DESCRIPTION OF THE PROPOSED ANKERLIG POWER STATION & TRANSMISSION INTEGRATION PROJECT CHAPTER 3

This chapter provides details regarding the scope of the proposed Ankerlig Power Station and Transmission Integration Project, including all required elements of the project and necessary steps for the project to proceed. The scope of project includes construction and operation activities.

3.1. Power Station Conversion

The existing Ankerlig OCGT Power Station consists of nine OCGT units (i.e. four existing OCGT units, plus an additional five OCGT units, currently under construction) each with a nominal capacity of ~150 MW, resulting in a total nominal capacity of 1 350 MW for the power station. Each OCGT unit consists of one gas turbine driving an electric generator. The concept of converting the OCGT units to CCGT units is to utilise the **heat energy** from the exhaust of the gas turbine to drive a steam turbine, instead of this heat energy being exhausted and lost to the to the atmosphere (as is the current scenario).

Simply stated, this can be achieved through the following:

» When the hot gas exits the gas turbine as exhaust gas, it has a temperature of up to 600°C. This heat energy is transferred to water in the heat recovery steam generator, instead of being exhausted to the atmosphere.
» The heat is used to generate steam (water vapour), which powers the steam turbine to produce mechanical energy.
» The resulting mechanical energy is transferred to a generator, where it is converted into electricity (i.e. electrical energy).
» A condenser converts exhaust steam from the steam turbine back into saturated water through a cooling process.

Conversion of the units to CCGT is undertaken to increase cycle thermal efficiency. It is estimated that each converted unit will produce approximately 80 MW additional capacity, i.e. approximately 50% more than a standard OCGT unit. Therefore, an additional 9 x 80 MW (720 MW in total) increase in capacity is foreseen from the OCGT to CCGT conversion. The **total nominal capacity** of the Ankerlig Power Station will, therefore, be **2 070 MW**. The proposed conversion will be on the site of the existing Ankerlig Power Station, and will not require any additional land take outside of the existing power station boundaries. Therefore, no location alternatives have been considered within this EIA process.

The primary components of the conversion project include the following:

» A **heat recovery steam generator** (HRSG) will be added to the gas turbine to recover waste heat, to drive the steam turbine cycle. In principle, a HRSG is associated with a gas turbine. One HRSG can be linked to 2 or 3 OCGT units. The following configurations are currently being investigated from a technical perspective:
  * A configuration of 3 x 3:1 (OCGT: HRSG units),
  * A configuration of 2 x 3:1 and 1 x 1:2 (OCGT: HRSG units) and one stand-alone OCGT unit, possibly to be used as "black-start" facility for the power station, and
  * A configuration of 4 x 2:1 (OCGT: HRSG units) and one stand-alone OCGT unit, possibly to be used as "self-start"[3] facility for the power station. This would allow for HRSG technology standardisation.
» A **condenser** which converts exhaust steam from the steam turbine back into water through a cooling process.
» Depending on the configuration, a **bypass stack** for the CCGT, anticipated to be approximately 60 m in height will be associated with each HRSG.
» **Water treatment plant** (for treatment of potable water and production of demineralised water (for steam generation)).
» **Dry-cooled technology** consisting of a system of air-cooled condenser fans situated in fan banks approximately between 25-30 meters above ground.
» **Additional fuel storage facilities** and associated off-loading and other related infrastructure to cater for the increased fuel requirements associated with the higher load factor (i.e. longer operating hours or a mid-merit operating regime[4]).
» An **elevated water tank**, approximately 20 m high, with a holding volume of approximately 2.5 million litres (i.e. water storage for approximately 5 days of operation).

High quality water is required for use within the CCGT power generation process. Membranes/ion exchange systems would be required for water treatment on site. A waste treatment plant for the effluent from this water treatment system will be required. All solid waste generated from this process would be disposed of off-site at a suitably licensed waste disposal facility.

The power station is to be operated as a zero liquid effluent discharge (ZLED) system, i.e. water within the power station will be recycled for re-use in the power station process. No liquid waste from the power station will therefore be discharged.

[3] A power station must be able to kick-start itself in the event of no external power supply being available. Hence this one dedicated unit.

[4] Mid-merit capacity is during the daytime from about 6 am to about 10 pm on weekdays.

3.1.1. Investigation of Water Resource Options

Process water will be required for the CCGT power generation process, as well as water for cooling. It is estimated that approximately 500 m^3/day will be required for this purpose. This translates into an annual water requirement of ~1.825 Mm^3/a.

In order to meet this demand, various water resource options have been investigated in terms of technical, economic and environmental criteria, including a) the use of **groundwater** from the underground aquifer in the Atlantis area, b) the use of **wastewater** from the Wesfleur Wastewater Treatment Works, c) the use of **potable water** from the Witzand Water Treatment Works, and d) the use of **desalinated sea water** piped to the power station from the ocean.

From an environmental perspective, the following conclusions were drawn with regards to these water resource options:

a) *The use of groundwater from the underground aquifer in the Atlantis area:*
A preliminary assessment of supplying the power station from the groundwater resources in the Atlantis area was undertaken by SRK Consulting (refer to Appendix B). The study area was subdivided into eight Groundwater Resource Units (GRUs) in which the aquifer types, groundwater quality, borehole and aquifer yield potential were assessed. The long-term sustainable yield of all the aquifer systems in the study area is conservatively estimated at 6.7 Mm^3/a during periods of normal rainfall. The so-called Atlantis Primary Aquifer System is the only major groundwater resource in the study area and it extends across five of the identified GRUs. This aquifer has, to a large extent, been fully developed. In addition, abstraction of water from the aquifer system is likely to impact significantly on the users in the Atlantis area, as this aquifer is the primary water resource for this area. Therefore, this option was **excluded as a reasonable and feasible alternative** to sustainably supply water to the power station in the long-term.

b) *The use of wastewater from the Wesfleur Wastewater Treatment Works:*
Both domestic wastewater and industrial effluent from the Atlantis area are treated at the Wesfleur Wastewater Treatment Works, but are treated within separate systems.

Treated domestic wastewater is utilised by the City of Cape Town to recharge the groundwater system of the Atlantis Primary Aquifer System. Therefore, the abstraction of effluent from the domestic wastewater stream would impact on the balance of this system and, as such, on the availability of groundwater within this aquifer, which is the primary source of water to the Atlantis area. This option was not supported by the City of Cape Town. As a result, this

option was **excluded as a reasonable and feasible alternative** to sustainably supply water to the power station in the long-term.

Treated industrial effluent is currently pumped to the sea barrier recharge zone, which is made up of a series of artificial dams located to the west of the Atlantis area within the Koeberg Nature Reserve. The purpose of this system is to maintain the hydrological barrier with the sea, thereby ensuring the quality of the groundwater resource. Through discussions with the City of Cape Town, it has been suggested that the abstraction of a limited volume of water from this system (such as the estimated 500m^3/day) could be possible. However, a concern has been raised that this abstraction could impact on the balance of the groundwater system. Further investigation of the impact of abstraction of industrial wastewater on the balance of the aquifer system would be required to confirm the level of impact. Such an investigation would require extensive modelling to provide meaningful results.

Due to the urgency of the need for the commissioning of the power station, this option is **not considered reasonable and feasible in the short-term**. However, the potential impacts associated with this option will continue to be investigated from a technical perspective in parallel to the EIA process in order to determine the possibility of adopting this option in the medium- to long-term.

c) *The use of potable water from the Witzand Water Treatment Works:*

The Witzand Water Treatment Works treats and reticulates water from the Atlantis aquifer to the Atlantis residential and industrial areas. From discussions held with the City of Cape Town, it has been established that there is currently spare capacity at the water treatment works (~15 Ml/d). Eskom would be required to purchase this water from the City of Cape Town, through a commercial agreement. The purchase of water from this water treatment works would minimise the impact on the aquifer system as water is already being abstracted and treated by the City of Cape Town. A water reticulation pipeline passes the Ankerlig Power Station on Neil Hare Road. Eskom have an existing permanent water tap-off point from this pipeline to the Ankerlig Power Station (existing 4 units), and a temporary tap-off point to the power station expansion site (i.e. additional 5 units) where construction is currently being undertaken. The option of using the existing tap-off points, as well as the need for a new tap-off point is currently being investigated from a technical perspective.

This option is **considered to be a feasible and reasonable option** from a technical, economic and environmental perspective. Should this option be implemented, it has been recommended that Eskom provide for on-site storage for at least a 48-hour period for use in the event that water cannot be

supplied from the water treatment works. This will require the installation of a water reservoir on the power station site with a capacity of ~2 Ml.

d) *The use of desalinated sea water piped to the power station from the ocean:* The possibility of abstracting water from the sea and desalinating the abstracted water within a Reverse Osmosis (RO) plant located immediately west of the Ankerlig power station on the coast was investigated. In order to minimise the length of pipeline required between the coast and the power station, an area of coastline immediately to the west of the Ankerlig Power Station was considered for the location of a sea water abstraction point. Alternative abstraction points were considered along the stretch of coastline between the Koeberg Power Station in the south to a site just south of Matroosbaai in the North.

As a result of the position of the Koeberg Power Station and the restrictions associated therewith, and the rugged nature of the coastline, only one feasible abstraction point within the Koeberg Nature Reserve (approximately 2 km north of the Koeberg Power Station) was identified for this proposed point of abstraction and wastewater discharge from the RO plant. Wastewater discharge could potentially impact on the offshore reef, the seal breeding colony located on the island just offshore of the proposed abstraction/discharge point, breeding sites of the oystercatcher (endangered species), and other sensitive marine life. In addition, location of the desalination plant on the coast could impact on potentially sensitive dune systems and vegetation.

A pipeline in excess of 10 km will be required to be constructed. This pipeline will be required to cross potentially sensitive areas within the Koeberg Nature Reserve.

As a result of the potentially significant environmental impact, and the economic considerations, this was **excluded as a reasonable and feasible alternative** to sustainably supply water to the power station in the long-term.

The use of potable water from the Witzand Water Treatment Works has been nominated as the preferred option in the short-term based on technical, environmental and economic constraints.

3.1.2. Investigation of Cooling Technologies

A number of cooling technology options for the CCGT have been investigated by Eskom, including dry-cooled technology and wet-cooled technology. Due to financial and technical constraints, **dry-cooling technology (air-cooled**

condensers) has been nominated as a preferred option for implementation. Dry-cooling technology is less water-intensive (i.e. uses significantly less water) than wet-cooled technology, and consists of a system of air-cooled condenser fans situated in fan banks approximately 25 – 30 m above ground. In a direct dry-cooled system, the steam is condensed directly by air in a heat exchanger (air cooled condenser) and the condensate is returned to the steam cycle in a closed loop. The air flow is induced solely by mechanical draft (i.e. caused by fans) in the air cooled condensers.

A condenser converts exhaust steam from the steam turbine back into saturated water through a cooling process. This water (condensate) is then fed into a Condensate Polishing Plant (CPP), to treat/polish it to desired qualities, before it is fed back into the HRSG as part of the steam cycle. Regeneration wastes, a highly saline effluent from the CPP, will have to be disposed of. Eskom is currently investigating various disposal options (one of which could be on-site wastewater treatment).

3.1.3. Additional Fuel Storage Facilities

Conversion of the units to CCGT is based on **increased cycle thermal efficiency**. The CCGT units would utilise the **same amount of liquid fuel** (i.e. diesel) as is currently the case for the OCGT units (i.e. approximately 40 tons of diesel/unit/hour) for the same operating regime. However, in order to meet the electricity supply demand in the medium-term, the plant will have to operate for more hours per day than was anticipated for the OCGT plant (i.e. higher than anticipated load factors). Therefore, the power station will not only operate as a peaking power plant[5] as is currently the case, but will contribute to the mid-merit electricity generation supply[6].

This **higher load factor** would require **higher fuel consumption**. **Additional fuel storage facilities** will be required at the Ankerlig Power Station to cater for the increased fuel requirements associated with the higher load factor. Fuel is currently transported by road to the Ankerlig Power Station site from the fuel supply point in Milnerton. The installation of a liquid fuel pipeline to the Ankerlig Power Station, as well as transport of fuel by rail is currently being investigated as part of a separate EIA application (DEAT reference number 12/12/20/955) by Bohlweki Environmental. A screening process for route selection has been completed, and the Scoping Process is being initiated.

[5] Peaking power refers to power generation technology designed to generate electricity during periods of high electricity demand, generally in the weekday mornings from 07:00 to 09:00 and weekday evenings from 18:00 to 20:00.

[6] Mid-merit capacity is during the daytime from about 6 am to about 10 pm on weekdays.

Eskom currently has authorisation to store 16,2 million litres of fuel on the Ankerlig Power Station site. In order to form a fuel storage buffer between actual fuel usage and fuel delivery to the CCGT units at the higher load factor, Eskom proposes the storage of an additional 43,2 million litres of fuel on the power station site, resulting in a total storage capacity of 59,4 million litres on site. An area to the east of the power station expansion has been earmarked for this additional fuel storage (refer to Figure 3.1). Provision would be required to be made for 8 x 5 400 m^3 fuel storage tanks, as well as associated off-loading and other related infrastructure. Security of liquid fuel supply nationally is regulated by the Department of Minerals and Energy (DME)[7].

3.1.4. Project Construction Phase

It is expected that the construction of the power station conversion would commence in early 2009, and would take a maximum of 32 months to complete. In order to meet the urgent need for additional electricity generation capacity, Eskom would aim to fast-track this construction timeframe as far as possible.

The number of construction workers required for a project of this nature is still being determined. Construction crews will constitute mainly skilled and semi-skilled workers. No employees will reside on the construction site at any time during the construction phase, and the intention is for appropriate accommodation to be sought and provided within the neighbouring residential area.

3.1.5. Project Operation Phase

As is typical of gas turbine power stations, the expected lifespan of the power station is approximately 25 years, with the option to extend this lifespan at the end of this period through the replacement of components, should this be required. The creation of additional employment opportunities during the operational phase of the power station will be limited. It is estimated that the project will support only about 20 direct employment opportunities (operators/maintainers).

3.2. Integration of the CCGT Power Station into the National Grid

Eskom proposes the construction of a 400kV transmission power line between the Ankerlig Power Station and the Omega Substation (to be constructed on the Farm Groot Oliphantskop 81) to transmit the additional power generated at this power station to the national electricity grid.

[7] Refer to Energy Security Master Plan – Liquid Fuels, published by the DME.

Figure 3.1: Aerial photograph showing Ankerlig Power Station layout and land use

One 400kV power line will be sufficient to evacuate the additional power, and would be connect to the now-to-be extended substation (high voltage (HV) yard) at the power station. No expansion of this HV yard is required to accommodate the new transmission power line.

Three technically feasible alternative transmission power line alignment corridors (approximately 500 m in width) have been identified for investigation within the EIA process (refer to Figure 3.2).

Option A (indicated in red on Figure 3.2) runs parallel to the two existing Atlantis-Koeberg 400kV power line servitudes from the Ankerlig Power Station alongside the Atlantis railway line, and then in a south-westerly direction. At Duinenfontein, the route continues straight until it links to the existing Koeberg-Stickland 400kV power line servitude. The line then deviates east across the R303 directly to the Omega Substation at a point situated in the Klein Zoute Rivier Agricultural Holdings (AH).

Option B (indicated in green on Figure 3.2) runs parallel to the two existing Atlantis-Koeberg 400kV power line servitudes from the Ankerlig Power Station alongside the Atlantis railway line. The route then cuts directly southwards over the farms Brakkefontein and Vaatjie as well as the Klein Sout Rivier before joining up with the Koeberg–Stickland 400kV power line servitude. This alignment follows an approximate straight line route from Ankerlig to the Omega substation site.

Option C (indicated in blue on Figure 3.2) follows the Atlantis railway line for its entire length until it reaches the farm Groot Olifantskop (Omega substation). It passes through the properties Brakkefontein, Donkergat, and Vaatjie. The alignment lies to the east of the Brakkefontein Shooting Range, the proposed new regional landfill site and the airstrip utilised by ‘Wings over Africa’. The alignment lies to the west of the municipal sewage works, Apollo Bricks and the Corobrick Four Wheel Drive Challenge site.

Through the EIA process, a preferred alternative transmission power line corridor will be nominated for environmental authorisation (by the environmental authorities), provided no environmental fatal flaws are identified to be associated with the proposed project.

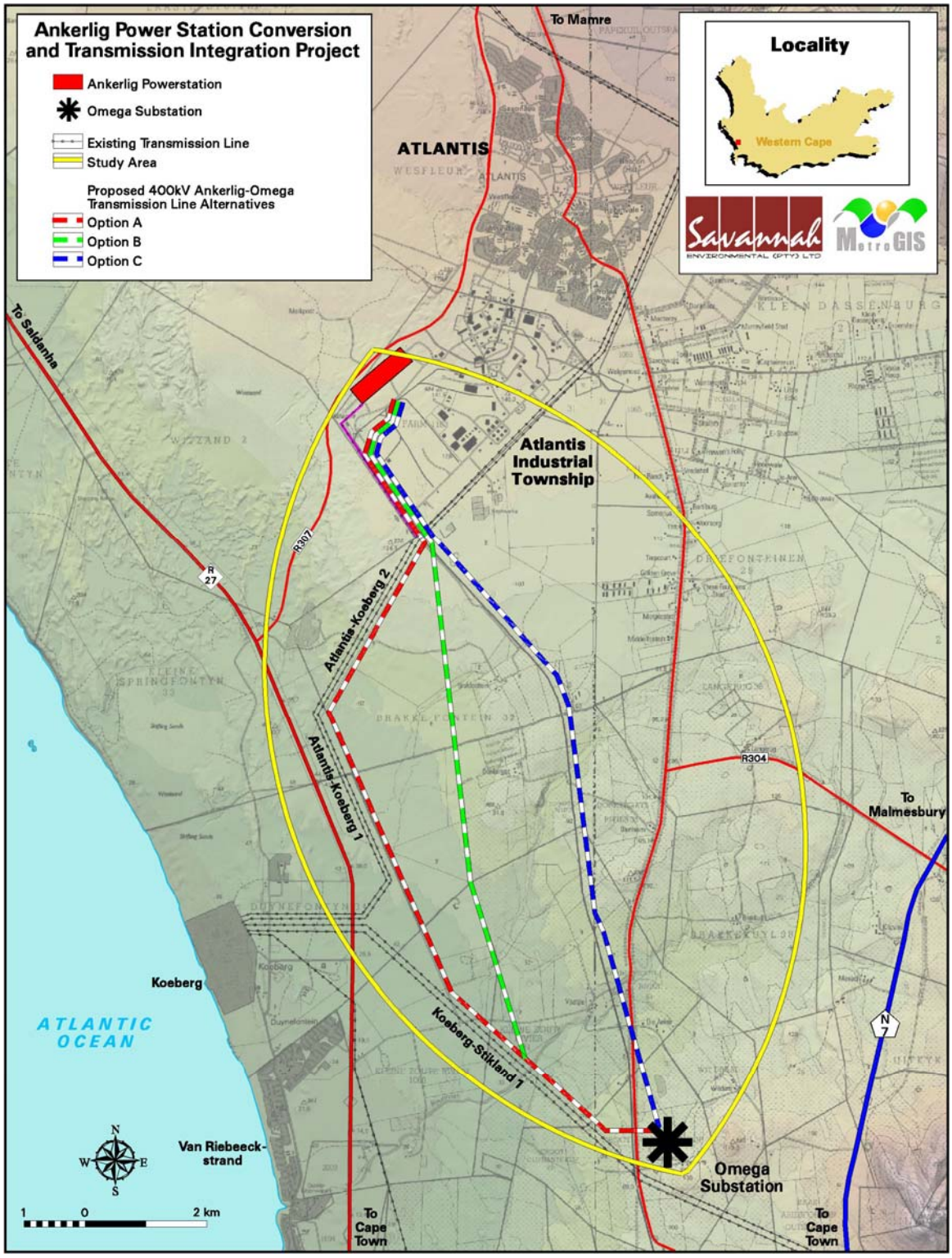

Figure 3.2: Transmission power line alternatives identified for investigation within the EIA process

Transmission power lines are constructed and operated within a servitude (55 m wide for 400kV lines) that is established along the entire length of the line. Within this servitude, Eskom has certain rights and controls that support the safe and effective operation of the line. The process of achieving the servitude agreement is referred to as the Servitude Negotiation Process with each affected landowner. The negotiation process is undertaken directly by Eskom and is independent of the EIA process.

While there should be reasonable confidence in the environmental feasibility of the preferred corridor nominated, other criteria may require minor alteration to the corridor which received environmental authorisation during the land negotiation process undertaken by Eskom. These may include:

» Identification of a technical problem during the detailed design phase which will require excessive cost to resolve (e.g. unstable subsurface conditions identified by detailed geotechnical investigations).
» Request by a landowner during the course of the negotiation process that the alignment be shifted to avoid disruption of a particular activity on his property, but provide a feasible new alignment.

Provided such potential deviations to the corridor are not unreasonable, it is fair for Eskom Transmission to investigate and negotiate local adjustments within the authorised corridor alignment. This may be required at a number of points along the alignment.

3.2.1. Project Construction Phase

It is expected that the construction for transmission power line will commence in early 2010, and would take approximately 9 months to complete. In order to meet the urgent need for additional electricity generation capacity, Eskom would aim to fast-track this construction timeframe as far as possible.

Construction crews will constitute mainly skilled and semi-skilled workers. No employees will reside on the construction site at any time during the construction phase.

3.2.2. Project Operation Phase

The expected lifespan of the proposed transmission power line is between 35 and 40 years, depending on the maintenance undertaken on the power line structures. The creation of additional employment opportunities during the operational phase of the power line will be limited, and will be restricted to skilled maintenance personnel employed by Eskom.

APPROACH TO UNDERTAKING THE SCOPING PHASE CHAPTER 4

An Environmental Impact Assessment (EIA) process refers to that process (dictated by the EIA Regulations) which involves the identification of and assessment of direct, indirect and cumulative environmental impacts associated with a proposed project. The EIA process comprises two phases: **Scoping Phase** and **EIA Phase**. The EIA process culminates in the submission of an EIA Report (including an environmental management plan (EMP)) to the competent authority for decision-making. The EIA process is illustrated below:

The Scoping Phase for the proposed Ankerlig Power Station Conversion and Transmission Integration project has been undertaken in accordance with the EIA Regulations published in Government Notice 28753 of 21 April 2006, in terms of Section 24(5) of the National Environmental Management Act (NEMA; Act No 107 of 1998). This Draft Scoping Report aimed to identify potential issues associated with the proposed project, and define the extent of studies required within the EIA. This was achieved through an evaluation of the proposed project involving specialists with expertise relevant to the nature of the project and the study area, the project proponent, as well as a consultation process with key stakeholders that included both relevant government authorities and interested and affected parties (I&APs). This chapter serves to outline the process which was followed during the Scoping Phase of the EIA process.

4.1. Objectives of the Scoping Phase

This Scoping Phase aimed to:

» Identify and evaluate potential environmental (biophysical and social) impacts and benefits of all phases of the proposed development (including design, construction and operation) within the study area through a desk-top review of existing baseline data and specialist studies.
» Provide the authorities with sufficient information in order to make a decision regarding the scope of issues to be addressed in the EIA process, as well as

regarding the scope and extent of specialist studies that will be required to be undertaken as part of the EIA Phase of the process.

Within this context, the objectives of this Scoping Phase were to:

» Clarify the scope and nature of the proposed activities.
» Clarify the reasonable and feasible project-specific alternatives to be considered through the EIA process, including the "do nothing" option.
» Identify and evaluate key environmental issues/impacts associated with the proposed project, and through a process of broad-based consultation with stakeholders and desk-top specialist studies identify those issues to be addressed in more detail in the Impact Assessment Phase of the EIA process.
» Conduct an open, participatory and transparent public involvement process and facilitate the inclusion of stakeholders' concerns regarding the proposed project in the decision-making process.

4.2. Overview of the Scoping Phase

The Scoping Phase has been undertaken in accordance with the EIA Regulations published in Government Notice 28753 of 21 April 2006 in terms of NEMA.

The potential impacts associated with the installation of 720 MW of additional electricity generation capacity at Ankerlig Power Station, as well as the transmission of this additional power to the national electricity network have been evaluated. Key tasks undertaken within the Scoping Phase included:

» Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
» Submission of a completed application form for authorisation in terms of Regulation 13 and 27 of Government Notice No R385 of 2006 to the competent authority (DEAT).
» Undertaking a public involvement process throughout the Scoping process in accordance with Regulation 56 of Government Notice No R385 of 2006 in order to identify issues and concerns associated with the proposed project.
» Preparation of an Issues and Response Report detailing key issues raised by I&APs as part of the EIA Process (in accordance with Regulation 59 of Government Notice No R385 of 2006).
» Undertaking of independent specialist studies in accordance with Regulation 33 of Government Notice No R385 of 2006.
» Preparation of a Draft Scoping Report and Plan of Study for EIA in accordance with the requirements of the Regulation 29 Government Notice No R385 of 2006.

These tasks are discussed in detail below. Quality control sheets to ensure that all the minimum requirements for the key tasks as listed above are met are included in Appendix C.

4.2.1. Authority Consultation and Application for Authorisation in terms of GN No R385 of 2006

As Eskom is a state-owned enterprise (SoE), the National Department of Environmental Affairs and Tourism (DEAT) is the competent authority for this application. As the project falls within the Western Cape Province, the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) acts as a commenting authority for the project. Consultation with these authorities has been undertaken throughout the Scoping process. This consultation has included the following:

» Pre-application consultation with DEAT and DEA&DP regarding the proposed project and the EIA process to be undertaken, including a pre-application consultation meeting with DEAT (27 September 2007).
» Submission of applications for authorisation for the power station conversion and transmission power line to DEAT, with copies submitted to DEA&DP. These applications were accepted and the reference numbers 12/12/20/1014 (power station conversion) and 12/12/20/1037 (transmission power line) allocated. Authorisation was therefore granted to continue with the Scoping Phase of the project. It was agreed that potential impacts associated with both the power station conversion and the transmission power line could be considered within a single report as the two projects are inter-linked. Two separate Environmental Authorisations would, however, be issued.

A record of all authority consultation undertaken within the Scoping Phase is included within Appendix D.

4.2.2. I&AP Identification, Registration and the Creation of an Electronic Database

The first step in the public involvement process was to identify relevant stakeholders and interested and affected parties (I&APs). This process was undertaken by **Sustainable Futures ZA** (specialist public participation consultants) through existing contacts and databases, recording responses to site notices and newspaper advertisements, as well as through the process of networking. Stakeholder and I&AP information included on the databases from the previous EIA processes was verified and included within the database for this proposed project.

Stakeholder groups identified include:

» Atlantis Business Sector
» Localised Civil Society Groupings (Community Based and Non-governmental Organised groups)
» Organised Labour
» Heritage Agencies (National and Provincial)
» Environmental Groupings (Traditional & Energy Sector)
» Provincial Government Departments (departments of relevance within the Western Cape Government)
» Local Authorities (Cape Town Uni City, Blaauwberg Administration, West Coast District Municipality and Swartland Local Municipality)
» National Government Departments (Line Departments)

All relevant stakeholder and I&AP information have been recorded within a database of affected parties (refer to Appendix E for a listing of recorded parties). Databases prepared as part of the previous EIAs undertaken for the Ankerlig Power Station were used as a basis for identifying I&APs and stakeholders for involvement within this current EIA process. While I&APs have been encouraged to register their interest in the project from the start of the process, the identification and registration of I&APs will be on-going for the duration of the EIA process. 439 parties have registered their interest in the project to date. The project database will be updated on an on-going basis throughout the project process, and will act as a record of the parties involved in the public involvement process.

4.2.3. Notification of the EIA Process

In order to notify and inform the public of the proposed project and invite members of the public to register as interested and affected parties (I&APs), the project and EIA process was advertised in the following newspapers:

» Regional newspaper – *Die Burger*: 25 October 2007
» Regional/local newspaper – *Swartland and Weskus Herald*: 1 November 2007
» Regional/local newspaper – *Table talk*: 24 October 2007
» Regional newspaper – *Cape Times*: 25 October 2007

In addition, site advertisements were posted at various locations throughout the study area, i.e.:

» On site: on the fence of the Ankerlig Power Station (a) to the west of Ankerlig Power Station on the link road between Neil Hare Road and Dassenberg Road (R307); (b) at the entrance to Ankerlig Power Station on the fence to the left

of the main gate; and (c) on the fence (along Neil Hare Road) at the entrance to the power station expansion construction site.
» Red Door Local Economic Development (LED) Centre
» Wesfleur Library
» Shoprite
» Melkbosstrand Library
» Atlantis Development Forum

In addition to the above advertisements and notices, key stakeholders and registered I&APs were notified in writing of the commencement of the EIA process (notifications sent out on 23 November 2007). These parties included:

» The City of Cape Town and officials within the Blaauwberg Administration (i.e. as the municipality which has jurisdiction in the area)
» The Municipal Councillors and Ward Committee members, as well as ratepayers organisations that represents the communities in the area.
» All the nearby communities and potentially affected landowners
» Neighbouring landowners (Atlantis Business Community)
» Relevant environmental organisations
» Business organisations and other operations in the area (e.g. Atlantis Business Forum and Organised Business Agencies)
» Organs of State having jurisdiction in respect of any aspect of the activity

Copies of the advertisements placed and notices distributed are contained in Appendix F of this report.

4.2.4. Public Involvement and Consultation

The aim of the public participation process was primarily to ensure that:

» Information containing all relevant facts in respect of the application was made available to potential stakeholders and I&APs.
» Participation by potential I&APs was facilitated in such a manner that all potential stakeholders and I&APs were provided with a reasonable opportunity to comment on the application.
» Comment received from stakeholders and I&APs is recorded.

In order to provide information regarding the proposed project and the EIA process, a background information document (BID) for the project was compiled at the outset of the process (refer to Appendix G). The BID (including a map and a reply form inviting I&APs to register for the proposed project and submit details of any issues and concerns) was distributed to identified stakeholders and I&APs, and additional copies were made available at public venues within the broader study area. To date, over 200 copies of the BID have been distributed.

Through consultation with key stakeholders and I&APs, issues for inclusion within the issues-based scoping study were identified and confirmed. In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as capture their views, issues and concerns regarding the project, various opportunities were provided for I&APs to have their issues noted prior to the release of the Draft Scoping Report for public review, as follows:

» **Focus group meetings** (pre-arranged and stakeholders invited to attend)
» One-on-one **consultation meetings**
» Telephonic consultation sessions (consultation with various parties from the EIA project team, including the project participation consultant, lead EIA consultant as well as specialist consultants)
» Written, faxed or e-mail **correspondence**

Table 4.1 below provides details of the formal focus group meetings held during the scoping phase of the public consultation process.

Table 4.1: Details of the focus group meetings held during the scoping phase of the public consultation process

Organisation	Parties Present	Date
City of Cape Town Blaauwberg Administration	Municipal Manager & Heads of Departments	21 November 2007
Atlantis Residents & Ratepayers Association	Members	21 November 2007
Melkbosstrand & Duinefontein Ratepayers Association	Members	21 November 2007
Atlantis Area Development Forum	Members	22 November 2007
Atlantis Local Economic Development Forum	Members	23 November 2007
NACA & Institute of Nuclear Engineers	Mr Mike Longden-Thurgood	23 November 2007

Networking with I&APs will continue throughout the duration of the EIA process. Notes from meetings held with stakeholders and reply forms returned by I&APs are included within Appendix H.

No letter of consent to undertake the EIA (as required in terms Regulation 16(1) of the NEMA EIA Regulations) was required to be obtained, as Eskom is in the process of purchasing the properties on which the Ankerlig Power Station is located.

In terms of Regulation 16(3), letters of consent were not required to be obtained from landowners along the proposed power line routes, as this is a linear activity.

In terms of the requirements of this Regulation, notice of the proposed activity has been given to the owners of the land on which the activity is to be undertaken.

4.2.5. Identification and Recording of Comments and Concerns

Issues and concerns raised by I&APs during the scoping phase have been synthesised into a Comments and Response Report (refer to Appendix I). The Comments and Response Report includes responses from members of the EIA project team and/or the project proponent. The responses indicate how the issues will be addressed in the EIA process, or clarification is provided. Where issues are raised that the EIA team considers beyond the scope and purpose of this EIA process, clear reasoning for this view is provided.

4.2.6. Evaluation of Issues Identified through the Scoping Process

All components of the proposed power station conversion project (as discussed in Chapter 3) will be on the site of the existing Ankerlig Power Station, and will not require any additional land take outside of the existing power station boundaries. Specialist studies undertaken within the two previous EIA processes for the existing OCGT units at Atlantis considered potential impacts on the entire site under consideration. As these EIA processes were recently undertaken (i.e. within the last 2 years) and the sites have been already disturbed through construction activities, it was not considered necessary to commission new specialist investigations into site-specific issues associated with the following:

» Heritage
» Ecology, flora and fauna
» Geology, soil conditions and erosion potential
» Soils, agricultural areas and potential
» Groundwater
» Tourism potential
» Access and transportation

Information collected within the previous studies undertaken and the conclusions drawn are assumed to be sound and based on legislated requirements. These studies have been reviewed and verified, and the relevant findings incorporated within this draft Scoping Report.

The conversion of the existing OCGT units to CCGT may alter the nature and/or extent of a number of issues as a result of the addition of components and the change in technology being utilised. In this regard, the following specialist studies have been included in this draft Scoping Study for the power station conversion:

» Visual scoping study
» Air quality scoping study
» Noise scoping study
» Flora scoping study for the proposed additional fuel tank storage site
» Social assessment

The findings and conclusions of the previous specialist studies undertaken in this regard for the OCGT units have been used as a basis for the specialist investigations.

In addition, the proposed transmission power line could impact on various aspects of the environment. In this regard, the following specialist studies have been undertaken:

» Visual assessment
» Heritage assessment
» Ecology, flora and fauna assessment
» Avifauna assessment
» Social impact assessment

Potential issues (both direct and indirect environmental impacts) associated with the proposed project identified within the scoping process have been evaluated through desk-top studies. In evaluating potential impacts within the Scoping Phase, Savannah Environmental has been assisted by the following specialist consultants:

Specialist	Area of Expertise	Refer Appendix
Demos Dracoulides of DDA	Air quality and noise scoping study for the power station conversion	Appendix J
Lourens du Plessis of MetroGIS	Visual scoping study and GIS mapping for the power station conversion and transmission power line	Appendix K
Liezl Coetzee of Southern Hemisphere	Social scoping study for the power station conversion and transmission power line	Appendix L
Nick Helme of Nick Helme Botanical Surveys	Vegetation scoping study for the proposed fuel tank area on the power station site and power line	Appendix M
Prof. Le Fras Mouton of the Department of Botany & Zoology, Stellenbosch University	Terrestrial fauna scoping study for the proposed transmission power line	Appendix N

Specialist	Area of Expertise	Refer Appendix
Andrew Jenkins of the Endangered Wildlife Trust (EWT)	Avifauna scoping study for the proposed transmission power line	Appendix O
Tim Hart of the Archaeology Contracts Office, Department of Archaeology: University of Cape Town	Heritage scoping study for the proposed transmission power line	Appendix P

In order to evaluate issues and assign an order of priority, it was necessary to identify the characteristics of each potential issue/impact:

» *the nature,* which includes a description of what causes the effect, what will be affected and how it will be affected
» *the extent,* wherein it is indicated whether the impact will be local (limited to the immediate area or site of development) or regional

The evaluation of issues has resulted in a statement regarding the potential significance of the identified issues, as well as recommendations regarding detailed investigations of these issues and other specialist studies required within the EIA phase (refer to Chapter 8). Recommendations regarding the methodology to be employed in assessing potential impacts have also been made (refer to Chapter 9).

Specialist Scoping Reports are contained within Appendices J - P.

4.2.7. Assumptions and Limitations

The following assumptions and limitations are applicable to the studies undertaken within this Scoping Phase:

» All information provided by Eskom and I&APs to the Environmental Team was correct and valid at the time it was provided.
» The Transmission line corridors identified by Eskom are technically and economically viable. The final power line route will be determined after the EIA process within the nominated preferred power line corridor.
» Strategic, forward planning deliberations are reflected in the IEP, NIRP and ISEP planning processes and do not form part of this EIA.
» The wealth of information already in hand from the EIA process undertaken for the initial OCGT projects provide a baseline from which this EIA process finds a point of departure.
» This report and its investigations are project-specific, and consequently the environmental team did not evaluate any other power source alternatives.

» As the proposed power station conversion is to be undertaken within the Ankerlig Power Station site, no site alternatives have been investigated as part of this EIA process.

4.2.8. Public Review of Draft Scoping Report and Feedback Meeting

This is the **current stage** of the Scoping Phase. The Draft Scoping Report has been made available for public review from **21 January 2008 to 20 February 2008** at the following locations:

» www.eskom.co.za/eia
» www.savannahSA.com
» Wesfleur Library
» Atlantis Residents and Ratepayers Association office
» Red Door Local LED Office
» Atlantis Development Forum Office
» Avondale Library
» Melkbosstrand Residents and Ratepayers Association
» Melkbostrand Library

A hard copy and an electronic copy of this draft report was also provided to the City of Cape Town: Blaauwberg Administration for review and comment as a key stakeholder.

In order to facilitate comments on the Draft Scoping Report, a public meeting and a stakeholder workshop will be held during the review period as follows:

» Key stakeholder workshop: 13 February 2008 at the Koeberg Visitors Centre at 09:00 – 12:00
» Public feedback meeting: 13 February 2008 at the Rebecca Van Amsterdam Hall (Protea Park) at 19:00 – 21:00

The public review process and details of the public meeting were advertised in regional and local newspapers: Die Burger, Cape Times, Table Talk and the Swartland and Weskus Herald (refer Appendix F). In addition, all registered I&APs were notified of the availability of the report and public meeting by letter. Identified key stakeholders were personally invited to attend the key stakeholder workshop by letter.

4.2.9. Final Scoping Report

The final stage in the Scoping Phase will entail the capturing of responses from I&APs on the Draft Scoping Report in order to refine this report. It is this final report upon which the decision-making environmental Authorities provide

comment, recommendations and acceptance to undertake the EIA Phase of the process.

4.3. Regulatory and Legal Context

The South African energy industry is evolving rapidly, with regular changes to legislation and industry role-players. The regulatory hierarchy for an energy generation project of this nature consists of three tiers of authority who exercise control through both statutory and non-statutory instruments – that is National, Provincial and Local levels.

4.3.1. Regulatory Hierarchy

At National Level, the main regulatory agencies are:

» *Department of Minerals and Energy (DME):* This department is responsible for policy relating to all energy forms, including renewable energy. It is the controlling authority in terms of the Electricity Act (Act No 41 of 1987).
» *National Energy Regulator (NER):* This body is responsible for regulating all aspects of the electricity sector, and will ultimately issue generating licenses for power station developments to generate electricity.
» *Department of Environmental Affairs and Tourism (DEAT):* This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the EIA Regulations. DEAT is the competent authority for this project, and charged with granting the relevant environmental authorisation.
» *Department of Transport and Public Works:* This department is responsible for roads and the granting of exemption permits for the conveyance of abnormal loads (as may be associated with the construction phase) on public roads.

At Provincial Level, the main regulatory agency is:

» *Provincial Government of the Western Cape (PGWC) – Department of Environmental Affairs and Development Planning (DEA&DP).* This is the principal authority involved in the EIA process and determines many aspects of Provincial Environmental policy. The department is a commenting authority for this project.

At Local Level the local and municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. The proposed project falls within the Koeberg and Blaauwberg sub-councils of the City of Cape Town Metropolitan Municipality.

» In terms of the Municipal Systems Act (Act No 32 of 2000) it is compulsory for all municipalities to go through an Integrated Development Planning (IDP)

process to prepare a five-year strategic development plan for the area under their control. The IDP process, specifically the spatial component (Spatial Development Framework), in the Western Cape Province is based on a bioregional planning approach to achieve continuity in the landscape and to maintain important natural areas and ecological processes.

» By-laws and policies have been formulated by local authorities to protect environmental resources relating to issues such as air quality, community safety, etc.

4.3.2. Legislation and Guidelines that have informed the preparation of this Scoping Report

The following legislation and guidelines have informed the scope and content of this Draft Scoping Report:

» National Environmental Management Act (Act No 107 of 1998)
» EIA Regulations, published under Chapter 5 of the NEMA (GN R385, GN R386 and GN R387 in Government Gazette 28753 of 21 April 2006)
» Guidelines published in terms of the NEMA EIA Regulations, in particular:
  * **Guideline 3:** General Guide to Environmental Impact Assessment Regulations, 2006 (DEAT, June 2006)
  * **Guideline 4:** Public Participation in support of the Environmental Impact Assessment Regulations, 2006 (DEAT, May 2006)
  * **Guideline 5:** Assessment of alternatives and impacts in support of the Environmental Impact Assessment Regulations, 2006 (DEAT, June 2006)
  * Guideline on Public Participation, 2006 (DEA&DP, July 2006)
  * Guideline on Alternatives, 2006 (DEA&DP, July 2006)
» Specialist study guidelines published by DEA&DP (June 2005)

Acts, standards or guidelines relevant to the establishment of the OCGT Power Station at Atlantis were identified in the previous EIA processes undertaken for the Ankerlig Power Station. Those Acts, standards or guidelines which have informed the project process and the scope of issues evaluated in this Scoping Study are summarised in Table 4.2.

Table 4.2: List of applicable legislation and compliance requirements required for the Ankerlig Power Station conversion and transmission integration project, Western Cape Province

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
National Legislation			
National Environmental Management Act (Act No 107 of 1998)	EIA Regulations have been promulgated in terms of Chapter 5. Activities which may not commence without an environmental authorisation are identified within these Regulations. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation. In terms of GNR 387 of 21 April 2006, a scoping and EIA process is required to be undertaken for the proposed power station conversion and transmission integration project	National Department of Environmental Affairs and Tourism – lead authority. Western Cape Department of Environmental Affairs and Development Planning – commenting authority.	This EIA report is to be submitted to DEAT and DEA&DP in support of the **application for authorisation** submitted in August 2007.
National Environmental Management Act (Act No 107 of 1998)	In terms of the Duty of Care provision in S28(1) Eskom as the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised. In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.	Department of Environmental Affairs and Tourism (as regulator of NEMA).	While **no permitting or licensing requirements** arise directly by virtue of the proposed project, this section will find application during the EIA phase and will continue to apply throughout the life cycle of the project.

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
Environment Conservation Act (Act No 73 of 1989)	Section 20(1) provides that where an operation accumulates, treats, stores or disposes of waste on site for a continuous period, it must apply for a permit to be classified as a suitable waste disposal facility.	National Department of Environmental Affairs and Tourism and Department of Water Affairs and Forestry.	As no waste disposal site is to be associated with the proposed project, **no permit** is required in this regard.
Environment Conservation Act (Act No 73 of 1989)	National Noise Control Regulations (GN R154 dated 10 January 1992). Provincial noise control regulations have been promulgated for the Western Cape in Provincial Notice (PN 627/P5309/2299) dated 20 November 1998. In terms of these Regulations, industrial noise limits are 61 dBA and noise limits from any source other than an industrial source are 65 dBA. Draft regulations relating to noise control published in Provincial Gazette No 6412, PN 14 dated the 25th of January 2007. Noise limits are based on the acceptable rating levels of ambient noise contained in SANS 10103.	National Department of Environmental Affairs and Tourism Western Cape Department of Environmental Affairs and Development Planning Local authorities, i.e. City of Cape Town	There is **no requirement for a noise permit** in terms of the legislation. A **Noise Impact Assessment** is required to be undertaken in accordance with SANS 10328. This has been undertaken as part of the EIA process (refer to Appendix J).
National Water Act (Act No 36 of 1998)	Section 21 sets out the water uses for which a water use license is required.	Department of Water Affairs and Forestry	As no water use (as defined in terms of S21 of the NWA) will be associated with the proposed project (as water will be obtained from the City of Cape Town water treatment works), **no water use permits or licenses** are required to be applied for or obtained. The City of Cape Town are required to reflect Eskom's water use from the water treatment works within their water balance which is submitted to

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
			DWAF.
National Water Act (Act No 36 of 1998)	In terms of Section 19, Eskom as the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing or recurring.	Department of Water Affairs and Forestry (as regulator of NWA)	While **no permitting or licensing requirements** arise directly by virtue of the proposed project, this section will find application during the EIA phase and will continue to apply throughout the life cycle of the project.
Atmospheric Pollution Prevention Act (Act No 45 of 1965)	Scheduled Processes: A specifications standard applies to the production of noxious or offensive gases. This means that pollution control equipment used in operating the process must conform to certain design criteria. Currently sixty nine (69) scheduled processes are listed in the Second Schedule to the Act. No person may carry on a Scheduled Process in or on any premises unless he is the holder of a current registration certificate. The granting of a permit is subject to compliance with certain minimum standard specifications. To be replaced by the National Environmental Management: Air Quality Act (Act No 39 of 2004) on promulgation of Section 22 of this Act.	National Department of Environmental Affairs and Tourism - Chief Air Pollution Control Officer (CAPCO) Western Cape Department of Environmental Affairs and Development Planning - Chief Air Pollution Control Officer (CAPCO)	Eskom have applied for an emissions permit for the current operations at the Ankerlig Power Station and are in consultation with CAPCO in this regard. Eskom may need to **obtain an amended registration certificate** from the Chief Air Pollution Control Officer (CAPCO) at DEA&DP in the event that the emissions from the power station are altered as a result of the proposed conversion project. Eskom must ensure that the conditions in the certificate are complied with at all times.
National Heritage Resources Act (Act No 25 of 1999)	Section 38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including » the construction of a road, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length; » any development or other activity which	South African Heritage Resources Agency (SAHRA) - National Heritage Sites (grade 1 sites) as well as all historic graves and human remains Heritage Western Cape - all Provincial Heritage Sites (grade 2 sites), generally protected	The area proposed for the location of the CCGT units associated with the power station conversion project is within the existing Ankerlig power station site. This area has been disturbed through construction activities associated with the OCGT power station. No heritage sites are

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	will change the character of a site exceeding 5 000 m^2 in extent. The relevant Heritage Resources Authority must be notified of developments such as linear developments (such as roads and power lines), bridges exceeding 50 m, or any development or other activity which will change the character of a site exceeding 5 000 m^2; or the re-zoning of a site exceeding 10 000 m^2 in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided. Stand alone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of Section 38. In such cases only those components not addressed by the EIA should be covered by the heritage component.	heritage and structures (grade 3a – 3c sites) and prehistoric human remains	expected to be located within this area. Therefore, **no permits** will be required to be obtained. An **HIA** will be required to be undertaken for the proposed power line. An **HIA** may be required to be undertaken for the proposed water pipeline to the power station, depending on the length and location of this pipeline. A **permit** may be required should identified **cultural/heritage sites** along the proposed transmission power line be required to be **disturbed or destroyed** as a result of the proposed development.
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	In terms of Section 57, the Minister of Environmental Affairs and Tourism has published a list of critically endangered, endangered, vulnerable and protected species in GNR 151 in Government Gazette 29657 of 23 February 2007 and the regulations associated therewith in GNR 152 in GG29657 of 23 February 2007, which came into effect on 1 June 2007. In terms of GNR 152 of 23 February 2007: Regulations relating to listed threatened and	National Department of Environmental Affairs and Tourism	As Eskom will not carry on any restricted activity, as is defined in Section 1 of the Act, **no permit** is required to be obtained in this regard. **Specialist flora and fauna studies** are required to be undertaken as part of the EIA process. These studies have been undertaken as part of the previously EIAs undertaken for the power station site. Specialist flora and fauna scoping studies have been

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	protected species, the relevant specialists must be employed during the EIA phase of the project to incorporate the legal provisions as well as the regulations associated with listed threatened and protected species (GNR 152) into specialist reports in order to identify permitting requirements at an early stage of the EIA phase.		undertaken for the proposed power line (refer to Appendices M -O). Detailed specialist studies will be required to be undertaken for the nominated preferred alternative. As the power station site has been disturbed through construction activities associated with the OCGT power station, **no protected plant species** are likely to be present on the proposed development site. Therefore, **no permits** will be required to be obtained in this regard. A **permit** may be required should any **protected plant species** within the power line corridor be **disturbed or destroyed** as a result of the proposed development.
Conservation of Agricultural Resources Act (Act No 43 of 1983)	Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Weeds are described as Category 1 plants, while invader plants are described as Category 2 and Category 3 plants. These regulations provide that Category 1, 2 and 3 plants must not occur on land and that such plants must be controlled by the methods set out in Regulation 15E.	Department of Agriculture	While **no permitting or licensing requirements** arise from this legislation, this Act will find application during the EIA phase and will continue to apply throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, the existing weed control and management plan within the EMP must be implemented.

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
Minerals and Petroleum Resources Development Act (Act No 28 of 2002)	A mining permit or mining right may be required where a mineral in question is to be mined (e.g. materials from a borrow pit) in accordance with the provisions of the Act.	Department of Minerals and Energy	As no borrow pits are expected to be required for the power station conversion and transmission integration project, **no mining permit or mining right** is required to be obtained.
National Veld and Forest Fire Act (Act No 101 of 1998)	In terms of Section 12 Eskom would be obliged to burn firebreaks to ensure that should a veldfire occur on the property, that same does not spread to adjoining land. In terms of Section 13 Eskom must ensure that the firebreak is wide enough and long enough to have a reasonable chance of preventing a veldfire from spreading; not causing erosion; and is reasonably free of inflammable material. In terms of Section 17, Eskom must have such equipment, protective clothing and trained personnel for extinguishing fires as are prescribed or in the absence of prescribed requirements, reasonably required in the circumstances.	Department of Water Affairs and Forestry	While **no permitting or licensing requirements** arise from this legislation, this Act will find application during the operational phase of the project.
Hazardous Substances Act (Act No 15 of 1973)	This Act regulates the control of substances that may cause injury, or ill health, or death by reason of their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition	Department of Health	It is necessary to identify and list all the Group I, II, III and IV hazardous substances that may be on the site by the activity and in what operational context they are used, stored or handled. If applicable, a **license** is required to be obtained from the Department of Health.

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc, nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared to be Group I or Group II hazardous substance; Group IV: any electronic product; Group V: any radioactive material. The use, conveyance or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.		
National Road Traffic Act (Act No 93 of 1996)	The Technical Recommendations for Highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges and culverts. The general conditions, limitations and escort	Western Cape Department of Transport and Public Works (provincial roads) South African National Roads Agency (national roads)	An **abnormal load/vehicle permit** will be required to transport the various CCGT and power line components to site for construction. **These include:** » Route clearances and permits will be required for vehicles carrying abnormally heavy or abnormally dimensioned loads. » Transport vehicles exceeding the dimensional limitations (length) of 22m. » Depending on the trailer configuration and height when

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.		loaded, some of the power station components may not meet specified dimensional limitations (height and width).
National Road Traffic Act (Act No 93 of 1996)	Regulation 274 (read with SABS Code 0232 which deals with transportation of dangerous goods and emergency information systems) states that the regulations are applicable where dangerous goods are transported in quantities, which exceed the exempt quantities (listed in Annex E of SABS Code 0232). Dangerous goods may only be transported in accordance with the provisions in the Regulations, unless the Minister of Transport has granted an exemption.	Department of Transport Western Cape Department of Transport and Public Works (provincial roads) South African National Roads Agency (national roads)	Eskom will need to ensure that **procedures** are in place **to prevent that the quantities of dangerous goods transported exceed the prescribed quantity** (listed in Annex E of SABS Code 0232). Apply for an exemption, if applicable.
Development Facilitation Act (Act No 67 of 1995)	Provides for the overall framework and administrative structures for planning throughout the Republic.	Western Cape Department of Environmental Affairs and Development Planning Local authorities, i.e. City of Cape Town	As the power station conversion project is planned to be undertaken within the existing Ankerlig power station site, no rezoning or sub-division of land is required. Therefore, no land development application is required to be submitted. Eskom must submit a land development application for the proposed transmission power line in the prescribed manner and form as

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
			provided for in the Act.
Land Use Planning Ordinance 15 of 1985	Details land subdivision and rezoning requirements & procedures	Western Cape Department of Environmental Affairs and Development Planning Local authorities, i.e. City of Cape Town	As the power station conversion project is planned to be undertaken within the existing Ankerlig power station site, no rezoning or sub-division of land is required. Therefore, no application in terms of LUPO is required to be submitted. Given that the transmission power line is proposed on land that is zoned for agricultural use (depending on the preferred power line corridor nominated through the EIA process), a rezoning application in terms of Section 17 of LUPO to an alternative appropriate zone will be required. Rezoning is required to be undertaken following the issuing of an environmental Authorisation for the proposed project.
Provincial Legislation			
Nature Conservation Ordinance (Act 19 of 1974)	Article 63 prohibits the picking (defined in terms of article 2 to include, cut, chop off, take, gather, pluck, uproot, break, damage or destroying of certain flora. Schedule 3 lists endangered flora and Schedule 4 lists protected flora. Articles 26 to 47 regulates the use of wild animals	CapeNature	As the power station site has been disturbed through construction activities associated with the OCGT power station, **no endangered or protected plant species** are likely to be present on the proposed development site. Therefore, **no permits** will be required to be obtained in this regard. A **permit** may be required should any

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
			endangered or protected plant species within the power line corridor be **disturbed or destroyed** as a result of the proposed development.
Local Legislation			
City of Cape Town Air Pollution Control By-Law 12649- 4 February 2004- Provincial Gazette Extraordinary 5979	Section 7: No person shall install, alter, extend or replace any fuel-burning equipment on any premises without the prior written authorisation of the Council, which may only be given after consideration of the relevant plans and specifications.	City of Cape Town	Eskom will need to **obtain written authorisation** from the local council for the alteration of the fuel-burning equipment at the Ankerlig power station (i.e. addition of the CCGT units)
By-law relating to Community Fire Safety 11257 – 28 February 2002 – Provincial Gazette Extraordinary 5832	Section 37(1): Prior to the construction of a new installation or the alteration of an existing installation, whether temporary or permanent, for the storage of a flammable substance, the owner or person in charge of the installation must submit a building plan to the Municipality, in accordance with the National Building Regulations. A copy of the approved plan must be available at the site where the installation is being constructed.	City of Cape Town	Eskom must **submit a building plan** to the Municipality, in accordance with the National Building Regulations prior to installing the additional facilities for fuel storage on the site. A copy of the approved plan must be available at the site where the installation is being constructed.
By-law relating to Community Fire Safety 11257 – 28 February 2002 – Provincial Gazette Extraordinary 5832	Section 37(2): Prior to the commissioning of an aboveground or underground storage tank installation, liquid petroleum gas installation or associated pipework, the owner or person in charge of the installation must ensure that it is pressure-tested in accordance with the provisions of the National Building regulations (T1), SABS 0131: Parts1 and 2, SABS 089:Part 3 and SABS 087: Parts 1,3 and 7 in the presence of the controlling authority.	City of Cape Town	Eskom must ensure that additional fuel tanks proposed to be installed at the power station site are **pressure-tested** in accordance with the relevant provisions as stated in the by-law.

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
By-law relating to Community Fire Safety 11257 – 28 February 2002 – Provincial Gazette Extraordinary 5832	Section 37(6): The owner or person in charge of the premises, who requires to store a flammable gas in excess of 19 kilogram, or a flammable liquid of a danger group (i),(ii),(iii),or (iv) in excess of 200 litres must obtain a flammable substance certificate from the controlling authority.	City of Cape Town	Eskom must obtain a **flammable substance certificate** for the additional fuel storage at the power station site, as prescribed in Schedule 2 of this By-law.
By-law relating to Community Fire Safety 11257 – 28 February 2002 – Provincial Gazette Extraordinary 5832	Section 41: The handling, storage and distribution of flammable substances at bulk depots must be in accordance with the National Building regulations (T1), read in conjunction with SABS 089: Part 1.	City of Cape Town	If applicable, Eskom must ensure that handling, storage and distribution of flammable substances (such as fuel) is in accordance with National building regulations.
By-law relating to Community Fire Safety 11257 – 28 February 2002 – Provincial Gazette Extraordinary 5832	Section 53: The operator of a vehicle designed for the transportation of dangerous goods may not operate such a vehicle in the jurisdiction of the controlling authority, unless he has obtained a dangerous goods certificate issued by a fire brigade service in terms of the National Road Traffic Act	City of Cape Town	Eskom must ensure that the contractor/s responsible for the transportation of fuels and other dangerous goods to the power station site have obtained the **dangerous goods certificates** in respect of all vehicles transporting dangerous goods and keep the certificate available in the relevant vehicle.

DESCRIPTION OF THE AFFECTED ENVIRONMENT CHAPTER 5

This chapter provides a description of the environment that may be affected by the proposed Power Station Conversion and Transmission Integration Project. This information is provided in order to assist the reader in understanding the possible effects of the proposed project on the environment. Aspects of the biophysical, social and economic environment that could be affected by, or could affect the proposed development have been described. This information has been sourced largely from existing information available for the area, and aims to provide the overall context within which this environmental impact assessment process is being conducted. A more detailed description of each aspect of the affected environment is included within the specialist scoping reports contained within Appendices J – P.

5.1. Location of the Study Area and Property Description

The study area is located within the Koeberg and Blaauwberg sub-councils of the City of Cape Town Metropolitan Municipality in the Western Cape Province. The existing Ankerlig OCGT Power Station is located in the Atlantis Industrial Township (refer to Figure 5.1), which is located ~40 km from the Cape Town city centre. According to 2006 Municipal Demarcation, Atlantis falls between Ward 29 (north-west) and Ward 32 (south-east) of the Koeberg sub-council. Regardless o fthe alignment selected, the proposed transmission power line would pass through Ward 23 of the Blaauwberg sub-council, through the Klein Zoute River Agricultural Holdings, in the vicinity of the residential areas of Melkbosstrand, Van Riebeeckstrand and Duynefontein.

The Ankerlig Power Station is located within the western portion of the existing proclaimed Industrial Area of Atlantis on the Farm No 1183 and a Portion of Farm Witzand 2, Atlantis, Cape Town, both of which are owned by Eskom. Infrastructure associated with CCGT units will be developed on the site of the existing Ankerlig Power Station, and will not require any additional land take outside of the existing power station boundaries.

The power station site is 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.

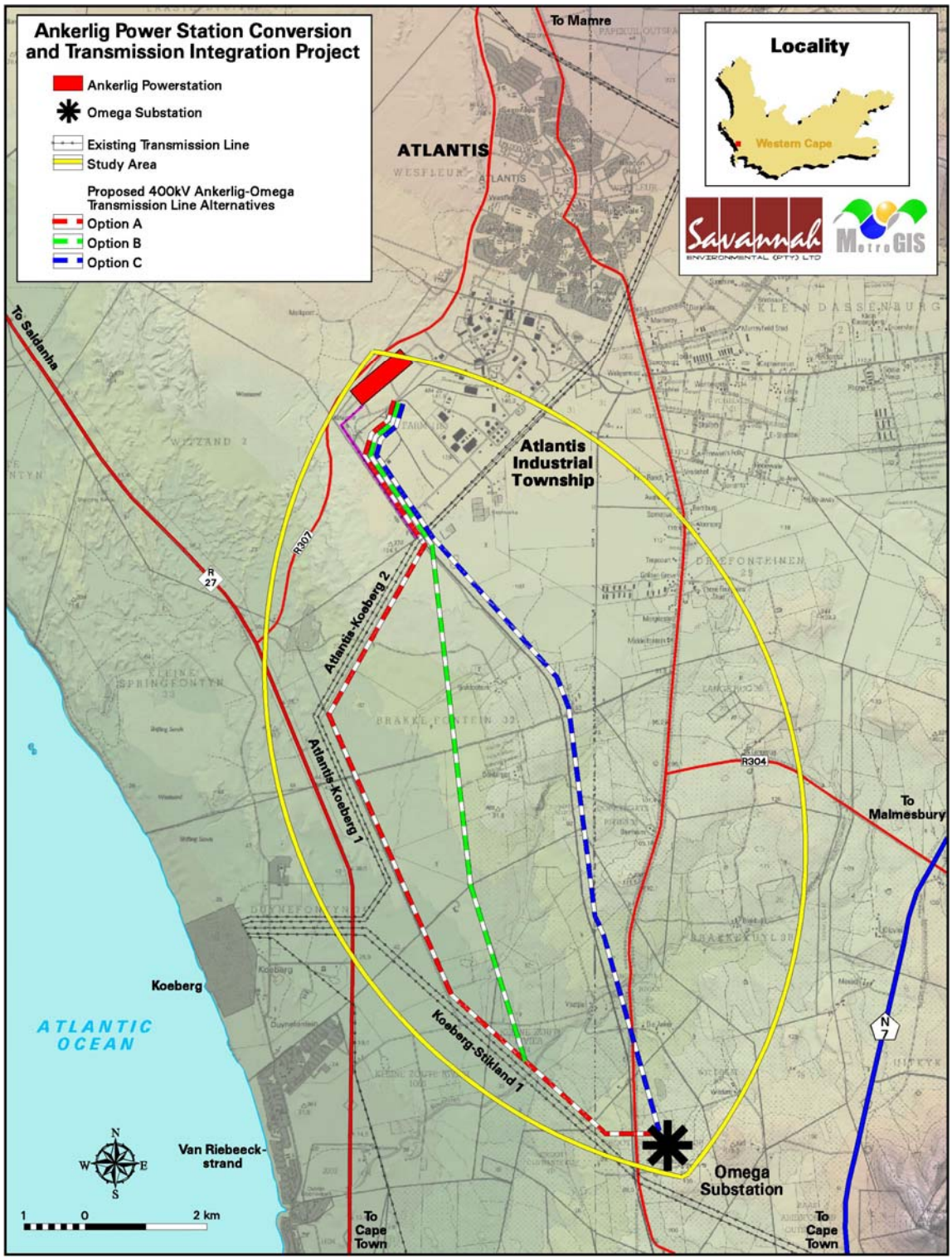

Figure 5.1: Locality map showing the location of the existing Ankerlig Power Station, the study area and the proposed transmission power line corridor alternatives between Ankerlig and Omega Substation

In accordance with the requirements of Section 16(2) of the NEMA EIA Regulations, potentially affected landowners have been given notice of the proposed activity and have been provided with the opportunity to participate within the EIA process.

5.2. Social Characteristics of the Study Area

Atlantis Industria and its adjoining residential suburb Wesfleur are located 7 km inland on the Cape West Coast, some 40 km north of Cape Town. Significant landmarks in the wider area are the existing Ankerlig Power Station, Koeberg Nuclear Power Station located ~9 km to the south-west, and the town of Mamre located ~3 km to the north. Arterial access to the area is provided by the West Coast road (R27) and the N7 national road, and locally by the R307.

The Atlantis Industrial Zone was established as an industrial growth point in the mid-1970s and set up with adequate infrastructure and services to support future growth in the area. The Atlantis industrial area is already served by a tarred industrial road network and essential services (including stormwater, municipal sewer and water supply services and street lighting) which support most of the industrial area. A railway spur is located south of the Ankerlig Power Station site. This railway line is currently not in use.

The residential townships of Atlantis and the informal settlement of Witzand are located between 3-6 km to the north-east and approximately 1 km south of the Ankerlig Power Station site respectively (refer to Figure 5.2). Open farmlands are present to the north, south and east of the site. The area surrounding the power station site is visually dominated by the presence of various types of industrial stacks and buildings located within the surrounding industrial area, and the existing transmission power lines associated with the Ankerlig and Koeberg power stations. The power station site is zoned for industrial use.

The population potentially affected by the proposed power station conversion and transmission integration project include:

» Residents of Atlantis, particularly the suburbs of Avondale, Wesfleur, Protea Park, Beacon Hill and Robinvale, and the nearby informal settlement of Witzand, situated in close proximity to the industrial area.
» Residents of Atlantis non-urban[8]
» Residents of Melkbosstrand, Duynefontein and Van Riebeeckstrand

[8] Comprised of the rural area surrounding Atlantis to the north, south, east and west stretching South to include the Klein Zoute Rivier and Morning Star Agricultural Holdings, as well as the regions indicated as 'Malmesbury non-urban' and 'Koeberg' on the City of Cape Town Census suburb map (refer to Appendix L).

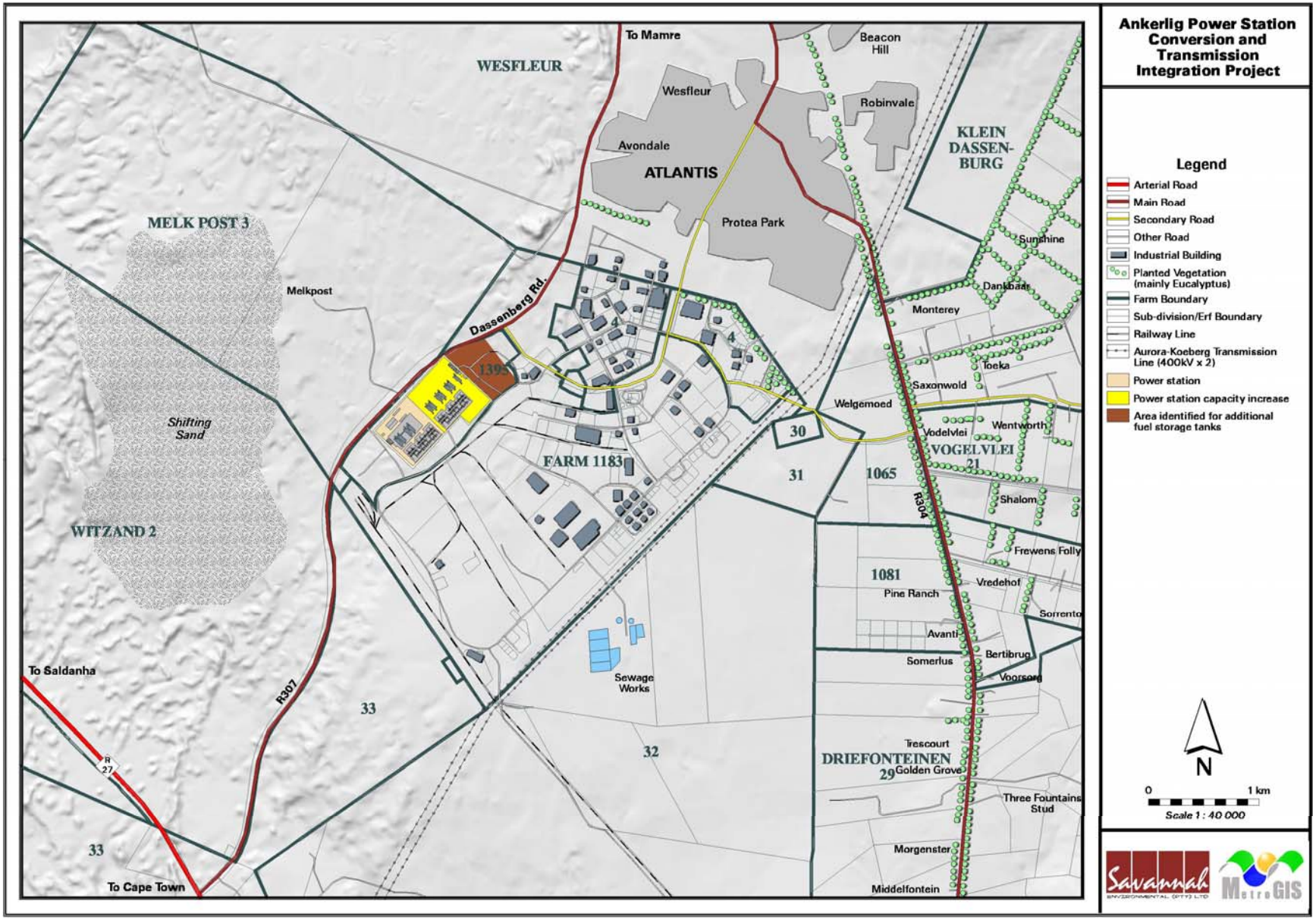

Figure 5.2: Map showing Ankerlig Power Station and surrounding areas

» Users of land which could be affected by the proposed power line, including:
  * Users of the Delta 200 Airstrip (used as a drop zone for members of the sky diving club)
  * Users of the Corobrick Four Wheel Drive Challenge site
  * Residents of Klein Zoute River Agricultural Holdings
  * Landowners of farms situated in the Malmesbury non-urban area immediately south of the Atlantis Industrial Area.

Land uses which may be affected by the proposed power line alternatives between the Ankerlig power station and the Omega substation include (refer to Figure 5.3):

» Brakkefontein shooting range
» Brakkefontein Clay Products Pty/Apollo Bricks (existing works and proposed expansions)
» The new Regional landfill site
» Delta 200 Airstrip
» Wesfleur Wastewater Treatment Works

The existing noise environment in the Atlantis communities is typical of a suburban residential area next to an industrial zone. The noise environment is affected by localised vehicular traffic, human activities and the industrial activities in the Atlantis Industrial Zone. There is, however, an adequate buffer zone between the industries and the Atlantis communities in order to maintain the noise levels within the recommended guidelines for suburban residential areas.

5.2.1 Demographic Profile

According to the 2001 Census, the total population of the City of Cape Town was approximately 2.9 million. Within the study area, the Atlantis population comprised of just under 55 000 people, while the surrounding non-urban areas (Atlantis non-urban according to suburb profiles) housed just over 4 000 people, and just under 6 500 people resided in the Melkbosstrand area.

5.2.2. Population Groups

The Atlantis population is predominantly Coloured (92.6%), with a small percentage (6.6%) being Black African and less than 1% respectively White and Indian. It is worth noting that population projections for the Western Cape show significantly larger growth amongst the Black African population than other groups (Romanovsky 2006). It can therefore be expected that this group may have increased proportionately within Atlantis and surrounding areas.

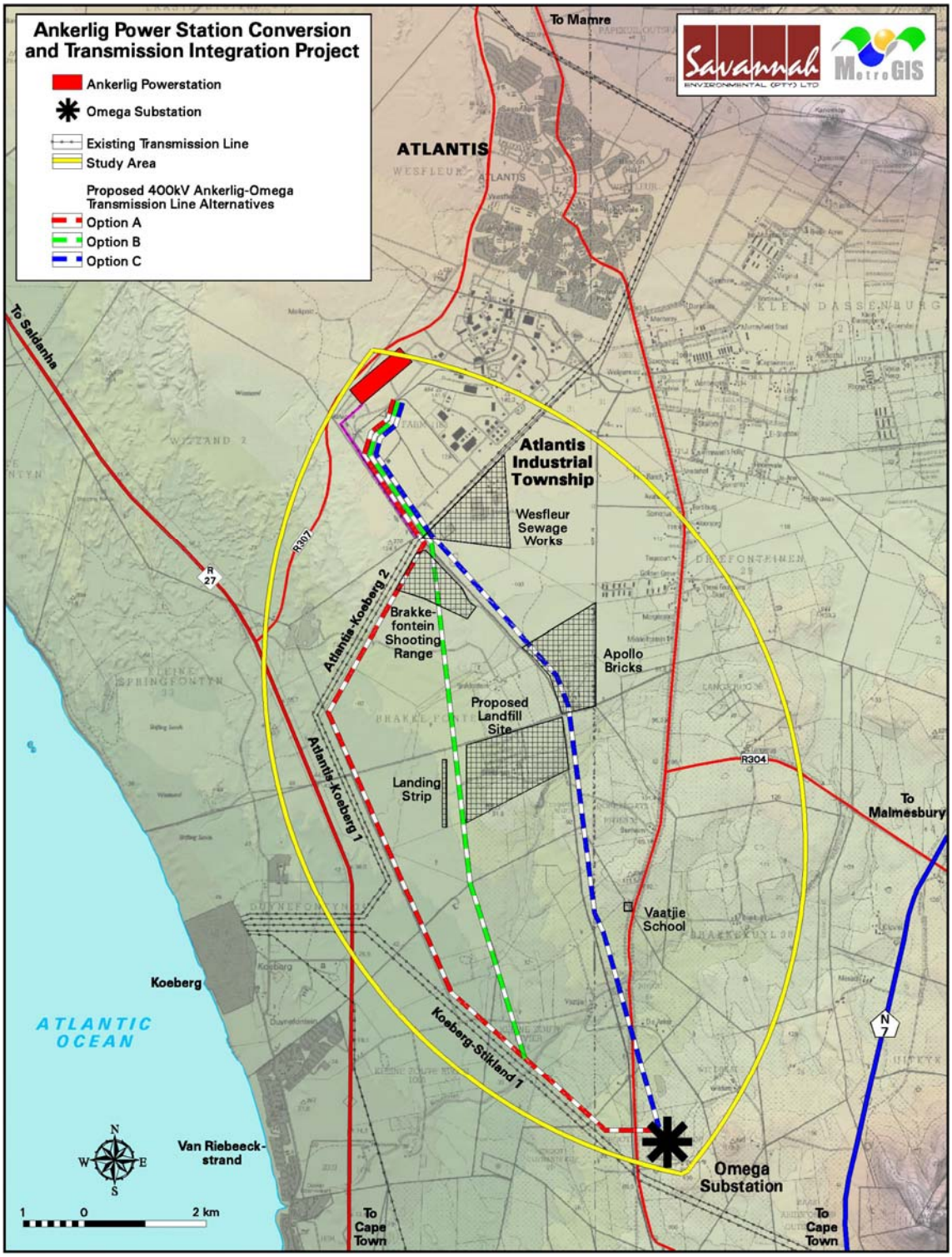

Figure 5.3: Map indicating land uses between Ankerlig Power Station and the Omega substation site which may be impacted by the proposed transmission power line alternatives

The population of Atlantis non-urban[9] is also predominantly Coloured (68%) according to the 2001 census, with a significantly greater percentage of Whites (22%) and slightly more Black African (10%). By contrast Melkbosstrand is predominantly White (89%).

Afrikaans is the most common language spoken in Atlantis (87%), Atlantis non-urban (78%) and to a somewhat lesser extent Melkbosstrand (58%). English is the first language of 38% of Melkbosstrand residents, 16% of those in Atlantis non-urban, and less than 10% of the Atlantis community.

5.2.3. Age and Gender Distribution

Gender distribution is reasonably equal across the study area, with slightly more females than males in all areas except Atlantis non-urban, where males predominate by a slight margin. This could indicate this area to have more male (possibly migrant) employees working on farms.

The age distribution in Atlantis is slightly younger than the average for the City of Cape Town, with a larger percentage (just under 40%) aged under 17. The corresponding percentage in Melkbosstrand is significantly lower at only 24%. By contrast the percentage of older people in the age categories above 35 is significantly higher in Melkbosstrand (~55%) than in the broader Cape Town (~35%) or Atlantis (28%) and surrounding non-urban areas (37%). Almost a third of the population in Atlantis are between the ages of 18 and 34, while a quarter are aged 35 to 54. These age groups may be considered as the potential labour force, together comprising about 55% of the Atlantis population, and 57% of Atlantis non-urban.

5.2.4. Educational Profile

Approximately 20% of Atlantis residents aged over 20 had completed matric in 2001, and of these less than 4% had attained any further levels of education (the majority (3%) being a certificate or diploma with less than 0.5% citing any types of degrees). The percentage with 'no schooling' was slightly higher in Atlantis non-urban at 9%, compared to 4% in Atlantis (similar to that for Cape Town as a whole). By contrast Melkbosstrand had less than 2% with no education, over three quarters had completed matric, and just under a third had attained some level of tertiary education, about half of which certificates, with the other half being various levels of degrees.

[9] Comprised of the rural area surrounding Atlantis to the north, south, east and west stretching South to include the Klein Zoute Rivier and Morning Star Agricultural Holdings, as well as the regions indicated as 'Malmesbury non-urban' and 'Koeberg' on the City of Cape Town Census suburb map (refer to Appendix L).

5.2.5. Employment and Income

The labour force, or economically active population[10] comprised of about 46% of City of Cape Town residents aged between 15 and 65 in 2001. Figures for the study area are similar, though slightly lower for Atlantis at 44%, and higher for Melkbosstrand (48%). Of those indicated as economically active, who can be considered the actual and potential labour force, 31% in Atlantis are unemployed, slightly higher than the average for the City of Cape Town as a whole. Corresponding percentages are much lower for Atlantis non-urban (13%), and Melkbosstrand (7%).

Of the economically active residents of Atlantis that are employed, approximately 12% commute to jobs outside Atlantis. Another 25% are employed by local industries, and 5% are employed by small- medium- and micro-enterprises (SMMEs). A significant number of jobs in Atlantis (2700) are held by outsiders who commute to the area. These jobs generally fall in the educational and other professional occupational categories (Afrosearch 2005).

Over half of those employed in Atlantis, and 62% in Atlantis non-urban earned less than R1 600 per month in 2001, with almost all the remainder (45% in Atlantis and 32% in Atlantis non-urban) earning between R1 600 and R6 400 per month. Income of Melkbosstrand residents was notably higher, with about half earning over R6 400 per month.

5.2.6. Housing

Atlantis has experienced land invasions and the growth of informal settlements, especially in the area that has become known as Witzand. These informal settlements are home to locals who have lost their homes as a result of rising unemployment, farm labourers who are no longer able to secure work and accommodation on the surrounding farms and smallholdings, and job seekers attracted to the area by the prospect of finding work (Afrosearch 2005).

The percentage of households residing in a ‘house or brick structure on a separate stand or yard’ is higher across the study area than in the City of Cape Town as a whole, but most so in Melkbosstrand (80%), followed by Atlantis at 75%, and least in Atlantis non-urban (68%). Atlantis non-urban has the greatest percentage residing in traditional dwellings (12%), while Atlantis and Melkbosstrand both have around 9% residing in flats. The percentage in informal dwellings is lower than that for the broader Cape Town in all parts of the study area, but notably higher in Atlantis non urban (mostly shacks in back yards) and

[10] A person of working age (15–65 years) who is available for work, and is either employed or unemployed.

Atlantis (predominantly not in back yards, which would include residents of the Witzand settlement).

The City of Cape Town's Blaauwberg Sub-council has earmarked R1.9 million for a Melkbos Housing Project, while the Koeberg sub-council has earmarked R3 million for Phase 2 of the Witzand Housing Project and R2 million for the Atlantis Housing Project respectively between 2007 and 2010.

5.2.7. Access to Electricity

According to the 2001 Census, 70% of South Africa's population used electricity as primary source of energy for lighting. The corresponding figure in the Western Cape was significantly higher at 88%, with that in the City of Cape Town being 89%.

Within the study area electricity use for lighting is almost universal in Melkbosstrand (98% of households) and only slightly less common in Atlantis (92%) where paraffin is the other form most cited (7%). Atlantis non-urban noted this to be slightly less common at only 64% of households using electricity for lighting, with a 32% relying on candles, and smaller percentages on gas, paraffin and other sources of energy.

5.2.8.Water and Sanitation

Atlantis receives the bulk of its water supply from the Atlantis aquifer. Access to piped water inside dwellings is higher in Atlantis (83%) and Melkbosstrand (93%) than in the broader Cape Town (69%). This percentage is significantly lower in Atlantis non-urban at only 36%, with 23% citing piped water in the yard, and over 30% piped water on a community stand, mostly over 200 m from the dwelling.

The comparatively lower levels of living prevalent in the Atlantis non-urban area is highlighted in terms of access to sanitation facilities, with only half of all households having access to flush toilets (including both sewerage and septic tanks), compared to over 90% in Atlantis and Melkbosstrand. About 1/5th of Atlantis non-urban households have no sanitation facilities, while 17% rely on bucket latrines. The remainder use chemical toilets and pit latrines.

5.2.9. Heritage Profile

Numerous fossil and archaeological sites have been recorded in the broader study area. Fossils are regularly encountered between Woodstock beach, near Cape Town, and Saldanha Bay to the north of Yzerfontein. These include the material excavated from sites such as Elandsfontein, Duinefontein 2 and Langebaanweg.

Fossil bones were also seen at Bakoond and Tygerfontein, both to the south of Yzerfontein, and a large collection has been made from an occurrence at Melkbosstrand. Material from the Milnerton beach area has also been recorded.

The fossil site of Duinefontein 2 in the Koeberg Private Nature Reserve contains Early Stone Age (ESA, >200 thousand years ago (kya)) artefacts and similar isolated items are routinely found in ploughed fields across the south-western Cape. Kaplan (1996, 2000b) reports ESA artefacts from farmlands near the study area.

Middle Stone Age (MSA, 200kya – 20kya) artefacts were found in association with the Melkbosstrand fossils indicating at least some MSA presence in the area. MSA artefacts of the Stillbay type have also been collected in the region of Maitland just south of the study area and at a site described as being between Milnerton and Maitland. Artefacts thought to date to the MSA were observed at Groot Oliphantskop to the east of the Melkbosstrand WWTW and in the region of Vissershok.

In general, Later Stone Age (LSA, <20kya) sites are far more commonly encountered than earlier material. This may be largely due to burial of older sites beneath recent sand. The only formal excavations to have taken place at an LSA site are those in the near coastal dunes of the Atlantic Beach Golf Estate, just northwest of Blaauberg Hill and at Melkbosstrand. LSA artefacts have also been noted from the vicinity of Maitland, the farm Groot Oliphantskop – site of the Omega substation - as well as other farms in the area. Halkett (*pers comm*) reports the presence of Early Stone Age scatters on the farm Vaatjie as well as substantial Late Stone Age open sites on an adjoining property. Early Stone Age material has also been located on the farm Brakkefontein just south of Atlantis.

Two burials were reportedly excavated from the Groot Oliphantskop farm in the mid-20th century. Morris (1992) has catalogued human burials from South Africa and records numerous burials from the Milnerton (13 listed), Blaauwberg (20 listed) and Melkbosstrand (22 listed) areas. Others have also been recorded in recent years and continue to be found at new development sites.

5.3. Biophysical Characteristics of the Study Area

The topography of the Atlantis study area is gently rolling, but generally sloping towards the south. The vegetation of the area is **Cape Flats Dune Strandveld** in the north-western section, **Atlantis Sand Fynbos** on the sandy sections and **Swartland Shale Renosterveld** on the clayey sections (Mucina & Rutherford 2006). Alien plant infestation is considerable and large sections have been transformed.

The climate of Atlantis and the Cape West Coast is similar to Mediterranean countries and is influenced by the effects of the nearby Atlantic Ocean, resulting in warm to hot summers and cool winters. The average daily maximum and minimum temperatures in summer are 27°C and 13°C respectively. In winter, the daily temperatures range between an average maximum of 18°C and an average minimum of 6°C.

Rain occurs predominantly in the winter, and the summer months are generally dry. The average annual rainfall is 466 mm. The month with the highest rainfall is July (with a high of 77 mm), and the driest month is February (with a monthly total of 10 mm).

The predominant wind directions in the area are south-westerly to south-easterly during the spring and summer months, and north-westerly to north-north-westerly during the winter months. The strength of the wind is generally greater during the summer months.

The study area is situated on a coastal plain that comprises unconsolidated Cenozoic sediments (mainly quartz sand) associated with the Sandveld Group. These have been deposited on shale bedrock of the Malmesbury Group. The sand deposits average 25 m in thickness, although a maximum of some 80 m is attained in the southwest. Bedrock outcrops of shale occur sporadically along the coast and inland to the north and south of Atlantis. Granite intrusions associated with the Cape Granite Suite are exposed in the vicinity of Mamre. These reach a maximum elevation of some 418 m above sea level in the form of Kanonkop located about 9 km to the northeast.

The western portion of Atlantis Industria occupies a surface elevation of around 125 m above sea level. The land surface slopes gently from northeast to southwest. A variety of other sandy soil types are also found across the area. The landscape can be loosely divided into residential, agricultural, industrial and Fynbos shrub land.

The site occurs within quaternary catchment G21B (304 km^2 in extent) of the Berg Water Management Area. The area is largely devoid of rivers and streams. The most significant surface water drainage feature is the southwesterly draining Donkergat River located some 6 km to the southeast of the site (Figure 5.1). The Donkergat River itself is a major tributary of the Sout River, which enters the Atlantic Ocean at Melkbosstrand. A much smaller drainage, the Buffels River, occurs in the Silwerstroom area to the northwest (Figure 5.1). All streams in the study area have an ephemeral character.

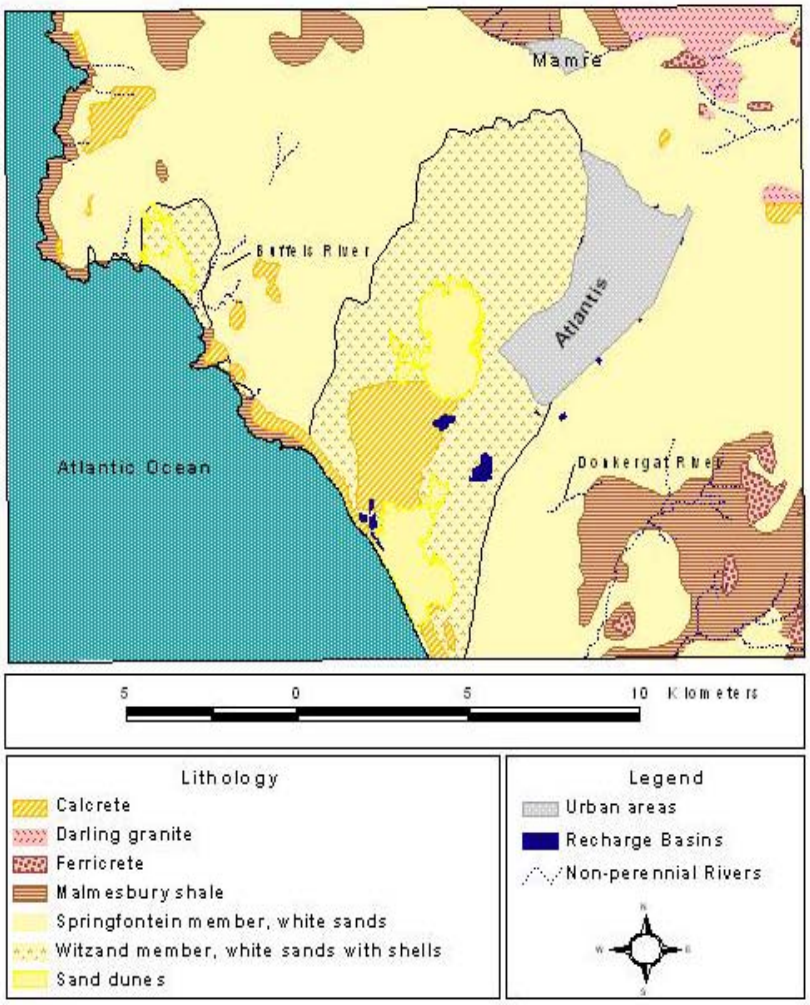

Figure 5.1: Geographical map for Atlantis and its surrounds

A high-yielding spring (approximately 30 L/s) is located at Silwerstroom on the coast, and another at Mamre. Both of these features serve as sources of potable water. Silwerstroom is utilised by the City of Cape Town, and the spring at Mamre represents the original source of water for the Mission Station established there in 1808.

The study area is part of the Cape Floristic Region, a renowned botanical hotspot with a very high percentage of endemic plant species (species restricted to that area) and threatened plant species. Almost 85% of the threatened plants found in South Africa are restricted to the Cape Floristic Region. The vegetation of the area is Cape Flats Dune Strandveld in the north-western section, Atlantis Sand Fynbos on the sandy sections and Swartland Shale Renosterveld on the clayey sections (Mucina & Rutherford 2006). Alien plant infestation is considerable and large sections have been transformed.

The ecology of the power station site has been largely transformed through the construction of the existing Ankerlig Power Station. Small portions of vegetation do, however, still exist in areas not directly impacted by construction. Previous investigations of the vegetation of the power station site (Bohlweki Environmental 2005; 2007) have indicated that the vegetation for a large portion of the site has been substantially modified or disturbed by a variety of factors or combinations thereof. In terms of vegetation integrity, the site was described as fragmented with severely disturbed natural drainage patterns. The vegetation on the site was severely degraded and transformed due to human disturbance, e.g. road building, original site clearance and installation of stormwater drainage systems, change of drainage patterns, illegal quarrying of sand, illegal dumping of waste, frequent fires at the wrong time etc. As a result, large areas were totally dominated by alien invader species such as Port Jackson (Acacia saligna) and Rooikrans (A. cyclops). The site is separated from the natural vegetation of the Melk Post and Witsand areas to the north and west by the Dassenberg road (R307).

The proposed transmission power line routes traverse an area that has been fairly extensively transformed by agriculture, originally by ploughing, and subsequently by heavy grazing and trampling by cattle, as well as too frequent fires. Alien invasive vegetation is therefore not surprisingly a prominent feature of the area. Soils are typically acid to neutral sands overlying shale – derived clays, and the latter are exposed in river valleys and along the railway cuttings.

Five potential faunal habitats are present within the study area, i.e.

» **Rocky habitat**, which supports many animals, including many invertebrates, amphibians, reptiles, birds and mammals. Rock habitat islets may therefore house unique forms and for this reason, this habitat has high conservation importance, especially along the western coastal lowlands.
» **Coastal fynbos/coastal sand**, a unique animal habitat that supports many endemic species, especially psammophylic or sand-loving species such as burrowing lizards, golden moles and mole rats.
» **Renosterveld**, found on the lowlands along the coast on shale and granite, from sea level to 400 m above. As a veld type, it is rich in a wide variety of species and dominated by renosterbos and the characteristic wealth of spring flowers. Although poor in fauna, a number of threatened species are associated with this habitat, e.g., several butterfly species, the Geometric Tortoise and the Cape Rain Frog.
» **Water bodies**, such as rivers, streams, pools, lagoons, estuaries and other wetland areas support a wide range of animal species, including many endemic species and/or species of conservation importance. The majority of frog species occurring in the greater study area are associated with water bodies. A wide range of bird species and several mammal species are also dependant on permanent or seasonal water bodies.

» **Mountain fynbos**, characterised by ericoids, restioids and proteoid shrubs like proteas and conebushes. Trees are scarce in this veld type. Several endemic bird species are associated with this habitat type.

The presence of any Red Data invertebrate taxa within the Atlantis study area is doubtful. Of the nine Red Data frog species occuring in the Western Cape, only the Cape Rain Frog (*Breviceps gibbosus* – listed as vulnerable), and the Cape caco (*Cacosternum capense* – listed as vulnerable) may occur within the study area.

Eighty-five reptile species occur in the greater study area, including 3 tortoise, one terrapin, 51 lizard and 30 snake species (Branch 1998). Of these, only 5 could occur within the study area, i.e. the Cape Sand Snake (*Psammophis l. leightoni* – listed as Lower Risk)[11], the Large-scaled Girdled Lizard (*Cordylus macropholis* – listed as Lower Risk)[12], the Silvery Dwarf Burrowing Skink (*Scelotes bipes* – listed as Data Deficient), Cuvier's Blind Legless Skink (*Typhlosaurus caecus* – listed as Data Deficient), and Austen's Thick-toed Gecko (*Pachydactylus austeni* - listed as Data Deficient).

Sixty-seven mammal species potentially occur in the greater study area, including seven insectivores, 11 bats, one primate, 3 hare/rabbit species, 23 rodents, 3 felids, 3 canids, 3 mustelids, 6 viverrids, the aardvark, the dassie, and 5 antelope species (Skinner & Smithers 1990). Of these, 8 are endemic to the greater study area. During previous investigations of the power station site (Bohlweki Environmental, 2005; 2007), there was no evidence of medium- to large-sized mammals, given the general nature of the area that is semi industrialised with an adjacent residential area. The presence of small mammals, in particular terrestrial rodents and subterranean rodents was considered more likely to occur in the proposed study area. Three Red Data species have the potential to occur in the study area as a result of the habitats present, i.e. the Forest Shrew (*Myosorex varius* – listed as Data Deficient), the Greater Musk Shrew (*Crocidura flavescens* – listed as Data Deficient), and the Cape Golden Mole (*Chrysochloris asiatica* – listed as Data Deficient).

The area supports 201 bird species, of which 15 species are Red-listed, 44 species are regional endemics or near-endemics, and three species are Red-listed endemics. Of the 5 avian microhabitats identified, natural (if generally degraded) Strandveld/Fynbos areas and wetlands support or partially support the bulk of the local avian diversity and most of the Red-listed and endemic species.

[11] Presence unconfirmed but possible due to habitats present.

[12] Presence unconfirmed but possible due to habitats present.

The Cape West Coast Biosphere Reserve is situated in the coastal zone north of Cape Town. Core areas consist of the West Coast National Park, and Dassen and Vondeling Islands. There is also a buffer zone and transition zones. The Atlantis study area is located within the transition zone of the Cape West Coast Biosphere Reserve[13] (refer to www.capebiosphere.co.za/CONSERVATION.55.0.html).

Other conservation areas in the region surrounding the power station site include the Koeberg Private Nature Reserve, the Blouberg Nature Reserve and the Blaauw Mountain Private Nature Reserve.

[13] Transition zones are areas of cooperation that contain a variety of land uses, including settlements, where the area's natural resources are sustainably developed for the benefit of those who live there.

SCOPING OF ISSUES ASSOCIATED WITH THE PROPOSED POWER STATION CONVERSION CHAPTER 6

This section of the Scoping Report serves to evaluate the identified potential environmental (social and biophysical) impacts associated with the proposed conversion of the OCGT units at the Ankerlig Power Station to CCGT units. Potential direct and indirect impacts of the proposed conversion project are evaluated, and recommendations are made regarding further studies required within the EIA phase of the process.

The cumulative impacts associated with the proposed power station conversion project are expected to be associated with the addition of infrastructure onto the existing power station footprint and are largely associated with visual impacts of the facility on the surrounding environment. Cumulative effects can only be assessed once the detailed design information becomes available, and will be considered in the detailed specialist studies to be undertaken in the EIA phase.

6.1. Potential Impacts on Air Quality

The Ankerlig Power Station is situated on the western side of the Atlantis Industrial Zone. This area is located approximately 7 km inland from the Cape West Coast, approximately 40 km north of Cape Town. The existing Ankerlig Power Station is approximately 10 km northeast of Eskom's Koeberg Nuclear Power Station.

The existing air quality in the area is relatively good. There are several air pollution sources in the Atlantis Industrial area that could potentially have a negative impact on the ambient air quality. Apart from industrial activities in the area, other potential air pollution sources include vehicular traffic, domestic fires, ploughed fields and non-vegetated land.

Potentially sensitive receptors surrounding the power station site include (refer to Figure 6.1):

» The residential township of Atlantis
» The informal settlement of Witzand
» Open farmlands in the vicinity of the power station site