RELOCATION OF ACACIA AND PORT REX GAS TURBINES TO THE ANKERLIG POWER STATION SITE

VISUAL IMPACT ASSESSMENT

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CONTENTS

Lourens du Plessis from MetroGIS (Pty) Ltd. undertook the visual assessment in his capacity as a visual assessment and Geographic Information Systems specialist. Lourens has been involved in the application of Geographical Information Systems (GIS) in Environmental Planning and Management since 1990. He has extensive practical knowledge in spatial analysis, environmental modelling and digital mapping, and applies this knowledge in various scientific fields and disciplines. His GIS expertise are often utilised in Environmental Impact Assessments, State of the Environment Reports and Environmental Management Plans.

Lourens is familiar with the "Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes" (Provincial Government of the Western Cape: Department of Environmental Affairs and Development Planning) and utilise the principles and recommendations stated therein to successfully undertake visual impact assessments.

Savannah Environmental (Pty) Ltd. appointed MetroGIS (Pty) Ltd. as an independent specialist consultant for the visual assessment. Neither the author, nor MetroGIS will benefit from the outcome of the project decision-making.

1. INTRODUCTION AND BACKGROUND

The Ankerlig Power Station site is situated approximately 40km north of Cape Town and about 3km (at the closest) from the Atlantis residential area. It is located within the western corner of the Atlantis Industrial Township and is surrounded by predominantly open space and vacant land to the north, west and south. The mixed industrial area of Atlantis Industria borders the power station site to the east. The industrial area stretches eastward for about 2 - 3km towards the Aurora-Koeberg transmission lines that form the eastern boundary of the industrial township.

The site is considered to be relatively remote and far removed from major centres, tourist attractions and major roads. It is located next to the R307 (Dassenberg Road) that functions as the primary access route to Atlantis and Mamre (north of Atlantis) from Cape Town. The closest major road is the R27 (about 5 km from the site). The R27 functions as the primary connector between Cape Town, Saldanha and the West Coast National Park.

The relocation of the Acacia and Port Rex gas turbines to the Ankerlig power station is the fourth phase of the original Ankerlig (Atlantis) OCGT power station project. The current OCGT units in operation (four units), as shown in the photograph below, are the first phase of the project. The second phase of the project (currently under construction) includes the expansion (capacity increase) of the power station by adding another five OCGT units, four fuel tanks and a switchyard to the power station. The third phase is the proposed conversion of the OCGT (Open Cycle Gas Turbine) units to CCGT (Combined Cycle Gas Turbine) units, the addition of eight fuel tanks to the east of the power station, and the construction of a power line from the power station to the Omega Substation (EIA process currently underway).

This fourth phase proposes the decommissioning and relocation of the three existing aero derivative gas turbine units at the Acacia Power Station (located near Goodwood) and the decommissioning and relocation of one unit at Port Rex (located near Port Elizabeth) to the existing Ankerlig Power Station site. The proposed project further includes the turning-in of the existing Koeberg-Dassenberg 132kV power line into a new 132kV High Voltage Yard (HV Yard), to be located adjacent to the existing HV yard on the power station site, to transmit the power generated by these relocated units to the Koeberg Power Station.

The aero derivative gas turbine units in question produce approximately 57MW each and are much smaller than the existing OCGT units at Ankerlig that produce approximately 150MW of power each. The height of the aero derivative gas turbine units is approximately half that of the OCGT units (i.e. 14m as opposed to the 30m high smoke stacks of the OCGT units) and only about a quarter of the height of CCGT units (proposed to be approximately 60m above ground level).

The photograph below indicates the approximate position of the proposed relocated aero derivative gas turbine units within the Ankerlig Power Station site. The units will be located south of the new HV Yard (which in turn is located south of the additional five OCGT units currently being constructed) adjacent to the Neil Hare Road. This road is an Atlantis Industria internal road.

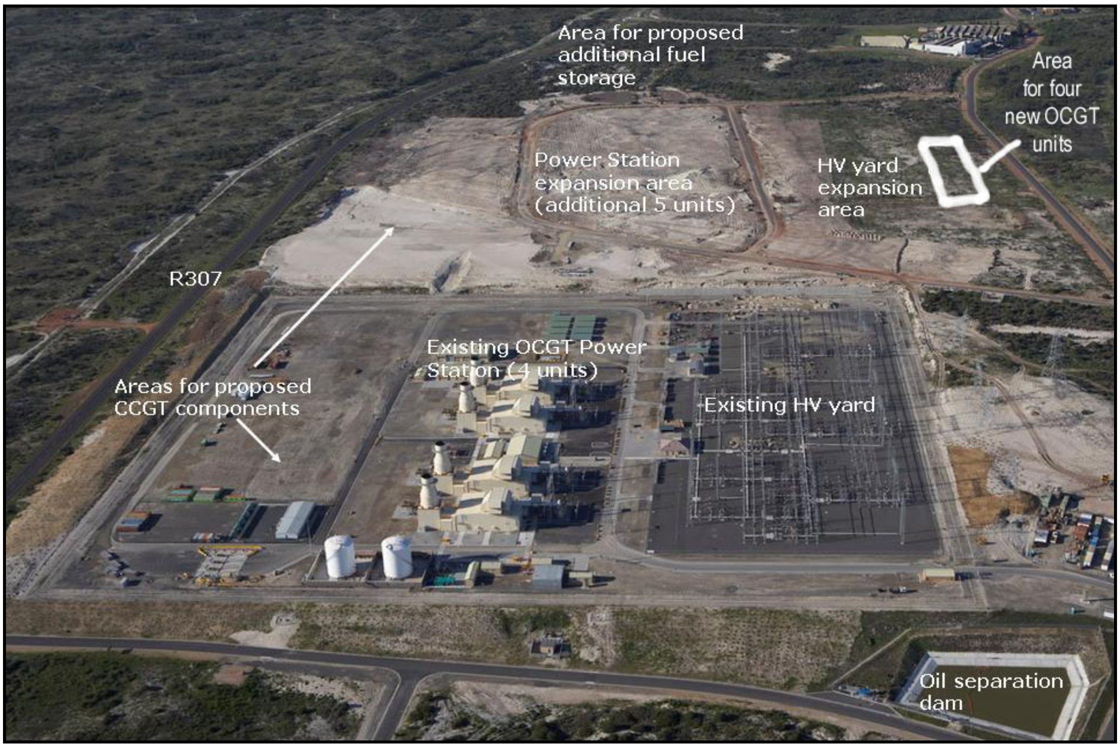

Figure 1: Aerial view of the Ankerlig OCGT power station (four OCGT units and two fuel tanks are shown).

Please refer to Figure 2 for the layout of the Ankerlig Power Station and the position of the proposed gas turbines in relation to existing power station infrastructure. The map also indicates broad land use patterns surrounding the power station site and the two proposed 132kV power line alternatives

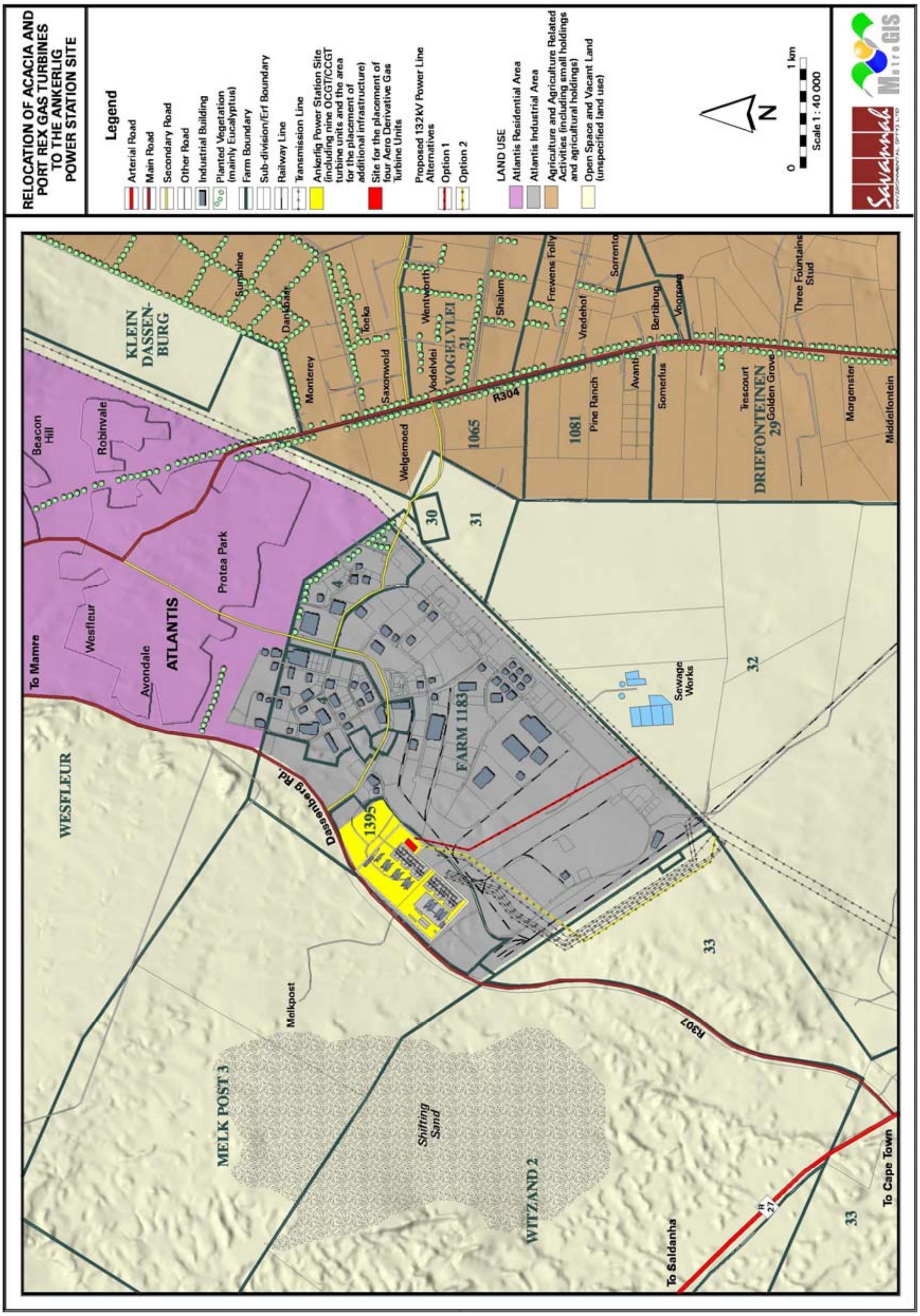

Figure 2: Ankerlig power station layout and broad land use.

2. METHODOLOGY

2.1. General

The study was undertaken using Geographic Information Systems (GIS) software as a tool to generate viewshed analyses and to apply relevant spatial criteria to the proposed infrastructure. A detailed Digital Terrain Model (DTM) for the study area was created from 5m interval contours, supplied by the City of Cape Town.

Site visits were undertaken to source information regarding land use, vegetation cover, topography and general visual quality of the affected environment. It further served the purpose of verifying the results of the spatial analyses and to identify other possible mitigating/aggravating circumstances related to the potential visual impact.

The results of the spatial analysis and other relevant orientation data are displayed on a number of maps, which will be referred to in the text.

2.2. Methodology

The first step in undertaking a visual impact assessment is to identify and understand the crucial issues related to the specific impact. These issues or concerns, as stated by Interested and Affected Parties (I&AP) through the public participation process of the scoping study, highlight the envisaged potential impact and help to identify the critical factors that should be addressed in the detailed assessment phase. It also focuses the analytical procedures on site-specific issues, rather than to apply general assumptions that might not be applicable to the affected parties or study area.

Once a clear understanding was formed about the perceived visual impact of the proposed gas turbine units and transmission power line, procedures were set in place to firstly, determine the potential visual impact within the study area, and secondly, to identify the location (place) where the likely impacts would occur.

The potential visual impact and location of likely impact is indicated by a visual impact index that comprises the following spatial criteria:

- ***Visual exposure (visibility) of the infrastructure.***
  This procedure is generally referred to as the viewshed analysis, indicating all the areas from which the proposed infrastructure will potentially be visible. The viewshed analysis takes into account the dimensions of the proposed gas turbine units and the effect of existing man-made structures and planted vegetation on the potential visual exposure.

- ***Proximity to the project infrastructure (visual distance).***
  The principle that visual impact decreases over distance is applied through the creation of buffer radii around the project infrastructure. These buffer radii indicate whether the observer/viewer has a short, medium or long distance experience of the structures. The concept of visual distance and the determination of the buffer radii are discussed further in Section 4.3. of this report.

- ***Viewer incidence/Viewer perception.***
  Visual impacts occur where there are people to be impacted on. Where more people occur, the potential impact (or frequency of impact) increases. In terms of this rationale, densely populated areas (such as residential areas) or areas frequented by observers (e.g. roads) would increase viewer incidence and need to be identified. It is also important to determine what the observer's envisaged perception of the proposed infrastructure would be in the area of likely impact. If the observer's perception were favourable or neutral, there would be no significant impact. A negative perception of the structures would alternatively increase the potential visual impact.

Once the potential impact and area of likely impact had been identified, another set of criteria was applied in order to determine the severity of the impact.

The criteria/elements for the evaluation of the proposed project infrastructure include:

- ***Landscape character/land use character.***
  It is necessary to evaluate the identified location of the gas turbine units and transmission power line in terms of its suitability or potential conflict with existing land uses or with the general character of the area.

- ***Visually sensitive features (scenic features or attractions).***
  The region or environment within which the proposed infrastructure is located might include either general scenic features, or specific scenic attractions that may be impacted on or compromised by the construction of the transmission power lines or through the relocation of the gas turbine units.

  These features need to be identified and the significance of the proposed project infrastructure on these features must be determined.

- ***Potential impact of the project infrastructure on tourism and eco-tourism.***
  This issue relates to the potential visual impact of the gas turbine units and transmission power line on current tourist activities (West Coast National Park) and the envisaged impact or constraints it may place on the potential expansion of nature-oriented tourism (Cape West Coast Biosphere Reserve) in the region.

- ***Visual absorption capacity (VAC) of the natural vegetation.***
  Certain areas possess, through natural vegetation cover, the ability to absorb or greatly reduce the visual impact of proposed developments. This depends on both the vegetative species and the dimensions of the proposed development and has been investigated for the proposed relocation of the gas turbine units.

- ***Potential visual impact of lighting.***
  After-hours operational and security lighting has the potential to impact on road users and landowners (adjacent to the industrial area) in the form of glare, light trespass and sky glow. Glare, the direct staring into a light fixture, is the severest of these lighting impacts and has the greatest potential to create a significant visual impact through the utilisation of flood lights (typically associated with power generating facilities).

- ***Potential mitigation measures.***
  Some areas may offer more opportunities in terms of the mitigation and reduction of the visual impact. The successful implementation of these measures may lessen the visual impact significantly. An example of potential mitigation may be the utilisation of vegetation screening during the operational phase of the facility.

The result of the above evaluation formed the basis for the identification and determination of the significance of the visual impact.

3. THE AFFECTED ENVIRONMENT

The broad terrain morphological unit for the study area is plains and moderately undulating plains. The relatively flat topography of the region is broken only by the sand dunes to the west of the study area towards the Atlantic Ocean. The dominant vegetation cover is Thicket, Bushland, Shrubland and Fynbos, and the vegetation types are Sand Plain Fynbos and Dune Thicket (in terms of the Low and Rebelo classification).

The Atlantis industrial area borders the Cape West Coast Biosphere Reserve (to the west) that stretches northwards along the coast past the West Coast National Park and Saldanha, and south towards Koeberg. The larger part of the study area consists of vacant land or unspecified land uses, with the town of Atlantis to the north and agricultural holdings and smallholdings east of the study area (refer Figure 2 above).

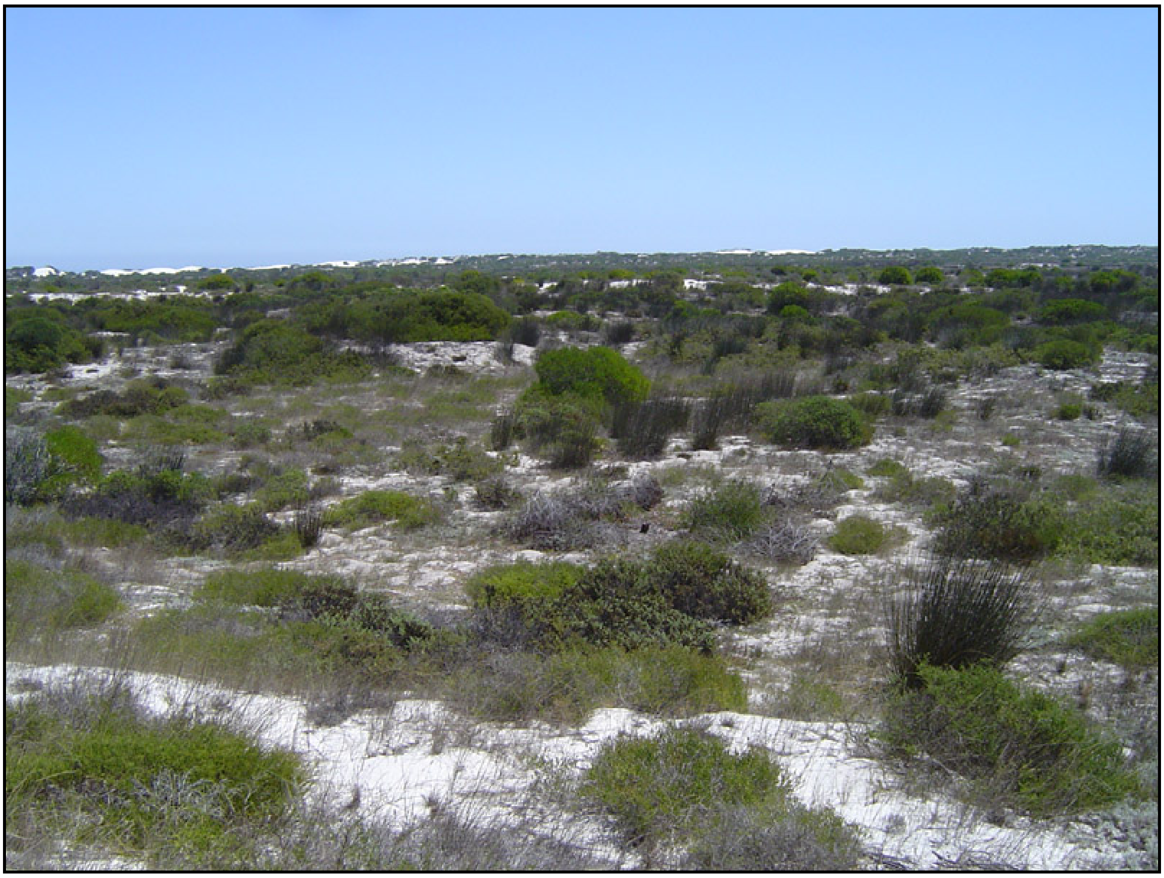

Figure 3: Vegetation cover and general topography of the area west of the Atlantis Industrial Area.

4. VISUAL IMPACT ASSESSMENT

The visual impact assessment is based on the visual exposure (visibility), the visual distance (proximity of the observer) and the viewer incidence (number of observers) of the proposed project infrastructure. It takes into account the size (width, height and length) of the relocated gas turbines. These spatial criteria will be discussed in the following sections and are displayed on Figures 4 to 7.

4.1. Visual exposure

Figure 4 shows the visual exposure of the proposed gas turbine units. An accurate digital terrain model, calculated from the 5m interval contours and the dimensions of the gas turbine units and additional infrastructure, illustrates how the topography of the area and the placement of the structures either shield or expose the gas turbine units. The effect of existing natural vegetation cover, as a potential to absorb the visual exposure, was not considered as the proposed gas turbine units will be approximately 14m in height and the average vegetation cover (thicket/bushland and shrubland/Fynbos) is only 2 to 3 m high. This was also done in order to calculate the maximum potential visual exposure of the proposed infrastructure in case of natural vegetation being cleared for agricultural or other purposes. The existing buildings in the industrial area and planted eucalyptus trees (along the R304) were included in the terrain model in order to accurately calculate the influence of existing visual obstructions on the visual exposure. The existing and future OCGT units and HV Yards were similarly built into the terrain model to determine the effect of these structures on the visual exposure.

It becomes apparent that the proposed Aero Derivative Gas Turbine Units will not be very exposed (visible areas indicated in orange) beyond the boundaries of the Atlantis industrial area. This is due mainly to the location of the proposed gas turbine units south-east of the new HV Yard and the five future OCGT units. The map also indicates the visual exposure (hatched areas) of the already approved Ankerlig OCGT Power Station at full capacity. The proposed new gas turbine units' visual exposure is entirely absorbed by the future exposure of the OCGT power station's visibility. The new units will essentially be visually dwarfed by the existing and future structures present at the power station site.

The dominant area of exposure, outside of the industrial area, occurs north of the proposed gas turbine units along the Dassenberg Road (R307).

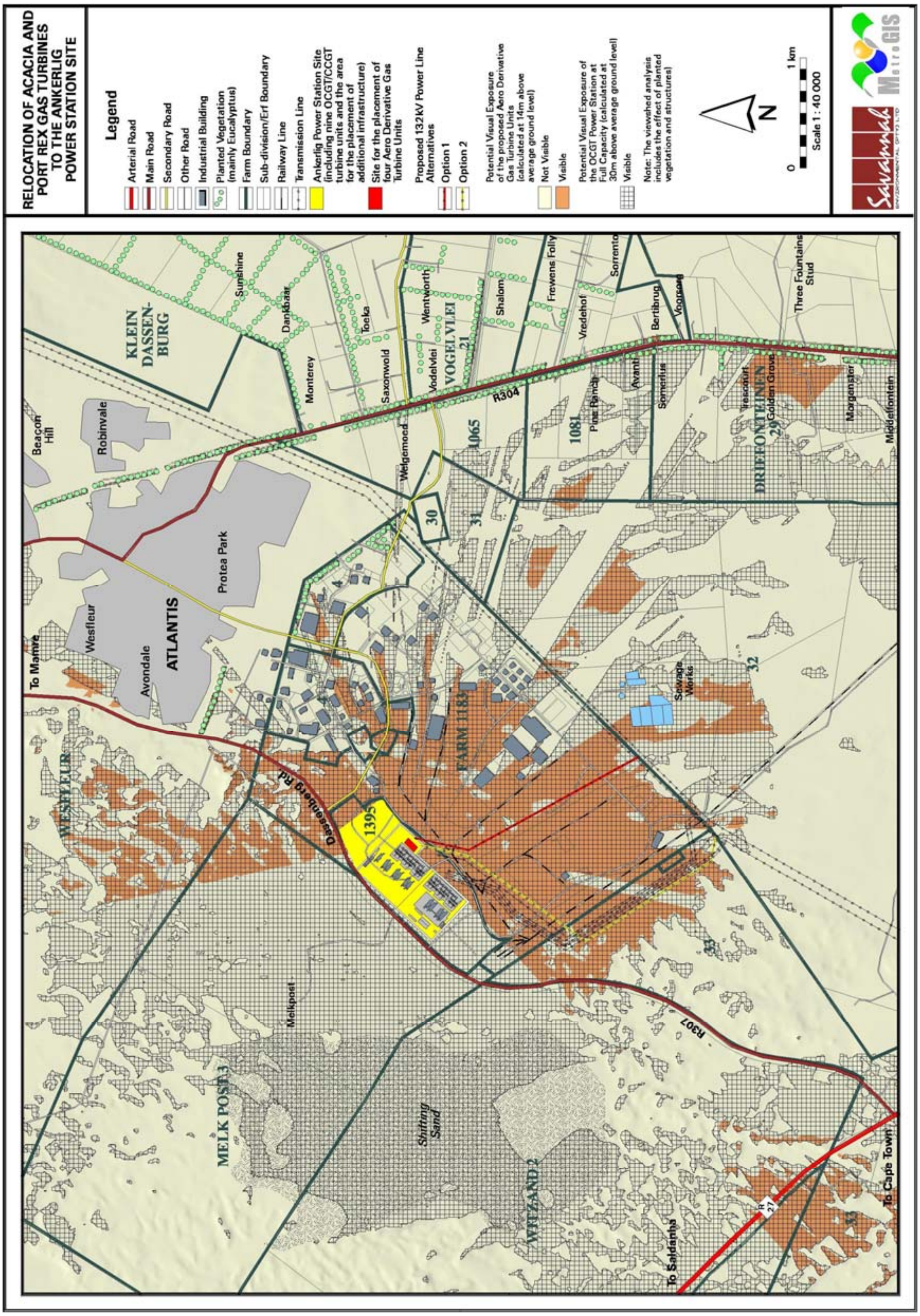

Figure 4: Potential visual exposure of the proposed Aero Derivative Gas Turbine Units.

Viewshed analyses were not undertaken for the two transmission line alternatives due to their location either entirely within the Atlantis industrial area (Option 1 and part of Option 2) or their alignment adjacent to a great number of existing high voltage power lines (Option 2). The author is of the opinion that the proposed power line infrastructure (i.e. 132kV monopole double circuit power lines as show in Figure 5 below) is not visually intrusive/exclusive within an industrial area with its associated industrial style infrastructure. Similarly the construction of this type of transmission power line structures, adjacent to much bulkier and visually exposed high voltage (400kV) power line structures, would not constitute a significant visual impact.

Figure 5: Examples of 132kV power line towers.

4.2. Visual distance

The visual distance theory relates to the scale of the proposed infrastructure, and the distance over which they are viewed in order to determine the prominence of the structures in relation to their surrounding environment. Figure 6 indicates the visual distances as buffer radii from the proposed gas turbine units.

The buffer distances selected for this study are 250m, 500m, 1000m and greater than 1000m.

- **0 - 250m.** Short distance view where the project infrastructure could potentially dominate the frame of vision and constitute a high visual prominence.

- **250 - 500m.** Medium distance view where the project infrastructure could potentially be easily and comfortably visible and constitute a medium visual prominence.

- **500 - 1000m.** Medium to longer distance view where the project infrastructure would become part of the visual environment, but could still be visible and recognisable. This zone constitutes a low visual prominence.

- **Greater than 1000m.** A Long distance view of the project infrastructure where the structures would more than likely not be visible or recognisable. This zone constitutes a low to negligible visual prominence.

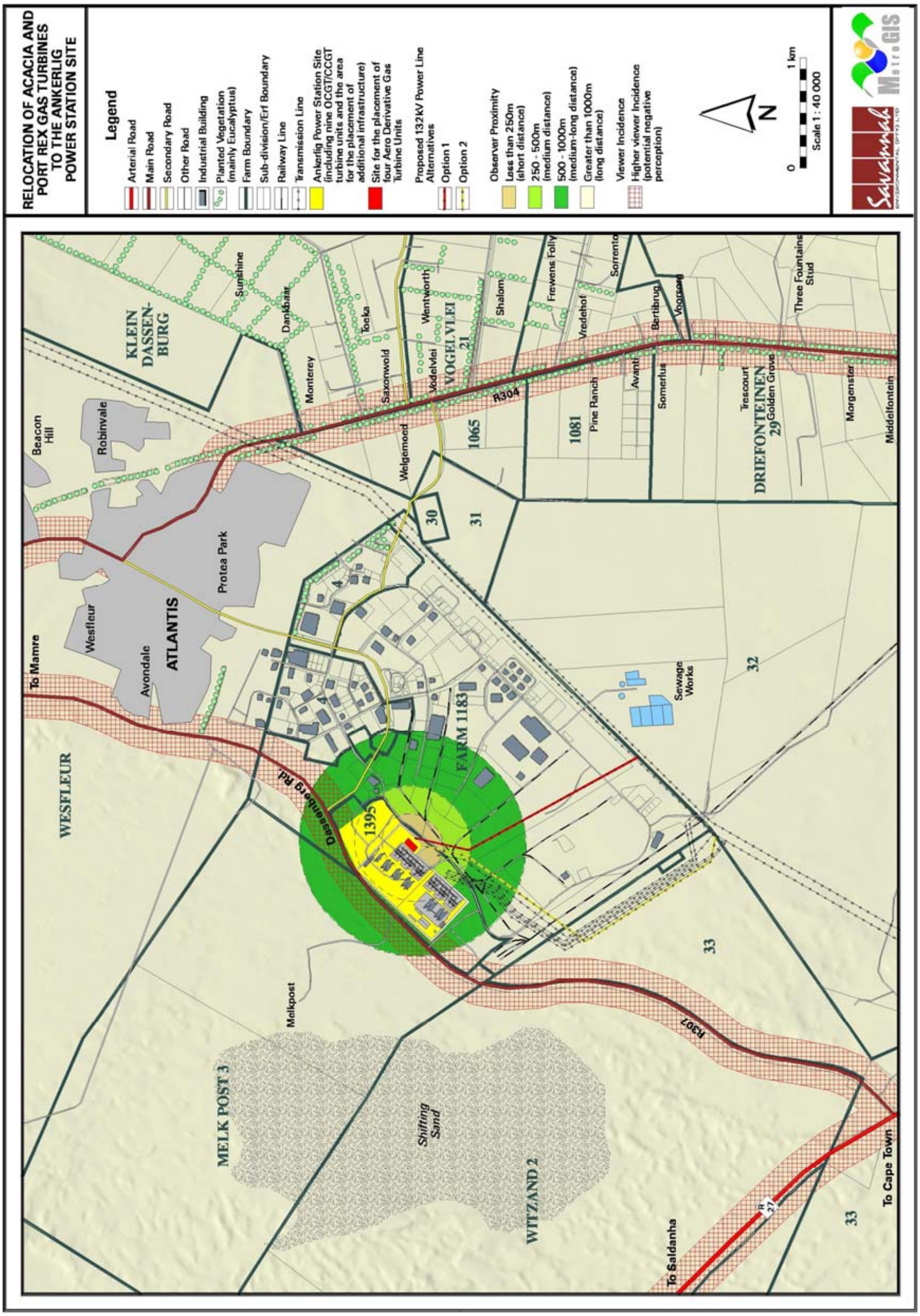

Figure 6: Observer proximity to the four Aero Derivative Gas Turbine Units.

4.3. Viewer incidence and viewer perception

The number of observers and their perception of a structure determine the concept of visual impact. If there are no observers or if the visual perception of the structure is favourable to all the observers, there would be no visual impact.

It is necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the proposed infrastructure. It would be impossible not to generalise the viewer incidence and sensitivity to some degree, as there are many variables when trying to determine the perception of the observer (i.e. regularity of sighting, cultural background, state of mind, purpose of sighting, etc.) that would create a myriad of options.

For the purpose of the proposed relocation of the four gas turbine units, five areas were classified as having differing observer incidences and perceptions.

The **first area** of viewer incidence and perception is indicated as a 200m buffer zone around the major roads in the area (see Figure 6). The rationale is that this area is likely to contain the most observers, being the main roads between Cape Town and the West Coast National Park and Cape Town and Atlantis/Mamre. The purpose of observers travelling along the R27 would be predominantly tourism related, whilst observers using the R307 or R304 would more than likely be local residents commuting between Cape Town and Atlantis/Mamre. If the proposed four gas turbine units were sighted from this area it would more than likely have a negative impact on the viewer.

The **second area** of high viewer incidence and negative viewer perception is the Atlantis residential area. This area has, through its relatively close proximity to the power station, and through its relatively high population density, the potential to be visually affected by the four gas turbine units. Please refer to Figure 2.

The less populated agricultural areas (agricultural holdings and small holdings west of the R304) to the east of the study area constitute the **third zone**. These areas are sparsely populated but would still evoke a predominantly negative viewer perception.

The **fourth zone** is the Atlantis industrial area itself. Employees of the various industries found within this area predominantly frequent this zone. It is assumed that their perception of the proposed four gas turbine units would be neutral as they go about their daily business, or even positive for the employees of the facility.

The **fifth area** is the remainder of the study area (excluding the first four zones). This area is predominantly devoid of observers, as it covers great tracts of vacant farming land and unpopulated areas. This zone is seen as having a neutral viewer perception and therefore a low effect on the visual impact of the proposed gas turbine units.

The transmission power line alternatives largely traverse areas with land-uses as described above under the fourth zone (the Atlantis industrial area) and the fifth zone (vacant farming land). They would therefore predominantly traverse areas with neutral viewer perception and/or low viewer incidence.

5. RESULTS

5.1. Visual impact index

The combined results of the visual exposure, viewer incidence/perception and visual distance of the proposed infrastructure are displayed on Figure 7. Here the weighted impact and the likely areas of impact are indicated as a visual impact index. Values were assigned for each potential visual impact per data category (as mentioned above) and merged in order to calculate the visual impact index. An area with short distance visual exposure of the project infrastructure, a high viewer incidence and a predominantly negative perception of the structures would therefore have a higher value (greater impact) on the index.

The visual impact index has a maximum potential value of 5 (very high visual impact). The proposed gas turbine units do not reach this value due to the units' visual exposure being contained primarily within the industrial area. The "high visual impact" rating or value, as well as most of the "medium visual impact" rating, is also contained within the Atlantis Industrial Area. A section of the Dassenberg Road (R307), north of the power station site, may experience a medium visual impact at a viewing distance of approximately 600m at the closest. The gas turbine units, although visible, will not be viewed in isolation. The much bulkier and imposing OCGT units, fuel storage tanks and the HV Yard will also fill the frame of view, thereby mitigating the individual visual impact of the proposed gas turbine units further.

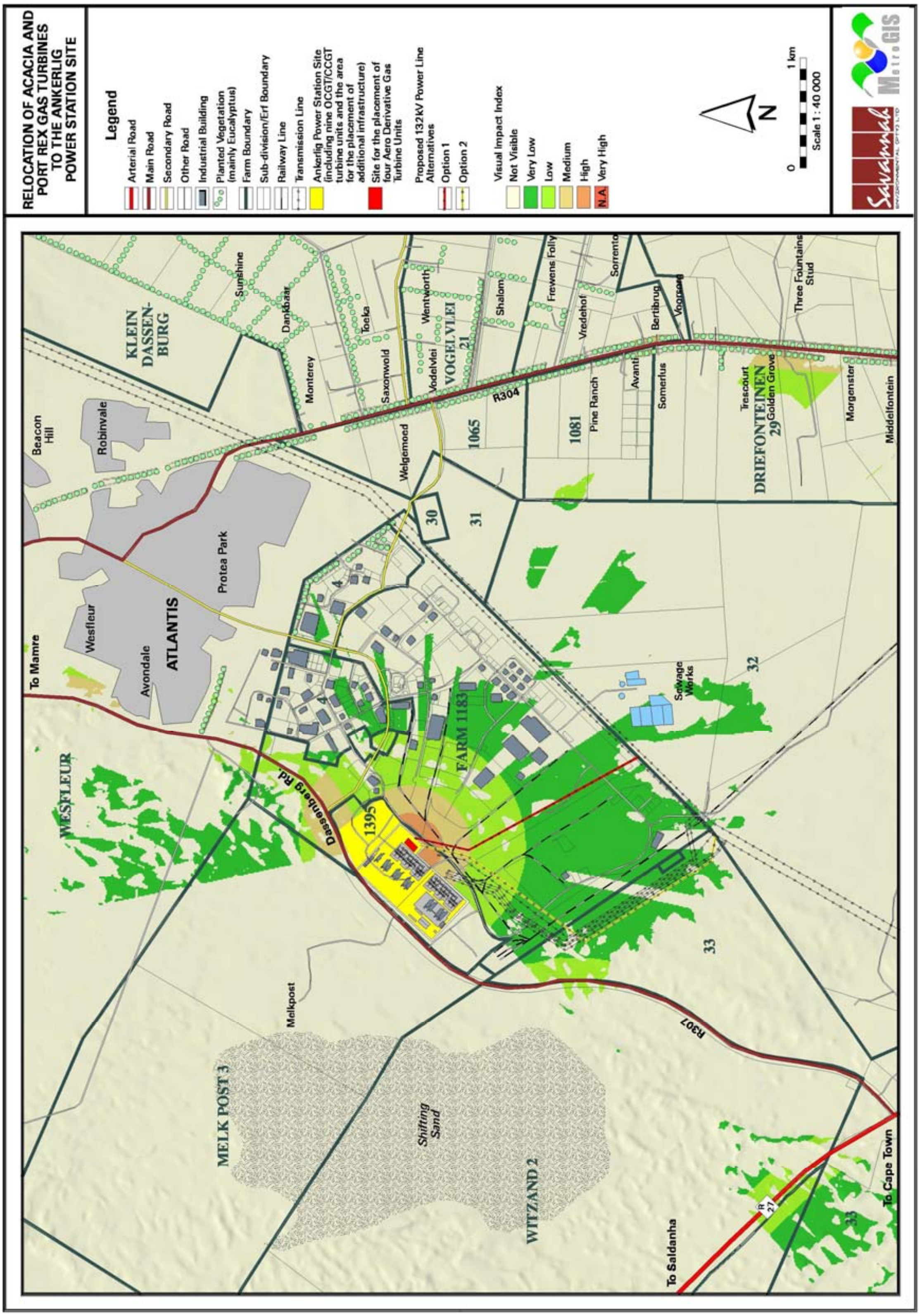

Figure 7: Visual impact index of the four Aero Derivative Gas Turbine Units.

5.2. Visual impact severity rating

The previous section of the report identified specific areas where likely visual impacts could occur. This section quantifies these potential visual impacts in their respective geographical locations and in terms of the identified issues related to visual impact.

The methodology for the assessment of potential visual impacts states the nature of the potential visual impact (e.g. the potential visual impact of the proposed gas turbine units on users of the Dassenberg Road) and includes a table quantifying the potential visual impact according to the following criteria:

- **Extent (E)** - local (high = 4), regional (medium = 3), national (low = 2) or international (very low = 1)
- **Duration (D)** - very short (0-1 yrs = 1), short (2-5 yrs = 2), medium (5-15 yrs = 3), long (>15 yrs = 4), and permanent (= 5)
- **Magnitude (M)** - low (= 0-4), medium/moderate (= 4-6), high (= 6-8) and very high (= 8-10)
- **Probability (P)** - very improbable (= 1), improbable (= 2), probable (= 3), highly probable (= 4) and definite (= 5)
- **Status** (positive, negative or neutral)
- **Significance (S)** - low, medium or high, where the significance is determined by combining the above criteria in the following formula: S = (E+D+M) P

The significance weighting for each potential visual impact (as calculated above) is as follows:

- <30 points: Low (where the impact would not have a direct influence on the decision to develop in the area)
- 31-60 points: Medium (where the impact could influence the decision to develop in the area)
- >60: High (where the impact must have an influence on the decision to develop in the area)

The potential visual impact of the Aero Derivative Gas Turbine Units on users of Dassenberg Road

As indicated above, the primary area of potential medium visual impact would occur along a section of this road at a distance of approximately 600m at the closest. It must however be borne in mind that the visual impact associated with the proposed gas turbine units will be an additional impact and that the initial visual impact has already occurred during the construction of the original OCGT power plant and its associated infrastructure. This initial visual impact was further compounded by the capacity increase (i.e. the construction of additional OCGT units) as addressed by a previous visual impact assessment report (MetroGIS (Pty) Ltd, 2007). It will in all likelihood also be further mitigated, to some extent, if the proposed OCGT to CCGT conversion project is approved (refer MetroGIS (Pty) Ltd, 2008).

The envisaged visual impact of the four Aero Derivative Gas Turbine Units are not as significant as would be the case if this had been a "green fields" development site.

The table below quantifies the potential visual impact of the proposed gas turbine units.

Table 1: Impact table summarising the significance of visual impacts - Aero Derivative Gas Turbine Units.

Nature of Impact: Potential visual impact on users of Dassenberg road.		
	Without mitigation	**With mitigation**

Extent	Local **(4)**	NA
Duration	Long term **(4)**	NA
Magnitude	Moderate **(5)**	NA
Probability	Probable **(3)**	NA
Significance	Medium **(39)**	NA
Status (positive or negative)	Negative	NA
Reversibility	None	NA
Irreplaceable loss of resources?	No	NA
Can impacts be mitigated?	No	NA
Mitigation: • NA		
Cumulative impacts: Each new development, expansion or increase in dimensions of the power station infrastructure has the potential to attribute to the accumulation of the visual impact of the facility along the Dassenberg Road.		
Residual impacts: NA		

The potential visual impact of the transmission power line

The potential visual impact of the construction of the 132kV transmission lines from the new HV Yard to the Dassenberg-Koeberg transmission power lines is envisaged to be low. This is due to the transmission power line alignment adjacent to the existing power lines within the study area or due to the options' traversing the Atlantis industrial area. The already visible power lines (existing vertical disturbance) are expected to absorb the visual exposure of an additional (much smaller) power line to a large degree.

To this end there is no clear preferred alternative. The shorter of the two alternatives (Option 1) is marginally favoured due to the fact that it is entirely located within the industrial area and due to Option 2's slight potential of increasing the cumulative visual impact of the great number of lines already present to the west of the industrial area.

Table 2: Impact table summarising the significance of visual impacts - 132kV power line alternatives.

Nature of Impact: Overall potential visual impact		
	Without mitigation	**With mitigation**
Extent	Local **(4)**	NA
Duration	Long term **(4)**	NA
Magnitude	Low **(2)**	NA
Probability	Improbable **(2)**	NA
Significance	Low **(20)**	NA
Status (positive or negative)	Negative	NA
Reversibility	None	NA
Irreplaceable loss of resources?	No	NA
Can impacts be mitigated?	No	NA
Mitigation: NA		
Cumulative impacts: Possible cumulative visual impact should Option 2 be preferred.		

Residual impacts: NA

5.3. Additional issues related to the visual impact

Landscape character / land use character

The proposed site for the location on the gas turbine units is within a Power Station site located within an established industrial area relatively far removed from residential developments or other conflicting land uses. The general land use is conducive to the relocation of the Aero Derivative Gas Turbine Units and no significant impact on the general land use character of the greater area is envisaged.

The construction of the 132kV power line is similarly not in conflict with the landscape character.

Visually sensitive features (scenic features or attractions)

The area in close proximity of the proposed gas turbine units and the 132kV power line does not contain any identified visually sensitive features or scenic attractions.

Potential impact of the project infrastructure on tourism and eco-tourism

The specific area surrounding Atlantis and the proposed project infrastructure is not currently viewed as a major tourist destination. Tourism predominantly consists of visitors travelling to the West Coast National Park and Saldanha Bay along the R27. This road passes south-west of the Atlantis industrial area at a distance of about 4km (at the closest) from the power station.

The proposed gas turbine units and the 132kV power line are not expected to significantly influence the tourism potential within the region.

Visual absorption capacity (VAC) of the natural vegetation

The visual absorption capacity of the natural vegetation in this region is not considered as an element that could successfully negate or mitigate the visual impact of the proposed gas turbine units and the 132kV power line due to the relatively low growth form in relation to the height of the proposed infrastructure.

Potential visual impact of lighting

There won't be a significant increase in the number of operational and security lighting fixtures associated with the relocation of the gas turbine units compared to the existing lighting fixture present at the Power Station. No significant increase in visual impact is therefore envisaged.

Potential mitigation measures

No site-specific visual impact mitigation measures are proposed for the proposed gas turbine units and the 132kV power line project.

General visual impact mitigation measures for the proposed project include the maintenance and general appearance of the facility. These measures focus on the fact that if/when the facility is seen by outsiders; the general impression should be favourable. Timely maintenance of the gas turbine units and the general surrounds of the property (gardens, access roads, etc.) can prevent the visual impact of degradation and perceived poor management. The most notable aspect of maintenance on this type of structure is the painting of the turbine units. In this regard and as a further mitigation to the visual impact, overtly contrasting and bright colours should be avoided. Natural hues that compliment the natural environment can soften the general appearance of the gas turbine units. The colour schemes currently utilised for the OCGT units is deemed appropriate and should be continued for the relocated gat turbine units.

Mitigation measures for the proposed 132kV power line include avoiding the unnecessary removal of vegetation for the transmission power line servitude and limiting access to the servitude (during both construction and operational phases) along existing access roads.

6. CONCLUSION

In both the relocation of the Aero Derivative Gas Turbine Units and the construction of the 132kV transmission power line, the potential visual impacts will be additional to existing visual impacts. The operation of the Ankerlig OCGT power station and the number of transmission power lines already present within the study area mitigates the potential visual impacts that would be associated with "green fields" projects.

The Ankerlig Power Station site, located within an established industrial area, is seen (from a visual impact point of view) as a suitable location for the Aero Derivative Gas Turbine Units and the construction of a 132kV power line.

7. MANAGEMENT PLAN

The management plan tables aim to summarise the key findings of the visual impact report and to suggest possible management actions in order to mitigate the potential visual impacts.

Table 3: Management plan - Aero Derivative Gas Turbine Units.

OBJECTIVE: The mitigation and possible negation of the potential visual impact of the Aero Derivative Gas Turbine Units with specific reference to the potential exposure of the project structures to the Dassenberg Road.

Project component/s	Aero Derivative Gas Turbine Units
Potential Impact	The potential exposure to and visual impact on observers traveling along the Dassenberg Road.
Activity/risk source	The viewing of the abovementioned project infrastructure from this road.
Mitigation: Target/Objective	General visual impact mitigation measures aimed at softening the potential visual impact.

Mitigation: Action/control	Responsibility	Timeframe
Ensure that proper planning is undertaken regarding the placement of lighting structures and that light fixtures only illuminate areas inside the power station facility. Undertake regular maintenance of light fixtures.	Eskom/lighting engineer.	Construction/Operation.
Maintain the general appearance of the facility in an aesthetically pleasing way.	Eskom	Operation.

Performance Indicator	A generally favourable impression of the gas turbine units when viewed from the Dassenberg Road.
Monitoring	The monitoring of the condition of the site and infrastructure during the operational phase of the project.

Table 4: Management plan - 132kV transmission power line.

OBJECTIVE: The mitigation of potential visual impacts caused by the unnecessary removal (clearing) of vegetation cover for the power line servitude or the creation of new access roads during the construction phase.	
Project component/s	Transmission power line servitude.
Potential Impact	The potential scarring of the landscape due to the creation of cleared cut-lines and new roads/tracks.
Activity/risk source	The viewing of the abovementioned cutlines/roads by observers.
Mitigation: Target/Objective	Minimal disturbance to vegetation cover in close vicinity to the proposed transmission power line.

Mitigation: Action/control	Responsibility	Timeframe
Avoid the unnecessary removal of vegetation for the transmission power line servitude and limit access to the servitude (during both construction and operational phases) along existing access roads.	Eskom.	Construction/Operation.

Performance Indicator	Vegetation cover that remains intact with no visible cutlines, access roads or erosion scarring in and around the power line servitude.
Monitoring	The monitoring of vegetation clearing during the construction and operational phases of the project.

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