity would have on the receiving environment. This description should include visual and scenic resources that are affected, and the manner in which they are affected, (both positive and negative effects).

Extent – the spatial or geographic area of influence of the visual impact, i.e.:

- *site-related*: extending only as far as the activity;
- *local*: limited to the immediate surroundings;
- *regional*: affecting a larger metropolitan or regional area;
- *national*: affecting large parts of the country;
- *international*: affecting areas across international boundaries.

Duration - the predicted life-span of the visual impact:

- *short term*, (e.g. duration of the construction phase);
- *medium term*, (e.g. duration for screening vegetation to mature);
- *long term*, (e.g. lifespan of the project);
- *permanent*, where time will not mitigate the visual impact.

Intensity – the magnitude of the impact on views, scenic or cultural resources.

- *low*, where visual and scenic resources are not affected;
- *medium*, where visual and scenic resources are affected to a limited extent;
- *high*, where scenic and cultural resources are significantly affected.

Probability – the degree of possibility of the visual impact occurring:

- *improbable*, where the possibility of the impact occurring is very low;
- *probable*, where there is a distinct possibility that the impact will occur;
- *highly probable*, where it is most likely that the impact will occur; or
- *definite*, where the impact will occur regardless of any prevention measures.

Significance – The significance of impacts can be determined through a synthesis of the aspects produced in terms of their nature, duration, intensity, extent and probability, and be described as:

- *low*, where it will not have an influence on the decision;
- *medium*, where it should have an influence on the decision unless it is mitigated; or
- *high*, where it would influence the decision regardless of any possible mitigation.

Note: These significance ratings may have limited usefulness unless they are described in terms of the broader context. The criteria given in Box 11 could assist in this regard.

Source: Adapted from the criteria provided by Department of Environmental Affairs and Tourism, 1998

8.2.1.1 Definition of Terminology

The following terms were used in the Contrast Rating Tables to help define Form, Line, Colour, and Texture. The definitions were a combination of Microsoft Word Dictionary and simple description.

FORM	LINE	COLOUR	TEXTURE
Simple	Horizontal	Dark	Smooth
Weak	Vertical	Light	Rough
Strong	Geometric	Mottled	Fine
Dominant	Angular		Coarse
Flat	Acute		Patchy
Rolling	Parallel		Even
Undulating	Curved		Uneven
Complex	Wavy		Complex
Plateau	Strong		Simple
Ridge	Weak		Stark
Valley	Crisp		Clustered
Plain	Feathered		Diffuse
Steep	Indistinct		Dense
Shallow	Clean		Scattered
Organic	Prominent		Sporadic
Structured	Solid		Consistent
Regular	Broken		

Simple	basic, composed of few elements	Organic	derived from nature; occurring or developing gradually and naturally
Complex	complicated; made up of many interrelated parts	Structure	organized; planned and controlled; with definite shape, form, or pattern
Weak	lacking strength of character	Regular	repeatedly occurring in an ordered fashion
Strong	bold, definite, having prominence	Horizontal	Parallel to the horizon
Dominant	controlling, influencing the surrounding environment	Vertical	Perpendicular to the horizon; upright
Flat	level and horizontal without any slope; even and smooth without any bumps or hollows	Geometric	Consisting of straight lines and simple shapes
Rolling	progressive and consistent in form, usually rounded	Angular	Sharply defined; used to describe an object identified by angles
Undulating	moving sinuously like waves; wavy in appearance	Acute	Less than 90°; used to describe a sharp angle
Plateau	uniformly elevated flat to gently undulating land bounded on one or more sides by steep slopes	Parallel	Relating to or being lines, planes, or curved surfaces that are always the same distance apart and therefore never meet
Ridge	a narrow landform typical of a highpoint or apex; a long narrow hilltop or range of hills	Curved	Rounded or bending in shape
Valley	low-lying area; a long low area of land, often with a river or stream running through it, that is surrounded by higher ground	Wavy	Repeatedly curving forming a series of smooth curves that go in one direction and then another
Terrace	Area of natural ground along the coast; a flat raised strip of beach or ground that has been formed naturally along the coast	Crisp	Smooth, firm, and clean with a stiff, uncreased, or unspoilt surface
Plain	A flat expanse of land; fairly flat dry land, usually with few trees	Feathered	Layered; consisting of many fine parallel strands
Steep	Sloping sharply often to the extent of being almost vertical	Indistinct	Vague; lacking clarity or form
Shallow	Lacking in depth; little space between the bottom and the surface or top	Clean	Smooth-edged without rough or jagged features
Prominent	Noticeable; distinguished, eminent, or well-known	Patchy	Irregular and inconsistent;
Solid	Unadulterated or unmixed; made of the same material throughout; uninterrupted	Even	Consistent and equal; lacking slope, roughness, and irregularity
Broken	Lacking continuity; having an uneven surface	Uneven	Inconsistent and unequal in measurement irregular
Smooth	Consistent in line and form; even textured	Stark	bare and plain; lacking ornament or relieving features
Rough	Bumpy; knobby; or uneven, coarse in texture	Clustered	Densely grouped
Fine	Intricate and refined in nature	Diffuse	Spread through; scattered over an area
Coarse	Harsh or rough to the touch; lacking detail	Diffuse	To make something less bright or intense

8.2.1.2 *Definitions and acronyms*³²

Alternatives

A possible course of action, in place of another, that would meet the same purpose and need defined by the development proposal. Alternatives considered in the EIA process can include location and/or routing alternatives, layout alternatives, process and/or design alternatives, scheduling alternatives or input alternatives.

Best practicable environmental option

This is the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.

Environmental impact assessment

A public process that is used to identify, predict and assess the potential positive and negative social, economic and biophysical impacts of a proposed development. EIA includes an evaluation of alternatives, appropriate management actions and monitoring programmes.

Impact (visual)

A description of the effect of an aspect of the development on a specified component of the visual, aesthetic or scenic environment within a defined time and space

Issue (visual)

Issues are concerns related to the proposed development, generally phrased as questions, taking the form "what will the impact of some activity be on some element of the visual, aesthetic or scenic environment?"

Key issue

An issue raised during the scoping process that has not received an adequate response and which requires further investigation before it can be resolved.

Landscape integrity

The relative intactness of the existing landscape or townscape, whether natural, rural or urban, and with an absence of intrusions or discordant structures

Management actions

Actions that enhance benefits of a proposed development, or avoid, mitigate, restore or compensate for negative impacts.

Mitigation measures See 'management actions'

Pre-application planning

The process of identifying environmental opportunities and constraints, potential fatal flaws and negative impacts, as well as alternatives and management actions in the early stage of the project design, prior to application for environmental authorization.

Receptors

Individuals, groups or communities who will be subject to the visual influence of a particular project.

Scenarios

³² Oberholzer, B. 2005. Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town. Appendix A

A description of plausible future environmental states that could influence the nature, extent, duration, magnitude/intensity, probability and significance of the impact occurring

Sense of place

The unique quality or character of a place, whether natural, rural or urban.

Scenic corridor

A linear geographic area that contains scenic resources, usually, but not necessarily, defined by a route. See also *view corridor*.

Scenic route

A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

Scoping

The process of determining the key issues, and the space and time boundaries to be addressed in an environmental assessment.

ACRONYMS

BPEO Best Practicable Environmental Option

DEA&DP Department of Environmental Affairs and Development Planning

DEAT Department of Environmental Affairs and Tourism

DWAF Department of Water Affairs and Forestry

DTM Digital terrain model

ECO Environmental Control Officer

EIA Environmental impact assessment

EMP Environmental Management Plan

GIS Geographic information system

VAC Visual absorption capacity

VIA Visual impact assessment

VRM Visual resource management

ZVI Zone of visual influence

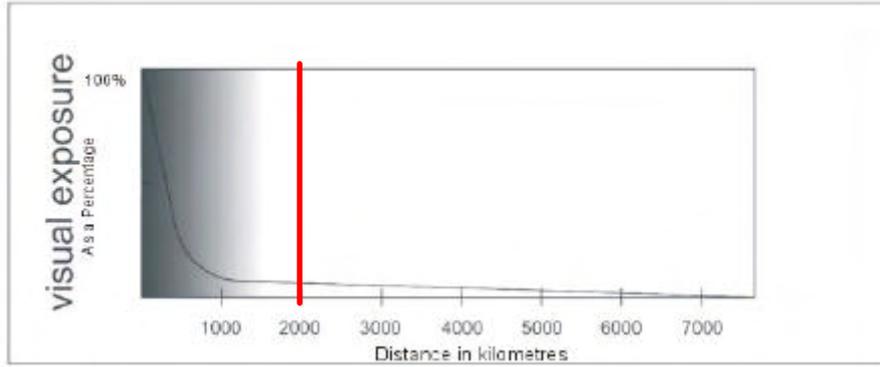
8.2.2 CONTRAST RATING TABLES

In order for one to fully assess the contrast rating the Contrast Rating Tables are completed for the two alternatives from the two Key Observation Points (See photographs of KOP's on Page 22). Modelling does not take into consideration existing vegetation. The Visual Exposure tables show the inverse relationship of distance and visual impact which is well recognised in visual analysis literature (Hull and Bishop, 1988)³³. This means that the impact of an object diminishes at an exponential rate as the distance between the observer and the object increases due to atmospheric conditions prevalent at the location which causes the air to appear greyer, diminishing detail. The distance and visual impact relationship is indicated in the following graphs for each KOP.

³³ Hull, RB; Bishop, ID. Journal of Environmental Management. Vol 27, no. 1, pg 99-108.

8.2.2.1

Key Observation Point 1: Vleesbaai Road



Distance from KOP 1 to landscape modification is approximately 2km (See details on the distance and visual impact relationship above)

VISUAL CONTRAST RATING WORKSHEET		Date: January 2007
		City: Mossel Bay
		Province: Western Cape
		Municipality: Mossel Bay Municipality
PROJECT INFORMATION	LANDSCAPE CHARACTER	
1. Project Name Proposed Eskom OCGT Power plant extensions	3. VRM Class	
2. Key Observation Point KOP 1 – Vleesbaai Road	4. Distance 2 km	

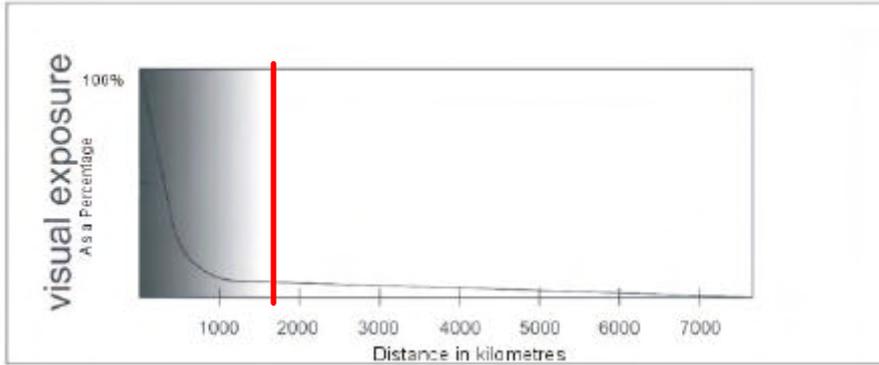
SECTION A. CHARACTERISTIC LANDSCAPE DESCRIPTION (NO GO OPTION)

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Wide, gently rolling landscape with shallow gradients. Concave shape in middle ground, convex of hill in distance	Clumped and irregularly scattered low bushes, predominantly middle to foreground, surrounded by low, flat shapes of grasses. Organic and unstructured.	Simple, clean geometric prisms dominate middle view. Vertical and horizontal.
LINE	Covered by vegetation so softened by irregular edge.	Irregular, broken, sketchy. Indistinct edges.	Fall below the organic convex of skyline. Straight, geometric, clean lines. Eye is led towards structures by the receding lines created by road.
COLOR	Covered by vegetation	Seasonal. Grasses yellow ochres and browns to a range of muted greens for bushes.	Light whites and greys
TEXT-URE	Rough, broken, irregular	Rough, broken, irregular	Smooth

SECTION B. PROPOSED ACTIVITY DESCRIPTION KOP 1: PROPOSED DEVELOPMENT OPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	As in section A	As in section A	Many more existing forms, simple, clean, geometric prisms.
LINE	As in section A	As in section A	Horizon line not affected. Straight verticals and horizontals still dominate middle to foreground.
COLOR	As in section A	As in section A	As in section A
TEXT-URE	As in section A	As in section A	As in section A

8.2.2.2 Key Observation Point 2: N2



Distance from KOP 1 to landscape modification is approximately 1.6km (See details on the distance and visual impact relationship on previous page)

VISUAL CONTRAST RATING WORKSHEET	
Date: January 2007	
City: Mossel Bay	
Province: Western Cape	
Municipality: Mossel Bay Municipality	
PROJECT INFORMATION	LANDSCAPE CHARACTER
1. Project Name Proposed Eskom OCGT Power plant extensions	3. VRM Class
2. Key Observation Point KOP 2– N2	4. Distance 1.6

SECTION A. CHARACTERISTIC LANDSCAPE DESCRIPTION (NO GO OPTION)

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Broad, horizontal, wide view. Flat foreground. Gentle, low, convex hill background.	Low scrub grasses predominate – also flat shape. Few irregular low bushes in middle ground.	Low geometric structures due to perspective and distance. Variety of prism shapes, mostly rectangular and vertical. Very dominant break with skyline on right hand side with strong verticals. Clean, rectilinear. Verticals of fence in foreground.
LINE	Low, rolling convex horizon	Some irregular lines formed between grass and low bush, mostly linear and horizontal	
COLOR	Covered mostly by vegetation, some brown, shows through	Seasonal, mostly yellow ochres for grasses, matt, dull greens for bushes, midtoned.	Mostly light toned – white and cement grey. Dependent on sun direction
TEXT-URE	Covered by vegetation	Low even textured grass, rough bushes.	Mostly smooth

SECTION B. PROPOSED ACTIVITY DESCRIPTION KOP 1: PROPOSED DEVELOPMENT OPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No change other than low berm to be built in front of structures	As in Section A	Increase in vertical prisms and dome structures in middle view
LINE	Extra horizontal line created by berm in middle distance	As in Section A	Vertical and curved lines repeated (multiplied)
COLOR	As in Section A	As in Section A	
TEXT-URE	As in Section A	As in Section A	As in Section A