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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

PREPARED FOR:
City of Cape Town Metropolitan Municipality and GreenCape Sector Development Agency

PREPARED BY: CSIR

October 2018

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Prepared for:
City of Cape Town Metropolitan Municipality and GreenCape Sector Development Agency

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REPORT DETAILS

Title:	**Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape**
Purpose of this report:	This Draft Scoping Report forms part of a series of reports and information sources that are being provided during the Environmental Impact Assessment (EIA) process for the proposed GreenTech in the Atlantis SEZ, Western Cape. In accordance with the EIA Regulations, the purpose of the Scoping Report is to: • Provide a description of the proposed project, including a sufficient level of detail to enable stakeholders to raise issues and concerns; • Describe the local planning context and environment within which the project is proposed, to assist further in identifying issues and concerns; • Provide an overview of the process being followed in the Scoping Phase, in particular the public participation process, as well as present the Plan of Study for EIA that would be followed in the subsequent EIA phase; and • Present the issues and concerns identified to date from the stakeholder engagement process, together with an explanation of how these issues will be addressed through the EIA process.
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Date:	October 2018
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CONTENTS

	EXECUTIVE SUMMARY
Chapter 1	Introduction
Chapter 2	Project Description
Chapter 3	Description of the Affected Environment
Chapter 4	Approach to EIA Process and Public Participation
Chapter 5	Project Alternatives
Chapter 6	Potential Environmental Impacts
Chapter 7	Plan of Study for EIA
Chapter 8	References
APPENDICES	
Appendix A	Curriculum Vitae of the Environmental Assessment Practitioner(s) and Declaration
Appendix B	Database of Interested and Affected Parties
Appendix C	Biodiversity offset Information: Integrated Reserve Management Plan
Appendix D	Other: 1. Excerpt from the DEA Screening tool report (sesnitivities) 2. Confirmation from DEA&DP that no Noise Impact Assessment is required

SUMMARY

PROJECT OVERVIEW

The City of Cape Town (CoCT): Property Management Department in collaboration with GreenCape is proposing to develop a Green Technology Manufacturing facility (hereafter referred to as "GreenTech") and associated infrastructure in the Atlantis Special Economic Zone (SEZ) on the land designated as Zone 2. Zone 2 is made up of several land portions that will comprise the "site", namely ERF Portion Remainder of ERF 277, ERF 246, ERF 254 and ERF Portion Remainder of 171 (these are the new ERF numbers, previously known as portions of Cape Farm 1183), Atlantis Industrial, approximately 40 km north of Cape Town. The portions that comprise the site (i.e. Zone 2) make up a total of 32.6 ha which will be used for the proposed development.

The site is zoned "General Industrial" and is located in the Atlantis Industrial Area. The site is therefore within the Urban Edge of Atlantis and is in line with the principles of the Cape Town Spatial Development Framework. The proposal is therefore to utilise the proposed portions of land located in the Atlantis Industrial Area for its intended purposes - Industrial development. Furthermore, the CoCT intend to lease the land to company's within the renewable energy sector and therefore the proposal is for the construction of manufacturing facilities to support the renewable energy industry and the broader "Green Economy".

Need for the Project

A Special Economic Zone (SEZ) is an economic development tool to promote national economic growth and export by using targeted support measures to attract foreign and domestic investments and technology. Traditionally SEZs geographically delineated and fenced- in areas that allowed for the duty- and tax-free import of raw and intermediate materials for processing and re-export. Modern forms of SEZs are not exclusively export focused and can encompass larger areas and support a wider range of economic activities or have a specific technology or sector focus. The typical SEZ policy package includes, "import and export duty exemptions, streamlined customs and administrative controls and procedures, liberal foreign exchange policies and income tax incentives." SEZ's in South Africa, such as the Atlantis Industrial area, have the ability to accelerate the rate of industrial development and agglomeration and are a platform for guiding the deployment of other tools such as incentives, skills development and infrastructure development.

Project Description

It is important to point out at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering phase.

The CoCT has made available this portion of vacant, City owned industrial land for these purposes, namely the manufacturing and supply of utility-scale renewable energy to the national grid and associated 'green' technology industries e.g. producing turbine blades, turbine towers, turbine assemblers, PV panel assembly plants and inverter manufacturers etc. The buildings (coverage, height etc.) to be located on site will be in accordance with the existing zoning of the site and the location in which the site is situated i.e. 'General Residential' and the Atlantis Industrial Area. The CoCT's building regulations and planning policies will be adhered to. A combination of Technological Alternatives will form part of the 'green' manufacturing hub in Atlantis. Typically, a GreenTech manufacturing facility would consist of the following:

- A typical "warehouse" structure. These structures will house offices and facilities for personnel and will not decrease aesthetic value in the surrounding area;
- Office and control room (often combined with ablution, crib and recreational facilities);
- Storage facilities (combined with the workshop and provides accommodation for the maintenance personnel, plant equipment and spare parts);
- Existing access roads;
- Existing municipal service connections:
    - Potable Water: The site can be serviced from a 150 mm diameter pressurised pipe-line municipal pipeline provides for both domestic and fire-fighting requirements. Pressure within the pipeline is maintained between 7 to 9 bars, should water be required at higher pressure then booster pumps will have to be installed by the developer.
    - Foul Sewer: In the Atlantis district there are two parallel municipal gravity pipeline in the adjacent road network. Generally effluent is divided into two categories namely: (1) Domestic effluent generated from toilets, showers, hand basins and kitchen sinks, and (2). Industrial effluent which could include noxious effluents (bye produfrom manufacturing process).
    - Electrical: The City of Cape Town is the supplier of electricity to the Atlantis Industrial area. Currently the power supply network capacity in the area is limited. The municipality indicates they could provide up to 2MVA to the site. Anything larger than 2 MVA can be accommodated, but with significant implications to their network. It is proposed that **alternative renewable energy sources** will be considered, i.e. photovoltaic (PV) panels, to provide electricity directly into the building (depending on energy requirements).
    - Solid Waste: The removal of refuse (solid waste) is managed by the municipality, alternatively this service can be provided by private contractors, depending on developer's needs.

Need for an Environmental Impact Assessment

As noted above, in terms of the EIA Regulations promulgated under Chapter 5 of the NEMA published in GN R327, R326, R325 and R324 in Government Gazette 40772, dated 7 April 2017, a full Scoping and EIA Process is required for the proposed project. The need for the full Scoping and EIA is triggered by, amongst others, the inclusion of Activity 15 listed in GN R325 (Listing Notice 2):

"15. The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; (ii) maintenance purposes undertaken in accordance with a maintenance management plan."

The purpose of the EIA is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The Environmental Assessment therefore needs to show the Competent Authority, the DEA&DP (Western Cape); and the project proponent, City of Cape Town, what the consequences of their choices will be in terms of impacts on the biophysical and socio-economic environment and how such impacts can be, as far as possible, enhanced or mitigated and managed as the case may be.

Purpose of the Scoping Report

The Scoping Phase of the EIA refers to the process of determining the spatial and temporal boundaries for the EIA. In broad terms, the objectives of the Scoping Process in terms of the 2014 NEMA EIA Regulations (as amended on 7 April 2018 (GN R326) are to:

- Confirm the process to be followed and opportunities for stakeholder engagement;
- Clarify the project scope to be covered;
- Identify and confirm the preferred activity and technology alternative;
- Identify and confirm the preferred site for the preferred activity;
- Identify the key issues to be addressed in the impact assessment phase and the approach to be followed in addressing these issues; and
- Confirm the level of assessment to be undertaken during the impact assessment

This is achieved through parallel initiatives of consulting with:

- The lead authorities involved in the decision-making for this EIA application;
- The public to ensure that local issues are well understood; and
- The EIA specialist team to ensure that technical issues are identified.

The Scoping Process is supported by a review of relevant background literature on the local area. Through this comprehensive process, the environmental assessment can identify and focus on key issues requiring assessment. The primary objective of the Scoping Report is to present key stakeholders (including affected organs of state) with an overview of the project and key issues that require assessment in the EIA Phase and allow the opportunity for the identification of additional issues that may require assessment. Issues raised in response to this Draft Scoping Report **(currently being released for a 30-day comment period)** will be captured in an Comments and Responses Trail as an appendix to the Final Scoping Report, which will be submitted to the DEA&DP for decision-making (i.e. approval or

rejection) in line with Regulation 21 (1) of GN R326. This approval is planned to mark the end of the Scoping Phase after which the EIA Process moves into the impact assessment and reporting phase.

Identification of Issues

The results of this high-level preliminary impact assessment will be verified by relevant specialists during the EIA Phase. Table 7.4 in Chapter 7 highlights the summary of issues and impacts to be addressed in the EIA phase, as well as the extensive list of existing information for the Atlantis SEZ that has and will be used (to avoid study duplication). Potential impacts associated with the Atlantis GreenTech project are anticipated to mainly be of **very low to moderate negative significance after mitigation**, whilst some high positive socio-economic impacts may be expected.

The Plan of Study for EIA (Chapter 8) presents the approach to the forthcoming EIA Phase. This includes the Terms of Reference for the various specialist studies that are proposed to address the issues raised, where necessary.

GLOSSARY

AEL	Air Emissions License
ADT	Average Daily Traffic
AGIS	Agricultural Geo-Referenced Information System
BGIS	Biodiversity Geographic Information System
BID	Background Information Document
CA	Competent Authority
CBA	Critical Biodiversity Area
CCGT	Closed Combined Gas Turbine
CoCT	City of Cape Town
CSIR	Council for Scientific and Industrial Research
DAFF	National Department of Agriculture, Forestry and Fisheries
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning
DMR	National Department of Minerals Resources
DOE	Department Of Energy
DOT	National Department of Transport
DSR	Draft Scoping Report
DWA	National Department of Water Affairs
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Protection Areas
FSR	Final Scoping Report
GA	General Authorization
GG	Government Gazette
GIS	Geographical Information Systems
GN R	Government Notice Regulation
HWC	Heritage Western Cape
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
IDP	Integrated Development Plan
IPP	Independent Power Producer
IRP	Integrated Resource Plan
kWh	Kilowatt Hours
MW	Megawatts
NBA	South African National Parks
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NFEPA	National Freshwater Ecosystems Protected Areas
NHRA	National Heritage Resources Act (Act 25 of 1999)
NPAES	National Protected Expansion Strategy
NWA	National Water Act (Act No. 36 of 1998)
PES	Present Ecological State
PPA	Power Purchasing Agreement
S&EIR	Scoping and Environmental Impact Reporting
SABAP2	South African Bird Atlas Project
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited
SANS	South African National Standards
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SEZ	Special Economic Zone
TDS	Total Dissolved Solids
ToR	Terms of Reference
WASA	Wind Atlas of South Africa
WMA	Water Management Area
WULA	Water Use License Application

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DRAFT SCOPING REPORT

CHAPTER 1

INTRODUCTION

CONTENTS

1. INTRODUCTION 1-5

1.1. PROJECT APPLICANT AND PROJECT OVERVIEW 1-5

1.2. PROJECT MOTIVATION (INCLUDING NEED AND DESIRABILITY) 1-7

1.2.1. Need and Desirability 1-7

1.3. REQUIREMENTS FOR AN ENVIRONMENTAL IMPACT ASSESSMENT 1-12

1.4. EIA TEAM 1-12

1.5. DETAILS AND EXPERTISE OF THE EAP 1-13

1.6. OBJECTIVES OF THE SCOPING REPORT 1-14

TABLES

Table 1.1: DEADP list of 14 questions to determine the "Need and Desirability" of the proposed project (2010 guidleines) 1-8

Table 1.2: The EIA Management Team and Specialist Team 1-13

FIGURES

Figure 1.1: Locality of the Atlantis GreenTech site where the development is proposed (Zone 2) 1-6

NEMA REQUIREMENTS WITH REFERENCE TO RELEVANT SECTIONS OF THIS REPORT

The Environmental Impact Assessment (EIA) process undertaken to date has culminated in the production of this Draft Scoping Report (SR), which provides information relevant to the project and establishes the potential impacts of the project and the methodologies and impacts that will be assessed in detail during the impact assessment phase.

Error! Reference source not found. illustrates how the structure of the SR addressed applicable requirements or information in terms of National Environmental Management Act (Act No. 107 of 1998) (NEMA).

Table 1.1: Requirements of a Scoping Report as defined in terms of Appendix 2 of GN R326

Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2017 NEMA EIA Regulations (GN R326)	Chapter and sub-section
Appendix 2 - (1)(a)	Details of - i. the EAP who prepared the report; and ii. the expertise of the EAP, including a curriculum vitae;	Chapter 1.7 and Appendix A
Appendix 2 - (1)(b)	The location of the activity, including - i. the 21 digit Surveyor General code of each cadastral land parcel; ii. where available, the physical address and farm name; iii. where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Chapter 1.1, 2.0 and 3.1
Appendix 2 - (1)(c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is - i. a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii. on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Chapter 2.0 and 3.2
Appendix 2 - (1)(d)	A description of the scope of the proposed activity, including – i. all listed and specified activities triggered; ii. a description of the activities to be undertaken, including associated structures and infrastructure;	Chapter 1.1, 2.1 and 4.1
Appendix 2 - (1)(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	Chapter 4.1 and 4.2
Appendix 2 - (1)(f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Chapter 1.5
Appendix 2 - (1)(g)	A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - i. details of all the alternatives considered; ii. details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Chapter 5 and Chapter 6

Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2017 NEMA EIA Regulations (GN R326)	Chapter and sub-section
	iii. a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; iv. the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; v. the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; vi. the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; vii. positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; viii. the possible mitigation measures that could be applied and level of residual risk; ix. the outcome of the site selection matrix; x. if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and xi. a concluding statement indicating the preferred alternatives, including preferred location of the activity;	
Appendix 2 - (1)(h)	A plan of study for undertaking the environmental impact assessment process to be undertaken, including - i. a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; ii. a description of the aspects to be assessed as part of the environmental impact assessment process; iii. aspects to be assessed by specialists; iv. a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists; v. a description of the proposed method of assessing duration and significance; vi. an indication of the stages at which the competent authority will be consulted; vii. particulars of the public participation process that will be conducted during the environmental impact assessment process; and viii. a description of the tasks that will be undertaken as part of the environmental impact assessment process;	Chapter 7

Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2017 NEMA EIA Regulations (GN R326)	Chapter and sub-section
	ix. identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	
Appendix 2 - (1)(i)	An undertaking under oath or affirmation by the EAP in relation to - i. the correctness of the information provided in the report; ii. the inclusion of comments and inputs from stakeholders and interested and affected parties; and iii. any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix A
Appendix 2 - (1)(j)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	Appendix A
Appendix 2 - (1)(k)	Where applicable, any specific information required by the competent authority;	Not Applicable at this stage
Appendix 2 - (1)(l)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	Not applicable at this stage

1. INTRODUCTION

The City of Cape Town (CoCT): Property Management Department in collaboration with GreenCape is proposing to develop a Green Technology Manufacturing facility (hereafter referred to as "GreenTech") and associated infrastructure in the Atlantis Special Economic Zone (SEZ) on the land designated as Zone 2. Zone 2 is made up of several land portions that will comprise the "site", namely ERF Portion Remainder of ERF 277, ERF 246, ERF 254 and ERF Portion Remainder of 171 (these are the new ERF numbers, previously known as portions of Cape Farm 1183), Atlantis Industrial, approximately 40 km north of Cape Town. The portions that comprise the site (i.e. Zone 2) make up a total of 32.6 ha which will be used for the proposed development. Figure 1.1 below shows the overall locality of the proposed GreenTech site considered in the Scoping Phase.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations (as amended on 7 April 2017) promulgated in Government Gazette 40772 and Government Notice (GN) R327, R326, R325 and R324, a full Scoping and Environmental Impact Assessment (EIA) Process is required for the construction of the proposed Atlantis GreenTech facility. The Applicant has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the EIA Processes in order to determine the biophysical, social and economic impacts associated with undertaking the proposed activity.

1.1. PROJECT APPLICANT AND PROJECT OVERVIEW

South Africa is an energy intensive country, largely as a result of our historic economic focus on energy intensive industries such as mining and primary metal processing. With current energy and electricity demands projected to continue increasing, new investments in electricity generation capacity are required. In terms of the New Generation Regulations, the Integrated Resource Plan (IRP), developed in March 2011, by the Department of Energy set out the new generation capacity requirement per technology, taking energy efficiency and the demand-side management projects into account. The introduction of private sector generation, as proposed in the Electricity Regulation Act (Act no. 4 of 2006), has multiple benefits and will contribute greatly to the diversification of both the supply and nature of energy production and enable the benchmarking of performance and pricing. The planned roll-out of renewable energy in South Africa will result in investments of R10-20 billon every year for the next 20 years. The manufacturing industry to support this renewable energy roll-out will be significant. It is estimated that about 2200 blue collar jobs will be created in this new industry. The Provincial strategic vision and intent is that the Western Cape has a secure supply of quality, reliable, clean, safe energy, which delivers social, economic and environmental benefits to the Province's citizens, while also addressing the climate change challenges facing the region and eradicating energy poverty. The Western Cape Provincial Government and the City of Cape Town (CoCT) have joined together in support of the renewable energy industry. The CoCT has simplified the process for those in the renewable energy industry wishing to find sites suitable for manufacturing activities.

Atlantis has been identified as a development priority by National, Provincial and Regional government and will largely benefit from the creation of an established "Green Technology Manufacturing Cluster". In addition, the CoCT will, for the majority, be leasing the land to company's within the renewable energy sector and therefore the proposal is for the construction of manufacturing facilities to support the renewable energy industry and the broader "Green Economy". The CoCT has made available Zone 2 for these purposes namely, the manufacturing and supply of utility-scale renewable energy to the national grid and associated 'green' technology industries e.g. producing turbine blades, turbine towers, turbine assemblers, PV panel assembly plants and inverter manufacturers etc. The proposal will therefore entail the utilisation of the entire site for industrial development. GreenCape is a sector development agency established by the CoCT and Western Cape Provincial Government with the task of unlocking and unblocking opportunities in the Green Economy, and are facilitating the development of GreenTech in the Atlantis SEZ.

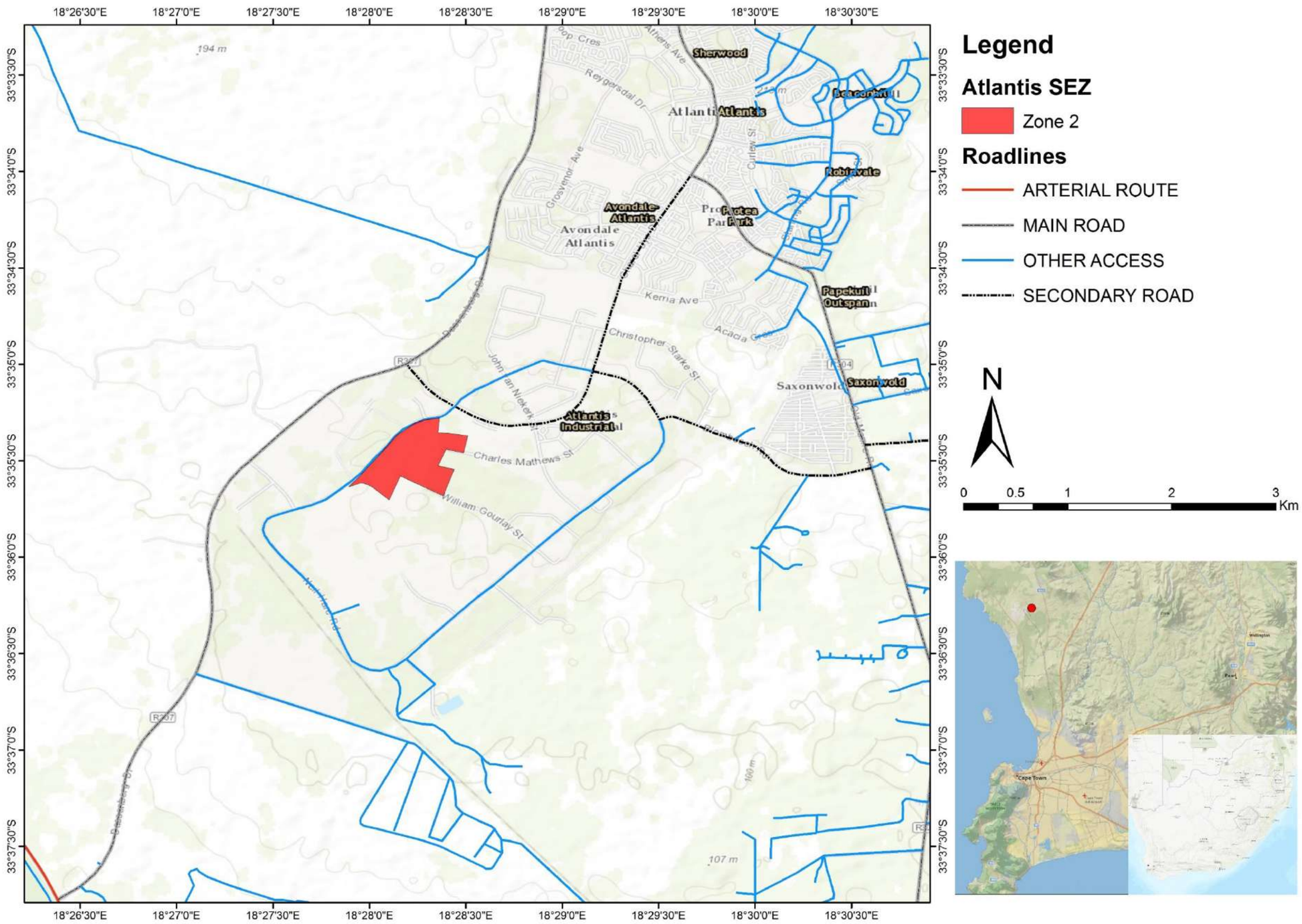

Figure 1.1: Locality of the Atlantis GreenTech site where the development is proposed (Zone 2)

1.2. PROJECT MOTIVATION (INCLUDING NEED AND DESIRABILITY)

GreenCape has been appointed as the project management office for the proposed special economic zone (SEZ) in Atlantis with the land owner and applicant for the proposed project being the City of Cape Town Metropolitan Municipality: Property Management Department (hereafter referred to as City of Cape Town). Special Economic Zones are geographically designated area of a country set aside for targeted industrial or economic activities which are supported through special arrangements and measures that often are not available to the rest of the country. It is expected that following the Department of Energy's request for information (RFI) from potential developers for proposals for GreenTech projects, it will play a significant role in South Africa's power generation mix. Special Economic Zones in South Africa, such as the Atlantis area, have the ability to accelerate the rate of industrial development and agglomeration and are a platform for guiding the deployment of other tools such as incentives, skills development and infrastructure development. The benefit of the proposed facility and its location and contribution to the greater Atlantis SEZ will furthermore allow for the increased focus on the development of desired industrial capabilities, "host regions" for development, and comprehensive planning and design to accommodate the diverse regional development needs and contexts.

The need for renewable energy (and associated technologies) is becoming increasingly apparent, in both local and international context, with South Africa becoming an integral part of the global transition towards renewable sources of electricity generation. The urgency behind this evolution can be appreciated considering that South Africa is the largest emitter of greenhouse gases in Africa, accounting for as much as 42% of the continent's total emissions, and is also estimated to rank amongst the top 20 largest emitters of greenhouse gases in the world. These emissions are largely a result of an energy-intensive economy and high dependence on coal-based electricity generation. The South African government is therefore committed to supplementing the existing generation capacity of thermal and nuclear power plants with renewable energy power generation, thus creating the framework that will lead to an increase in the supply of clean energy for the nation. The proposed project would also have international significance as it contributes to South Africa being able to meet some of its international obligations by aligning domestic policy with internationally agreed strategies and standards as set by the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and United Nations Convention on Biological Diversity (UNCBD) all of which South Africa is a signatory to. Renewable energy is critical to South Africa as this source of energy is recognised as a major contribution to climate protection, has a much lower environmental impact, as well as advancing economic and social development.

The preferred site (i.e. Zone 2) for the proposed Atlantis GreenTech project includes approximately 32.6 ha of land. It may be possible that the final layout does not require the utilisation of the entire 32.6 ha, however, a potentially larger than required surface area has been proposed during this phase of the project to ensure that should development constraints be present, the footprint can be reduced without the project being compromised. A project description (based on the conceptual design) is provided in Chapter 2 of this Draft Scoping Report. Additional information regarding the project contextualisation is provided in Chapters 2 and 5 of this Scoping Report.

1.2.1. Need and Desirability

It is an important requirement in the EIA Process to review the need and desirability of the proposed project. The Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) published a Guideline on Need and Desirability in 2010. The DEADP Guideline (2010) states that the essential aim of investigating the need and desirability of a proposed project revolves around determining suitability (i.e. is the activity proposed in the right location for the suggested land-use/activity) and timing (i.e. is it the right time to develop a given activity?). DEA&DP describes need and desirability as components of the "wise use of land", where need refers to time, and desirability to place. In other words, need and desirability answer the question of whether the activity is being proposed at the right time and in the right place. Table 1.1 includes a list of questions based on the DEA&DP 2010 Guideline to determine the need and desirability of the proposed project.

Table 1.1: DEADP list of 14 questions to determine the "Need and Desirability" of the proposed project (2010 guidleines)

NEED
1. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP). Answer: Yes **Justification:** The purpose of the Western Cape's Provincial Spatial Development Framework (PSDF) is to: • Be the spatial expression of the Provincial Growth and Development Strategy (PGDS). • Guide (metropolitan, district and local) municipal integrated development plans (IDPs) and • spatial development frameworks (SDFs) and provincial and municipal framework plans (ie. sub- • SDF spatial plans). • Help prioritise and align investment and infrastructure plans of other provincial departments, as well as national departments' and parastatals' plans and programmes in the Province. • Provide clear signals to the private sector about desired development directions. • Increase predictability in the development environment, for example by establishing no-go, conditional and "go" areas for development and redress the spatial legacy of apartheid. The establishment of a GreenTech facility and SEZ in Atlantis will promote the area for further investment, stimulate and contribute towards the economy as well as created a number of much needed blue-collar jobs within the area. These goals/ outcomes that will result from the proposed development are in line with the 5 year plan for the municipality. In addition the proposed facility is in line with Spatial Development Objective (1) of the Blaauwberg District Plan (2012) which relates to the promotion of infill industrial development.
2. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time? Answer: Yes **Justification:** Developments such as the Atlantis GreenTech facility have been stipulated in the CoCT's IDP 5 year plan. In addition, the biodiversity offset put in place by the CoCT for the Atlantis SEZ to compensate for the loss of biodiversity and to promote industrial development in that area allows for immediate development to happen in this area with a significantly reduced ecosystem cost. There are also a number of positive socio-economic benefits will result as a direct and indirect effect of this activity. The most notable being: • Job Creation. • Growth of the local, regional and provincial economies. • Diversity in the manufacturing industry through the investment in the energy sector.
3. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate). Answer: Yes **Justification:** Atlantis has been identified as a development priority by National, Provincial and Regional government. Historically, Atlantis was a decentralised zone for manufacturing. The proposed activity within the Atlantis Industrial Area will therefore benefit from the SEZ. The proposed site in Atlantis will be a priority area through which the path will be laid for future investments. The socio-economic benefits associated with the proposed development will have significant positive long-term benefits for Atlantis and the Western Cape.

4. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?

Answer: Partially

Justification: There are strict guidelines set out by the Atlantis Water Resource Management Scheme concerning the disposal of stormwater and effluent from sites within the Atlantis Industrial Zone. The purpose of these guideline is to ensure quality of potential waste water (stormwater and effluent), which is used to artificially recharge the Atlantis Aquifer, is of a quality which minimise contamination of ground water resource used as potable watersupply for the Atlantis district, alternatively to dispose of unsuitable effluent to prevent contamination of the ground water.

Potable Water: The site is serviced from a 150 mm diameter pressurised pipe-line located along the western boundary of the site. The municipal pipeline provides for both domestic and fire-fighting requirements. Pressure within the pipeline is maintained between 7 to 9 bars, should water be required at higher pressure then booster pumps will have to be installed by the developer.

Stormwater: The pipe network in the adjacent municipal roads is designed to take the predevelopment 1:2 year recurrence interval storm run-off for low traffic volumes areas to 1:10 year recurrence interval storm run-off for prime commercial developments. The balance of the run-off is conveyed within defined overland flow routes utilising streets to discharge into green belts comprising parks and playing fields where flood peak attenuation techniques are applied in accordance with the CoCT's Management of Urban Storm Water Impacts Policy" document.

Electrical: The City of Cape Town is the supplier of electricity to the Atlantis Industrial area. Currently the power supply network capacity in the area is limited. The municipality indicates they could provide up to 2MVA to the site. Anything larger than 2 MVA can be accommodated, but with significant implications to their network.

5. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?

Answer: No

Justification: There is no anticipated negative impact on municipal infrastructure planning (no clash of priority, and/or placement) as additional infrastructure required to maintain the proposed facility would be provided and maintained by the Applicant. The activity is furthermore proposed on industrial land with little existing and planned infrastructure.

6. Is this project part of a national programme to address an issue of national concern or importance?

Answer: Yes

Justification: South Africa is an energy intensive country, largely as a result of our historic economic focus on energy intensive industries such as mining and primary metal processing. With current energy and electricity demands projected to continue increasing, new investments in electricity generation capacity are required, resulting in the need for technological manufacturing. Future increases in electricity demand are particularly expected for the regions around the Western Cape. In terms of the New Generation Regulations, the Integrated Resource Plan (IRP) that has been developed in 2011 by the Department of Energy and sets out the new generation capacity requirement per technology, taking energy efficiency and the demand-side management projects into account. The introduction of private sector generation has multiple benefits and will contribute greatly to the diversification of both the supply and nature of energy production and enable the benchmarking of performance and pricing.

It is a political and economic imperative that the Western Cape attracts a portion of the investment in Renewable Energy Industry. The proposed site in Atlantis will be one such priority area through which the path will be laid for

future investments. The vast socio-economic benefits associated with the proposed development will have significant positive long-term benefits for Atlantis and the Western Cape.

DESIRABILITY

7. Is the development the best practicable environmental option for this land/site?

Answer: Yes (based on previous EA's conducted for neighbouring and nearby sites)

Justification: It would be premature to decide on the environmental practicability of the proposed development prior to the completion of the impact assessment phase of this EIA Process, however, based on current information and specialist studies that have already been conducted on nearby sites, the location factors favour this land use for a number of reasons e.g.:

- The site is already zoned 'General Industrial' and is located inside the Atlantis Industrial Area (within the Urban Edge).
- Atlantis is considered a national, provincial and regional priority area for readdressing the eras of apartheid through encouraging investment in the area and, as a result, creating jobs and contributing towards the local economy.
- The size of the land is appropriate in that they are large enough for the types of industries proposed.
- The road network in the area is also much more appropriate for transporting abnormal loads rather than navigating city traffic and passes.
- Easy, quick access onto the N7 allowing easier access to port facilities along the West Coast.
- The proposed development is in line with all the planning policies for the CoCT and the greater WC province.

8. Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF as agreed to by the relevant authorities?

Answer: No

Justification: The proposed activity does not compromise any of the objectives set within the Municipality IDP. The proposed project will also be supportive of the IDP's objective of creating more job opportunities. The proposed facility will assist in local job creation during the construction and operation phases of the project (if an EA is granted by the DEA&DP). However, as noted above, employment opportunities will be temporary during the construction phase and long-term during the operational phase as the plant is expected to be operational for 20 years.

Objective 1.1 of the IDP is to "create an enabling environment to attract investment that generates economic growth and job opportunities. There is considerable space for investment and growth, now and into the future in the Atlantis SEZ. The City plays a pivotal role in creating demand for these services through its programmes, projects and procurement systems, as well as through the use of energy in its own operations. The City aims to promote small-scale embedded power generation in Cape Town as well as to ensure that it benefits from regional and national-scale projects where suitable. The City faces skills development challenges, and requires significant investment, land release and buy-in from various stakeholders. There are opportunities for sustainable industries (such as solar water heater, photovoltaic and wind turbine manufacturers), who's services and products will be required for many years. This can result in job creation and skills development from new businesses."

9. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?

Answer: No (but to be confirmed during the EIA Phase)

Justification: It is not expected that the approval of the proposed project would compromise the integrity of the existing environmental management priorities for the area and the The City of Cape Town's EMF (Blaauwberg District Plan as adopted on 26 August 2013, PN. 297/2013, 13 September 2013). However, this will be determined during the EIA Phase of the proposed project. Furthermore, the proposed project will require mitigation of potential

negative environmental impacts during the construction, operational and potential decommissioning phases. To this end, an Environmental Management Programme (EMPr) will be compiled for the proposed project to ensure that all potential negative impacts identified are suitably managed and mitigated, and potential positive impacts are enhanced.

10. Do location factors favour this land use (associated with the activity applied for) at this place? (this relates to the contextualisation of the proposed land use on this site within its broader context)

Answer: Yes

Justification: The site is zoned 'General Industrial' and is located in the Atlantis Industrial Area. An industrial development will therefore be in line with the existing land use rights of the property. As a result of the dire socio-economic needs of the Atlantis community the establishment of jobs and the contribution towards the growth of the economy would be highly desirable.

11. How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?

Answer: To be confirmed during the EIA Phase, however, based on previous specialist studies done on neighbouring sites, it is likely that there will be no significant impact.

Justification: The proposed activity will have an impact on the endangered and critically endangered vegetation found on site, which will be removed completely. However, the CoCT has confirmed land elsewhere to offset the Atlantis Industrial Area – so that it may be developed in future. An appropriate biodiversity offset has been agreed upon to balance the loss of the sensitive vegetation on this site which is located in the Atlantis Industrial Area. Please see **Appendix C** for the report on the Klein Dassenberg Nature Reserve (biodiversity offset).

12. How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.)?

Answer: To be confirmed during the EIA Phase.

Justification:

- **Noise**: There may be noise associated with this development during its operation and the impacts, however, this will be in line with the zoning regulations of the site.
- **Odours**: These will be minimal during the construction phase and relatively minimal during the operational phase.
- **Visual Character and Sense of Place**: The proposed activity involves the construction of an industrial development within the Atlantis Industrial Area. The context within which the site is located is already characterised by industrial buildings and therefore will not have a significant impact on the visual character or sense of place of the area.

13. Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?

Answer: No

Justification: The proposed activity involves the construction of an industrial development within the Atlantis Industrial Area. The most significant impacts could be the loss of a portion of Cape Flats Dune Strandveld (endangered) and Atlantis Sand Fynbos (critically endangered). However, an appropriate offset has been put in place to mitigate this impact.

14. **Will the proposed land use result in unacceptable cumulative impacts?**

Answer: To be confirmed during the EIA Phase.

Justification: The significant cumulative impacts associated with this development include the following:
Cumulative loss of vegetation within the Atlantis Industrial Area has led to extensive loss of two vegetation types, namely Atlantis Sand Fynbos (CRITICALLY ENDANGERED) and Cape Flats Dune Strandveld (ENDANGERED). Note –

see above on Biodiversity Offset to compensate for this cumulative impact;

- Job Creation;
- Noise and visual;
- Economic growth and diversity;
- Investment in the Energy Sector.

It must be noted that the potential cumulative impacts resulting from the proposed project can only be objectively determined at the end of the EIA Process. These will be assessed as part of the EIA for this project.

1.3. REQUIREMENTS FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations (as amended on 7 April 2017) promulgated in Government Gazette 40772 and Government Notice (GN) R327, R326, R325 and R324, a full Scoping and Environmental Impact Assessment (EIA) Process is required for the construction of the proposed Atlantis GreenTech facility. The need for the full Scoping and EIA is triggered by, amongst others, the inclusion of Activity 15 listed in GN R325 (Listing Notice 2):

"15. The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for—
(i) the undertaking of a linear activity; or
(ii) maintenance purposes undertaken in accordance with a maintenance management plan."

Chapter 4 of this Scoping Report contains the detailed list of activities contained in R327, R325 and R324 which may be triggered by the various project components and thus form part of this Scoping and EIA Process. The purpose of the EIA is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The environmental assessment therefore needs to show the Competent Authority (i.e. the DEA&DP), and the project proponent, CoCT, what the consequences of their choices will be in terms of impacts on the biophysical and socio-economic environment and how such impacts can be, as far as possible, enhanced or mitigated and managed as the case may be.

1.4. EIA TEAM

As previously noted, the CSIR has been appointed by CoCT and GreenCape to undertake the EIA required for the proposed project. A public participation process (PPP) forms an integral part of the Environmental Assessment Process and assists in identifying issues and possible alternatives to be considered during the EIA Process. The CSIR is undertaking the PPP for this EIA. Details on the PPP are included in Chapter 4 of this Scoping Report. The EIA team which is involved in this Scoping and EIA Process is listed in Table 1.2 below. This team includes a number of specialists which have either been involved to date, or are planned to provide inputs during the EIA Process.

Table 1.2: The EIA Management Team and Specialist Team

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Environmental Management Services (CSIR)		
Paul Lochner	CSIR	Technical Advisor and Quality Assurance (EAPSA) Certified
Kelly Stroebel	CSIR	Project Manager (Appointed EAP)
Rirhandzu Marivate	CSIR	Project Officer and GIS specialist
Specialists		
Paul Emms	Bergwind Botanical Surveys and Tours	Ecological Impact Assessment (including Terrestrial Ecology)
Christo Bredenhann	WSP	Traffic Impact Statement
Jonathan Kaplan	Agency for Cultural Resource Management (ACRM)	Heritage Impact Assessment
John Pether	N/A	Desktop Palaeontological Impact Assessment

Note: ToR's for Specialist Studies as well as a description of the use of extensive existing information in the area is described further in Chapter 7 of this Draft Scoping Report.

1.5. DETAILS AND EXPERTISE OF THE EAP

Over the past 30 years the CSIR has been involved in a multitude of projects across Africa and South Africa, with experience in 32 sub-Saharan African and Indian Ocean Island countries. The Environmental Management Services (EMS) group within the CSIR has been involved in the management and execution of numerous environmental assessment and management studies in more than 15 countries in Africa, as well as the Middle East, South America and Russia. These studies have included both public and private sector clients. Consequently, the CSIR EMS team offers a wealth of experience and appreciation of the environmental and social priorities and national policies and regulations in South Africa. The EMS team at CSIR has also been involved in environmental assessments in the Atlantis SEZ (including an EIA on the neighbouring site and EA amendments in the SEZ).

The EIA Project Team is being led by the Project Manager, Kelly Stroebel. Paul Lochner will act as A Technical Advisor for the proposed project. Rirhandzu Marivate will be providing support on the project as a project officer/assistant and GIS expertise. Refer to Appendix A of this Scoping Report for the Curriculum Vitae of the EAPs. Appendix A of this Scoping Report also includes a declaration of and affirmation by the EAP as required by the 2014 EIA Regulations (as amended). The following roles and responsibilities are assigned in terms of this Scoping and EIA Process:

Designated Environmental Assessment Practitioner (EAP):

Kelly Stroebel - Kelly is an EAP in the EMS group of the CSIR and she has an Honours degree in Environmental Science and is a Registered Candidate Natural Scientist (Registration Number: 100151/14) with the SACNASP. She has 5 years of experience in the Environmental Management field, and has been involved in various Basic Assessments, EIA's and SEA's in the infrastructure, agriculture and renewable energy fields. She has also worked on environmental assessments in the Atlantis SEZ.

Technical Advisor:

Paul Lochner - Paul has 22 years of experience in environmental assessment and management studies, primarily in the leadership and integration functions. This has included SEAs, EIAs and Environmental Management Plans.

In July 2003, he obtained certification as a registered EAP with the Interim Certification Board for EAPs of South Africa (EAPSA).

Project Officer:

Rirhandzu Marivate – Rirhandzu is an EAP in the EMS group of the CSIR holds a Bachelor degree in Zoology & Geology, Honours in Ecology, Environment and Conservation from the University of the Witwatersrand; and has environmental research experience with the University of Cape Town. She has 5 years' experience in various forms of environmental assessments (BAs, EIAs, SEAs); consultation with stakeholders and public meetings; Project administration and GIS for EIA's.

1.6. OBJECTIVES OF THE SCOPING REPORT

The Scoping Phase of the EIA refers to the process of determining the spatial and temporal boundaries for the EIA. In broad terms, the objectives of the Scoping Process in terms of the 2014 NEMA EIA Regulations (as amended) (GN R326) are to:

- Confirm the process to be followed and opportunities for stakeholder engagement;
- Clarify the project scope to be covered;
- Identify and confirm the preferred activity and technology alternative;
- Identify and confirm the preferred site for the preferred activity;
- Identify the key issues to be addressed in the impact assessment phase and the approach to be followed in addressing these issues; and
- Confirm the level of assessment to be undertaken during the impact assessment

This is achieved through parallel initiatives of consulting with:

- The lead authorities involved in the decision-making for this EIA application;
- The public to ensure that local issues are well understood; and
- The EIA specialist team to ensure that technical issues are identified.

The Scoping Process is supported by a review of relevant background literature on the local area. Through this comprehensive process, the environmental assessment can identify and focus on key issues requiring assessment. The primary objective of the Draft Scoping Report is to present key stakeholders (including affected organs of state) with an overview of the project and key issues that require assessment in the EIA Phase and allow the opportunity for the identification of additional issues that may require assessment.

Issues raised in response to this Scoping Report (currently being released for a 30-day comment period) will be captured in the Comments and Responses Trail and will be included in the finalised Scoping Report and Plan of Study for EIA, which will be submitted to DEAD&DP for decision-making (i.e. approval or rejection) in line with Regulation 21 (1) of GN R326. This approval is planned to mark the end of the Scoping Phase after which the EIA Process moves into the impact assessment and reporting phase.

In terms of legal requirements, a crucial objective of the Scoping Report is to satisfy the requirements of Appendix 2 of the 2014 NEMA EIA Regulations (as amended on 7 April 2017) (as noted in Regulation 21 (3) of the GN R326). This section regulates and prescribes the content of the Scoping Report and specifies the type of supporting information that must accompany the submission of the Scoping Report to the authorities. An overview of where the requirements of Appendix 2 of the 2014 NEMA EIA Regulations (as amended) are addressed in this Draft Scoping Report is presented in Table 1.3. Furthermore, this process is designed to satisfy the requirements of Regulations 41, 42, 43 and 44 of the 2014 NEMA EIA Regulations as amended) relating to the PPP and, specifically, the registration of and submissions from I&APs.

GreenCape
Supporting the business of green

Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

CHAPTER 2

PROJECT DESCRIPTION

CONTENTS

2. PROJECT DESCRIPTION 2-3

2.1. ATLANTIS SEPCIAL ECONOMIC ZONE (SEZ) AND "GREENTECH" 2-3

2.2. SITE SELECTION 2-4

2.3. COMPONENTS OF A GREENTECH FACILITY 2-6

2.4. EIA AND THE ENVELOPE APPROACH 2-8

2.5. TYPICAL COMPOENETS OF A GREENTECH FACILITY 2-8

2.6. SUSTAINABLE DESIGN PRINCIPLES 2-9
- 2.6.1. Building Design 2-9
- 2.6.2. Water Conservation 2-10
- 2.6.3. Energy Efficiency 2-10
- 2.6.4. Waste and Recycling 2-10
- 2.6.5. Stormwater Management 2-10

2.7. PROJECT DEVELOPMENT CYCLE 2-12
- 2.7.1. Construction 2-12
- 2.7.2. Operation and Maintenance 2-12
- 2.7.3. Decommissioning 2-12

TABLES

Table 2.1: Land Portions and sizes that comprise the site (i.e. Zone 2 of the Atlantis SEZ) 2-4

Table 2.2: SG codes for the land portions that comprise the site (i.e. Zone 2 of the Atlantis SEZ) 2-4

Table 2.3: Specifications for General Industrial sites (Atlantis SEZ Feasibility Report, Deloitte, 2014) 2-7

FIGURES

Figure 2.1: Zones in the Atlantis SEZ (proposed site being Zone 2 of the Atlantis SEZ – portions outlined in red) 2-5
Figure 2.2: *Example* of a typical layout structure of a GreenTech manufacturing facility (Atlantis SEZ Feasibility Report, Deloitte, 2014) 2-11

2. PROJECT DESCRIPTION

This chapter provides an overview of the conceptual project design and an overview of the site and technology selection process for the proposed Atlantis GreenTech facility.

The purpose of this chapter is to present sufficient project information to inform the EIA Process in terms of design parameters applicable to the project. It is important to note that the project description details are preliminary at this stage and it is likely that some of the details presented herein may change during the detailed design phase and upon further investigations (including the findings and input of the specialist studies conducted during the EIA Phase of the proposed project). However, the project description (and design) used in this EIA Process assumes a worst-case scenario, where the maximum development footprint and requisite infrastructure is considered. Consequently, should any changes in project design be affected; such changes will only serves to reduce the overall infrastructure requirement and/or development footprint.

2.1. ATLANTIS SEPCIAL ECONOMIC ZONE (SEZ) AND "GREENTECH"

A Special Economic Zone (SEZ) is an economic development tool to promote national economic growth and export by using targeted support measures to attract foreign and domestic investments and technology. Traditionally SEZs geographically delineated and fenced- in areas that allowed for the duty- and tax-free import of raw and intermediate materials for processing and re-export. Modern forms of SEZs are not exclusively export focused and can encompass larger areas and support a wider range of economic activities or have a specific technology or sector focus. The typical SEZ policy package includes, "import and export duty exemptions, streamlined customs and administrative controls and procedures, liberal foreign exchange policies and income tax incentives."

SEZ's in South Africa, such as the Atlantis Industrial area, have the ability to accelerate the rate of industrial development and agglomeration and are a platform for guiding the deployment of other tools such as incentives, skills development and infrastructure development. In the Government Gazette of 20 March 2015, the Minister of Trade and Industry (Dr Rob Davies) issued the Special Economic Zones Regulations for public comment. Within these SEZs, support measures and funding are to be provided to businesses.

The GreenTech industry cannot be defined in terms of the conventional standard industry classification (SIC) system and there is also no unique or universally accepted definition of the term. The UN however recommends the following broad definition of GreenTech used originally to describe environmentally sound technologies in Agenda 21, their 1992 plan to achieve sustainable development14:

"Greentech includes technologies that "protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they are substitutes. Furthermore, GreenTech refers not just to the 'individual technologies', but total systems which include know-how, procedures, goods and services, equipment as well as organizational and managerial procedures."

In summary, GreenTech refers to technologies that limit or prevent harm to the natural environment relative to conventional alternatives because they:

- are less polluting and\or
- use all natural resources in a more sustainable manner and\or
- recycle more of their wastes and products and\or
- handle residual wastes in a more acceptable manner.

GreenCape is a sector development agency established by the City of Cape Town (CoCT) and Western Cape Provincial Government (WCPG) with the task of unlocking and unblocking opportunities in the Green economy. GreenCape has been appointed as the project management office for the proposed Special Economic Zone (SEZ) in Atlantis, which has a total land area of 124.5 ha and consists of zones 1, 2, 3 and 4. SEZ's are geographically designated areas of a country set aside for targeted industrial or economic activities which are supported through special arrangements and measures that often are not available to the rest of the country.

Following the approved allocation of 68 ha of greenfield sites in the Atlantis SEZ for the development of a green industrial park by the Council for the City of Cape Town Municipality (CoCT); a number of land portions have been made available for a Green Technology (GreenTech) hub, of which **Zone 2** (See Figure 2.1 below) is relevant to this project.

2.2. SITE SELECTION

Zone 2 (i.e. the site) consists of ERF portion remainder of 277, ERF 246, ERF 254 and portion remainder of 171, is bordered by Neil Hare road to the South, Neil Hare road to the North, Gideon Basson to the West and Charl Uys on the East. It is envisaged that the entire site (32.6 ha) will be used for the development. The following table summarizes the land portions comprising the total site for the proposed project.

Table 2.1: Land Portions and sizes that comprise the site (i.e. Zone 2 of the Atlantis SEZ)

ATLANTIS SEZ ZONE	OLD ERF NUMBER	NEW ERF NUMBER	SIZE (ha)
2	CA1183-4	**Portion Rem of 277**	9.6
	CA1183-45	**246**	4.0
	CA1183-122	**254**	3.0
	CA1183-0	**Portion Rem of 171**	16.0
TOTAL HECTARES			**32.6**
CENTRE CO-ORDINATES OF THE ACTIVITY			**33.59157°S 18.47060°E**

Note: Although CA1183-74 is included in Zone 2, **it does not form part of this EIA,** as this portion is already utilised by PEGAS.

Table 2.2: SG codes for the land portions that comprise the site (i.e. Zone 2 of the Atlantis SEZ)

ERF NUMBER	SURVEYOR GENERAL (SG) 21 DIGIT CODE FOR THE LAND PARCEL
Portion Rem of 277	C01600000000118300004
246	C01600000000118300045
254	C01600000000118300122
Portion Rem of 171	C01600000000118300000

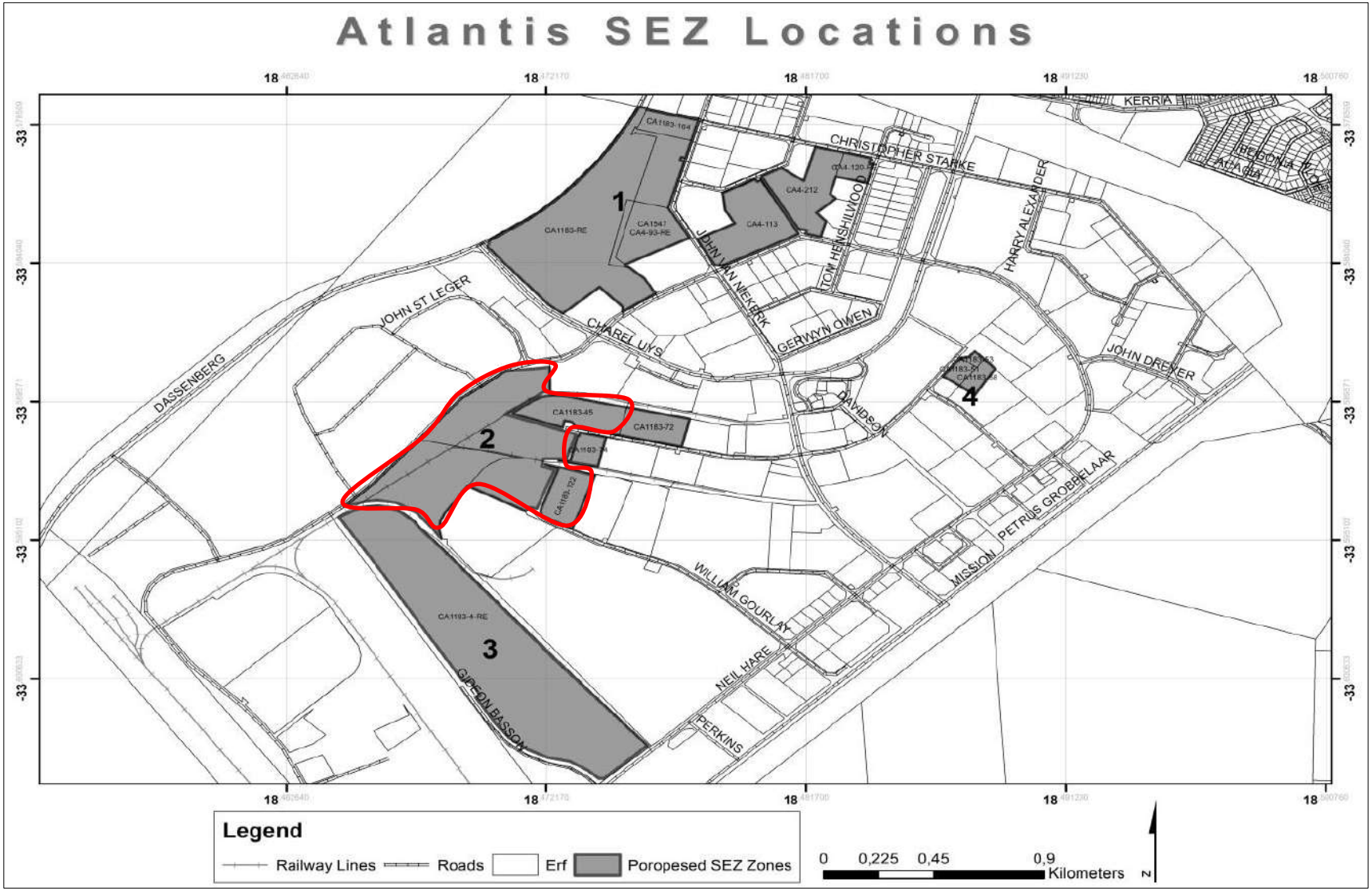

Figure 2.1: Zones in the Atlantis SEZ (proposed site being Zone 2 of the Atlantis SEZ – portions outlined in red)

2.3. COMPONENTS OF A GREENTECH FACILITY

The site is zoned "General Industrial" and is located in the Atlantis Industrial Area. The proposal is for the use of the site for industrial purposes. The site is therefore within the Urban Edge of Atlantis and is in line with the principles of the Cape Town Spatial Development Framework. The proposal is therefore to utilise the proposed portions of land located in the Atlantis Industrial Area for its intended purposes - Industrial development. Furthermore, the CoCT intend to lease the land to company's within the renewable energy sector and therefore the proposal is for the construction of manufacturing facilities to support the renewable energy industry and the broader "Green Economy". The CoCT has made available this portion of vacant, City owned industrial land for these purposes, namely the manufacturing and supply of utility-scale renewable energy to the national grid and associated 'green' technology industries e.g. producing turbine blades, turbine towers, turbine assemblers, PV panel assembly plants and inverter manufacturers etc. The proposal will therefore entail the utilisation of the entire site for industrial development, as it is zoned.

The buildings (coverage, height etc.) to be located on site will be in accordance with the existing zoning of the site and the location in which the site is situated i.e. 'General Residential' and the Atlantis Industrial Area. The CoCT's building regulations and planning policies will be adhered to. A combination of Technological Alternatives will form part of the 'green' manufacturing hub in Atlantis. All three are considered viable alternatives and will form part of the proposed activity description. The three main technology alternatives to be manufactured are as follows:

- Wind

There will be enough demand in the IRP2010 to justify 1 utility scale blade manufacturer. Currently there are no companies in South Africa that manufacture utility scale wind turbine blades. There is scope for 1 or 2 manufacturers of wind turbine towers.

- Solar Photo Voltaic (PV)

There is enough demand in the IRP2010 to justify 1 or 2 photo voltaic (PV) manufacturing facilities. Currently in South Africa there are 3 PV manufacturers (Tenesol, Solairedirect and Setsolar). These are all located in Cape Town and currently employ 250 people. There is an opportunity for these companies (or a new player) to set up a factory to supply the new demand.

- Inverters

It is anticipated that there will be 1 inverter manufacturer established. There is one current inverter manufacturer (MLT-Drives), they employ around 35 people and would need to scale up tenfold to meet this demand.

A concept site lay-out and design has been prepared in the ASEZ feasibility report (2014) for an industrial facility accommodating the anticipated 10-year demand for smaller Atlantis SEZ users. The lay-out is described as follows:

- A grid-like movement structure enabling easy movement from and to the surrounding route network as well as between and through buildings.
- Building orientation to maximise natural light.
- Appropriate yard/service space to individual units.
- Modular buildings (based on a grid design which could be easily converted/ adapted to accommodate larger or smaller units depending on the specific needs of users, and phasing of the development based on demand), repeated in rows.

As mentioned, the buildings (coverage, height etc.) will be in accordance with the existing zoning of the site (GI1) and the location of the site. It is not considered feasible to design the layout of the facility at this stage as it would depend on the investors who are successful in terms of the bidding process to lease the land and the

types of technology that will be manufactured, in accordance with the types of renewable energy alternatives mentioned above.

Thus, in order for the purpose of the EIA process, an "Envelope Approach"[1] will be adopted, allowing for all development within the specifications of the zoning of the site to be approved. These specifications are described in Table 2.3 below.

Table 2.3: Specifications for General Industrial sites (Atlantis SEZ Feasibility Report, Deloitte, 2014)

GENERAL INDUSTRY SUBZONE GI 1		
Purpose	The GI zone accommodates all forms of industry, except noxious trade and risk activity, in order to promote the manufacturing sector of the economy. Some allowance is made for non-industrial activities, but these should not compromise the general use of the area zoned for industry. It is accepted that the intensive nature of the industrial activity or the scale of the operation could generate some negative impact on adjacent properties.	
Primary uses	Industry, restaurant, service station, motor repair garage, funeral parlour, scrap yard, authority use, utility service, crematorium, rooftop base telecommunication station, freestanding base telecommunication station, transport use, multiple parking garage, agricultural industry, private road, open space.	
Additional use rights		Specific conditions applicable to additional use rights
	Factory shop	The occupant of an industry may operate a factory shop provided that: The total floor space devoted to the sale of goods shall not exceed 10% of the total floor space of all the buildings on the land unit. Any goods that are offered for sale but have not been manufactured on the property must be directly connected with the goods that are manufactured on the property.
	Adult shop	An adult shop shall not be located within 100 m of an existing adult shop, adult entertainment or adult services premises. The street front and entrance shall be discreet and unobtrusive, and no pornographic, sexually explicit or erotic material shall be visible from outside the premises. Outdoor signage must comply with Council's Outdoor Advertising and Signage by-law. No form of public address or sound amplification shall be audible from outside the premises.
Consent use	Abattoir, place of worship, institution, clinic, place of assembly, adult entertainment business, adult services, aqua-culture, informal trading, shop, office, sale of alcoholic beverages, place of entertainment, helicopter landing pad, wind turbine infrastructure and container site.	
Floor factor	1.5	
Coverage	75%	
Height	18m measured from base level to the top of the roof	
Street building lines	5m	
Common boundary building lines	3m	
Parking	Subject to the activity and designation of Public Transport Areas but for "standard" Industry: 2 bays per 100m² GLA	

[1] See description on the Rochdale Envelope Approach below under "Envelope Approach"

2.4. EIA AND THE ENVELOPE APPROACH

In terms of Environmental Authorisation and the identification of listed activities in the EIA regulations, the project description will follow the envelope approach as mentioned above. The Rochdale Envelope Approach[2] will be applied to determine the preferred Development Envelope for the proposed facility. The Rochdale Envelope approach is named after two legal cases relating to a proposed business park in Rochdale in the United Kingdom. These cases considered applications for outline planning consent in the context of preparing an EIA. The goal of the Rochdale Envelope approach is to allow for an EIA to be undertaken, based on the 'worst case scenario', whereby the Competent Authority granting the EA will then decide whether, based on this 'worst case scenario', the environmental impacts are acceptable.

This approach is very useful since normally an EIA is undertaken prior to the technical assessment of the site which would consider the exact placement of, for example, the buildings and associated infrastructure. The main principle behind this approach is that, should the development fall within the parameters set within this "envelope", as determined by the EIA Process, the placement of the different components could be determined at a later stage provided that the components fall within the parameters of the envelope. This approach therefore allows for flexibility to the developer during the detailed design phase in terms of engineering, design and construction parameters.

The development envelope parameters in which this project will fall will be determined by the zoning of the site within the SEZ. The General Industry Subzone (GI1) zoning of the site permits to GreenTech industries identified through market segmentation and sizing. In making the land available specifically for the SEZ, the City has further limited use rights on the land in that only applicants who comply in terms of one or more of the following categories will qualify for evaluation, i.e., companies that:

- Have been awarded power purchase agreements.
- Are Supplying components to utility scale renewable energy installations.
- Manufacture/ supply energy efficient equipment.
- Manufacture/ supply green technology.
- Specialise in the construction and/ or management and/ or maintenance of renewable energy installations.
- Manufacture and/ or repair components for primarily green manufacturing industries.
- Are involved in research and experiments in respect of renewable energy.

It is acknowledged that a specific green technology activity may require further deviation from the applicable zoning regulations, for example in relation to building height, setbacks, floor area, or coverage. In these cases, departures from the provisions of the zoning scheme could be applied for. However, for the purpose of EA, it is understood that if the facility falls within the parameters of the development envelope, as mentioned above, the exact building placement and layout can be determined at a later stage in the design phase. Thus, the environmental impact assessment will take into considerations the parameters of a "worst-case scenario" as per the GI1 zoning by-laws above.

2.5. TYPICAL COMPOENETS OF A GREENTECH FACILITY

As mentioned above, the Envelope Approach is being proposed for this Environmental Impact Assessment process, as specific layouts and descriptions depend on the investment opportunities in the Atlantis SEZ. However, some key infrastructure and components of a typical GreenTech facility are described in this sub-section. Typically, a GreenTech manufacturing facility would consist of the following:

[2] Infrastructure Planning Commission (IPC), Using the 'Rochdale Envelope'. February 2011

- A typical "warehouse" structure. These structures will house offices and facilities for personnel and will not decrease aesthetic value in the surrounding area;
- Office and control room (often combined with ablution, crib and recreational facilities);
- Storage facilities (combined with the workshop and provides accommodation for the maintenance personnel, plant equipment and spare parts);
- Existing access roads;
- Existing municipal service connections:
    - Potable Water: The site can be serviced from a 150 mm diameter pressurised pipe-line municipal pipeline provides for both domestic and fire-fighting requirements. Pressure within the pipeline is maintained between 7 to 9 bars, should water be required at higher pressure then booster pumps will have to be installed by the developer.
    - Foul Sewer: In the Atlantis district there are two parallel municipal gravity pipeline in the adjacent road network. Generally effluent is divided into two categories namely: (1) Domestic effluent generated from toilets, showers, hand basins and kitchen sinks, and (2). Industrial effluent which could include noxious effluents (bye produfrom manufacturing process).
    - Electrical: The City of Cape Town is the supplier of electricity to the Atlantis Industrial area. Currently the power supply network capacity in the area is limited. The municipality indicates they could provide up to 2MVA to the site. Anything larger than 2 MVA can be accommodated, but with significant implications to their network. It is proposed that **alternative renewable energy sources** will be considered, i.e. photovoltaic (PV) panels, to provide electricity directly into the building (depending on energy requirements).
    - Solid Waste: The removal of refuse (solid waste) is managed by the municipality, alternatively this service can be provided by private contractors, depending on developer's needs.

Generally service connections (potable water and foul sewer) to the site are installed by the developer (i.e. the City of Cape Town), however they might not be in the position dedicated by the preferred placement of the building footprint. In this instance an application to the Municipality for new service connections would be necessary. Section 2.6 below describes the sustainable design principles that will be applies for the proposed development, which should reduce the reliance on municipal services.

2.6. SUSTAINABLE DESIGN PRINCIPLES

The proposed project will strive to not only supply GreenTech components to support the green economy but should itself be developed in a "green" and sustainable way. To achieve such an outcome, Sustainable Design Principles will be developed for the site. The following provides key areas identified where sustainable practices and principles will be targeted (Note: mitigation measures associated with the sub-sections below will also form part of the EMPr in the EIA Phase):

2.6.1. Building Design

- Industrial buildings to target objectives in terms of the Green Building Council of South Africa's Green Star Custom Industrial Tool.
- Office buildings to target objectives in terms of the Green Building Council of South Africa's Green Star Office Tool.
- Orient building to allow natural lighting to reduce the need for internal lighting.
- Consider linkages with adjacent buildings in terms of resource sharing.
- Incorporate shading to keep building cool and to reduce glare.
- Include designated area for waste/materials management.
- Design in a modular fashion to enable easy extensions with limited wasted resources during the construction phase (buildings to be flexible).

- Design to minimise the need for maintenance.

2.6.2. Water Conservation

- Capture rainwater for re-use in the building.
- Include dual reticulation plumbing to enable non-potable water to be used for toilet flushing, machine washing, irrigation, use in on-site processes, etc.
- Treat grey water for re-use (either irrigation or recirculate back into the building).
- Specify low flow aerators for taps (e.g. 1.3 litre/min).
- Urinals to be waterless.
- Consider on-site sewage treatment and re-use of treated wastewater.
- Consider using treated effluent for fire water from the Atlantis WWTW.
- Diversify water use to reduce reliance on Municipal potable supply.

2.6.3. Energy Efficiency

- Include insulation to reduce heating and cooling requirements.
- Encourage use of natural ventilation and natural lighting to reduce energy consumption for building temperature control.
- Use building materials / finishes that reflect heat in summer.
- Specify Energy Star equipment and appliances.
- Provide sub-meters to enable energy consumption to be monitored.

2.6.4. Waste and Recycling

- The EMP which will form part of the Environmental Impact Assessment (EIA) Report will address waste management practices to be implemented.
- During the design phase of the project, targets will be set for the re-use of construction waste materials thereby limiting waste sent to landfill (i.e. goal would be zero waste to landfill during construction and operational phases)

2.6.5. Stormwater Management

- Create a more natural system where stormwater and rainwater are captured onsite and used for activities to minimise the reliance on municipal supply.
- Incorporate the use of bioretention areas, etc. to allow excess stormwater / rainwater from roads, sidewalks and parking areas, to infiltrate whilst treating the water to improve water quality.
- No hardened channels for stormwater management.
- Enhance stormwater systems so that they become an amenity and promote biodiversity and open space for people to enjoy.
- Ensure stormwater systems tie into the existing Atlantis Aquifer Recharge Scheme to promote aquifer recharge.

As per a previously conducted feasibility study done for the SEZ, and ***example*** of a solar photovoltaic manufacturing facility can be seen in Figure 2.2 below.

Figure 2.2: *Example* of a typical layout structure of a GreenTech manufacturing facility (Atlantis SEZ Feasibility Report, Deloitte, 2014)

2.7. PROJECT DEVELOPMENT CYCLE

2.7.1. Construction

The construction phase will take place subsequent to the issuing of an Environmental Authorisation (EA). The construction phase for the proposed Atlantis GreenTech project is expected to extend over a period of between 15 and 38 months, assuming normal daylight working hours are in place (however the construction period is subject to the final requirements of Eskom).

The construction phase will involve the transportation of personnel, construction material and equipment to the site, and personnel away from the site. In terms of site establishment, laydown areas will be required at the outset of the construction phase, as well as dedicated access routes from the laydown areas to the working areas. Haul roads for construction traffic (for the delivery of concrete, road materials and other construction materials) will be required.

The laydown area will either be located adjacent to or at the project site. It is expected that the laydown area will be temporary in nature (for the duration of the construction phase) and will include the establishment of the construction site camp (including site offices and other temporary facilities for the appointed Contractors). The laydown area is expected to cover a maximum area of 1 ha (depending on the contracting strategy at the time). If the laydown area is located outside of the footprint of the GreenTech facility itself, the area will thereafter be rehabilitated (i.e. returned to its pre-construction condition) at the end of the construction phase.

All efforts will be made to ensure that all construction work will be undertaken in compliance with local, provincial and national legislation, local and international best practice, as well as the Environmental Management Programme (EMPr), which will be compiled during the EIA Phase and included in the EIA Report. During the construction phase, both skilled and unskilled temporary employment opportunities will be created. It is difficult to specify the actual number of employment opportunities that will be created at this stage; however approximately 200 personnel in project support industries will be utilized during the construction phase.

2.7.2. Operation and Maintenance

The anticipated date of the start of operations of the proposed Atlantis GreenTech project is dependent on several external factors (i.e. investors). The following activities will occur during the operational phase:

- Manufacturing of renewable energy technologies (i.e. wind/solar/invertors);
- Maintenance of the GreenTech facility (routine, scheduled and unscheduled).

The projected operations are expected to provide several services and added economic spin offs (as highlighted in Chapter 1 of this Scoping Report). The operational phase of the project is expected to create skilled employment opportunities. However, other opportunities may arise for unskilled labour to be integrated to the ancillary activities. Approximately 280 temporary and 180 permanent employment opportunities will be created over the lifespan of the proposed facility.

2.7.3. Decommissioning

The main aim of decommissioning is to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise (i.e. if the facility becomes outdated or the land needs to be used for other purposes), the decommissioning procedures will be undertaken in line with the EMPr and the site will be rehabilitated and returned to its pre-construction state.

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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

CHAPTER 3

DESCRIPTION OF THE AFFECTED ENVIRONMENT

CONTENTS

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT 3-3

3.1 BACKGROUND 3-3

3.2 PRELIMINARY SENSITIVITY SCREENING 3-3

3.3 BIOPHYSICAL ENVIRONMENT 3-6

3.3.1 Climatic Conditions 3-6

3.3.2 Geology 3-7

3.3.3 Topography 3-7

3.3.4 Agricultural Capability and Sensitivity 3-8

3.3.5 Soil Types and Soil Potential 3-9

3.3.6 Existing Groundwater Data 3-9

3.3.7 Terrestrial Environment 3-10

3.3.8 Threatened ecosystems (remaining extent) 3-10

3.3.8.1 Conservation planning and aquatic systems 3-12

3.3.9 Heritage Profile 3-13

3.3.9.1 Historical Background 3-13

3.3.9.2 Archaeology 3-13

3.3.9.3 Palaeontology 3-13

3.3.10 Socio-Economic Environment 3-14

3.3.11 Proximity to the Koeberg Nuclear Power Station's Urgent Protection Zone (UPZ) 3-17

TABLES

Table 3.1: Estimated Volumes of Groundwater stored in the Atlantis Primary Aquifer System (Bredenkamp and Vandoolaeghe, 1982) 3-9

Table 3.2: Description, significance and permissible actions for the Critical Biodiversity Areas as defined by the CoCT BioNet (adapted from Holmes et al, 2012). 3-13

Table 3.3: Demographic Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011) 3-14

Table 3.4: Education Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011) 3-15

Table 3.5: Employment Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011) 3-16

Table 3.6: Household Income Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011) 3-16

Table 3.7: Anticipated population increase affecting the Koeberg Nuclear Power Station's TEM 3-17

FIGURES

Figure 3.1: Regional Context of the Atlantis GreenTech site (i.e. Zone 2 of the Atlantis SEZ) 3-4
Figure 3.2: Composite map of potential sensitive ecological features in the area proposed for GreenTech Project (i.e. Zone 2 of the Atlantis SEZ) 3-5
Figure 3.3: Mean Annual Rainfall Levels of South Africa (Source: Northern Cape PSDF, 2012) 3-6
Figure 3.4: Long-term mean a) temperatures (°C); and b) mean precipitation (mm) for Atlantis, Western Cape (Worldweatheronline.com, 2015). 3-7
Figure 3.5: Geological features of the Atlantis Area 3-8
Figure 3.6: National Protected Areas within 15 km of the proposed Atlantis SEZ (Note: Klein Dassenberg is the protected area designated as a biodiversity offset for the Atlantis SEZ – refer to Appendix C of this report). 3-10
Figure 3.7: Threatened ecosystems in the area proposed for the GreenTech facility 3-12
Figure 3.8: Age profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011) 3-15
Figure 3.9: Location of preferred site (**highlighted in red)** in relation to the Koeberg UPZ 3-18

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter of the Scoping Report provides an overview of the affected environment for the proposed Atlantis GreenTech project and the surrounding region. The receiving environment is understood to include biophysical, socio-economic and heritage aspects which could be affected by the proposed development or which in turn might impact on the proposed development. This information is provided to identify the potential issues and impacts of the proposed project on the environment. The information presented here has been sourced from:

- Scoping input from the specialists that form part of the project team;
- Review of information available on the South African National Biodiversity Institute (SANBI) Biodiversity Geographical Information System (BGIS) and Agricultural Geo-Referenced Information System (AGIS); and
- City of Cape Town Metropolitan Municipality IDPs and the Cape Town PSDF.
- Basic Assessment & correlating specialist studies, as well as the full Scoping & EIA conducted (by CSIR) for nearby sites in Atlantis (Portion 1 and Portion 4 of Cape Farm 1183) in 2012 and 2015/16 respectively.

It is important to note that this chapter intends to provide an overview and does not represent a detailed environmental study. Detailed studies focused on significant environmental aspects of this project will be provided during the EIA Phase[1].

3.1 BACKGROUND

The proposed project is situated on erf portion remainder of 277, 246, 254 and portion remainder of 171, is bordered by Neil Hare road to the South, Neil Hare road to the North, Gideon Basson to the West and Charel Uys on the East. The total portion property covers approximately 32.6 ha in area. As previously noted, the site is located approximately 43 km north of Cape Town, in the Koeberg and Blaauwberg Sub-Councils of the Cape Town Metropolitan Municipality. The co-ordinates of the corner points of the preferred project area are provided in Chapter 2 of this Scoping Report. Figure 3.1 provides a locality map of the proposed project area within a regional setting. The proposed GreenTech facility is far removed from major centers, roads and tourist attractions. It is located near the R307 which functions as a primary access route to Atlantis from Cape Town. The closest major road is the R27 which functions as a connector between Saldanha and Cape Town.

3.2 PRELIMINARY SENSITIVITY SCREENING

Figure 3.1 represents the regional setting of the proposed Atlantis GreenTech project in terms of the surrounding sensitive ecosystem features and sensitive geographical areas (as indicated in Listing Notice 2 and 3 of the 2014 EIA Regulations, as amended in 2017) in proximity to the site. Based on the preliminary sensitivity screening undertaken for the site (as well as existing information for the area), the proposed Atlantis GreenTech facility is situated within the Cape West Coast Biosphere reserve and approximately 8 km west of Camphill Private Nature Reserve. In terms of the City of Cape Town (CoCT) urban conservation areas, the proposed site is approximately 10.5 km north-west of Philadelphia. The proposed development of the Atlantis GreenTech facility may have a visual impact on surrounding protected areas. However, the landscape has already been altered by industrial infrastructure (e.g. Ankerlig power station), and therefore the proposed development is anticipated to have limited visual impacts on sensitive visual receptors. Cape Flats Dune Strandveld is listed as being Endangered, whilst the Atlantis Sand Fynbos is listed as being Critically Endangered (Fynbos Forum, 2016). The proposed facility is situated in the Cape Fltats Dune Strandveld and immediately outside of the Atlantis Sand Fynbos vegetation type (east). The proposed facility is located in an area identified by the Biodiversity Network (BioNet) as *Other natural vegetation*, which means that activities in the area are negotiable, but low impact activities are preferable as the vegetation is still in a good condition and should be sustainably managed.

[1] Environmental Impact Assessment within the South African context exists of 2 distinct phases; namely, the Scoping Phase (of which this report is part), and the Environmental Impact Assessment Phase.

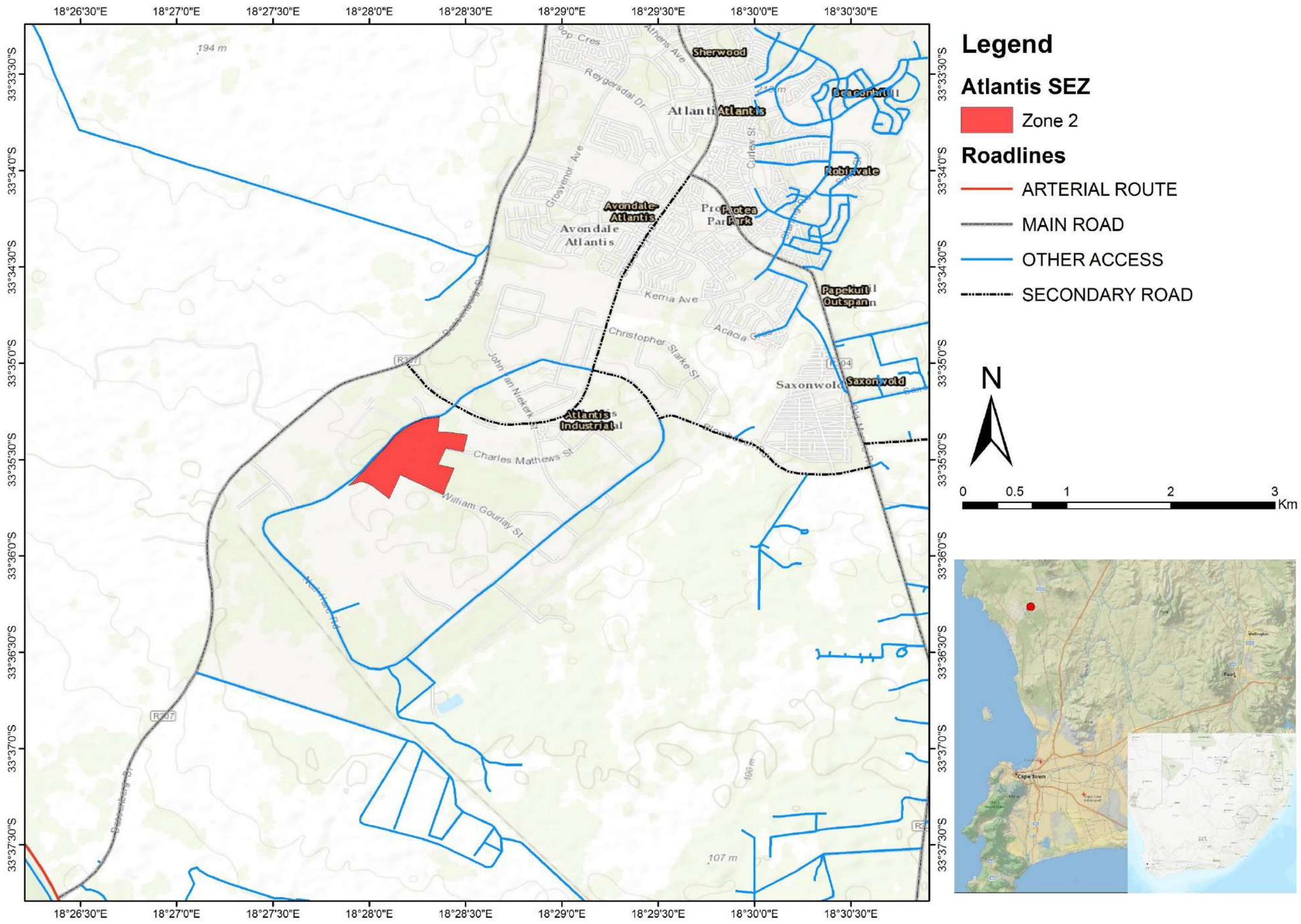

Figure 3.1: Regional Context of the Atlantis GreenTech site (i.e. Zone 2 of the Atlantis SEZ)

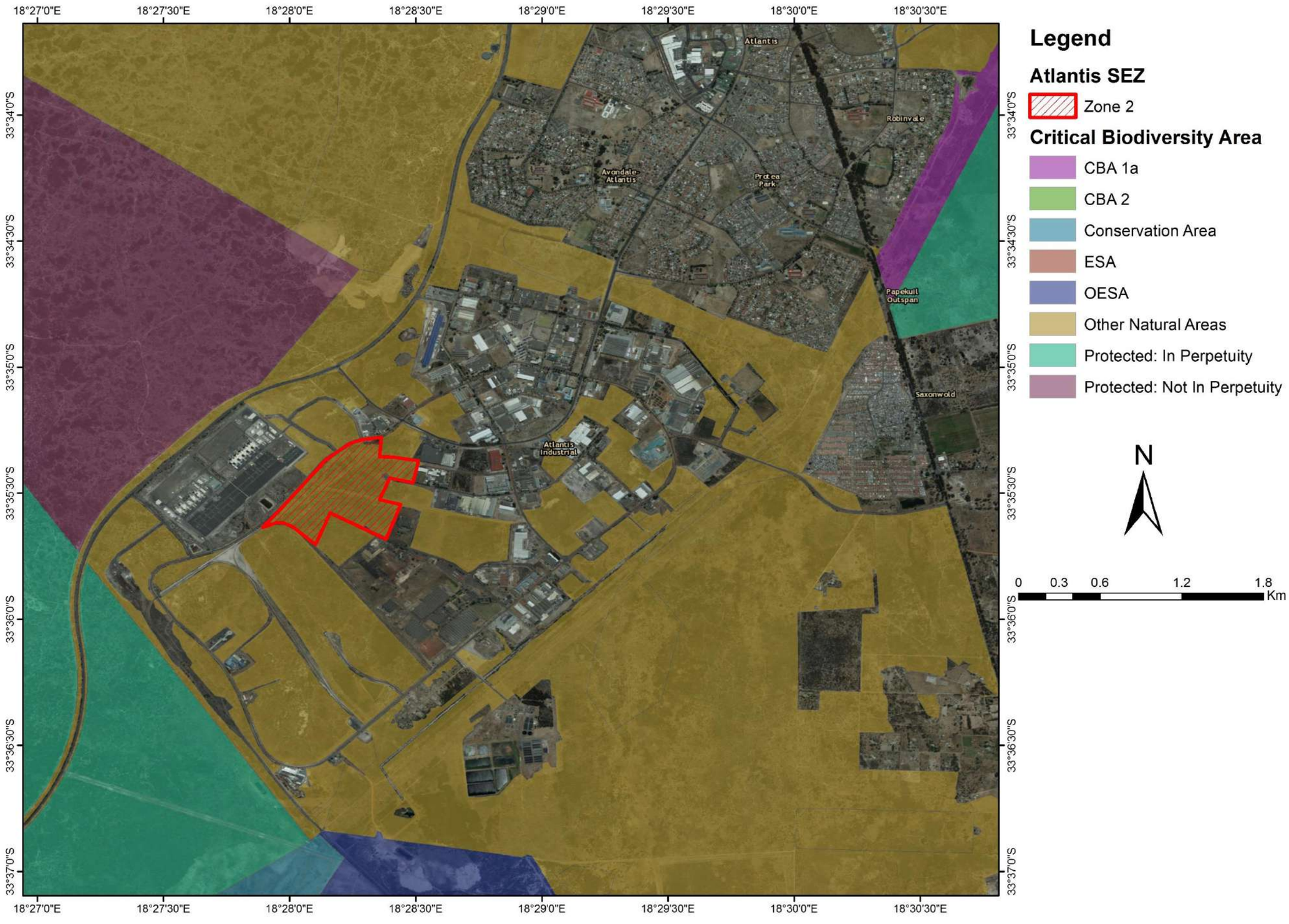

Figure 3.2: Composite map of potential sensitive ecological features in the area proposed for GreenTech Project (i.e. Zone 2 of the Atlantis SEZ)

3.3 BIOPHYSICAL ENVIRONMENT

3.3.1 Climatic Conditions

The mean annual rainfall of South Africa is shown in Figure 3.3below. The climate of the Western Cape is semi-arid with a late summer-autumn rainfall regime. Average rainfall of the area varies from 50 mm to 400 mm per year. Evaporation levels within this province exceed the annual rainfall. Climate conditions are extreme (i.e. very cold in winter and extremely hot in summer).

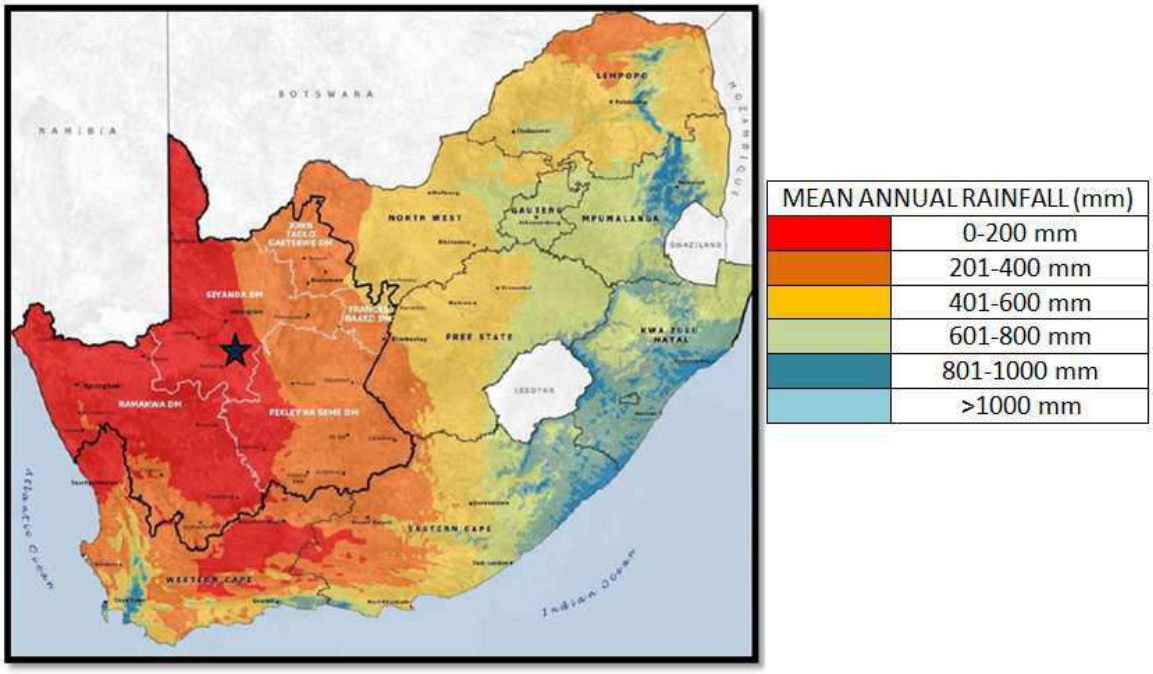

Figure 3.3: Mean Annual Rainfall Levels of South Africa (Source: Northern Cape PSDF, 2012)

In terms of climatic conditions, rainfall and temperature are arguably two of the key parameters requiring consideration during this assessment. The Atlantis area is characterised by Mediterranean climate with the majority of rainfall received during the winter months (approximately 39 mm on average during June/July), and with corresponding low temperatures experienced during July (approximately 10 degree Celsius on average) and maximum temperatures in February (approximately 22 degrees Celsius on average) (Figure 3.4).

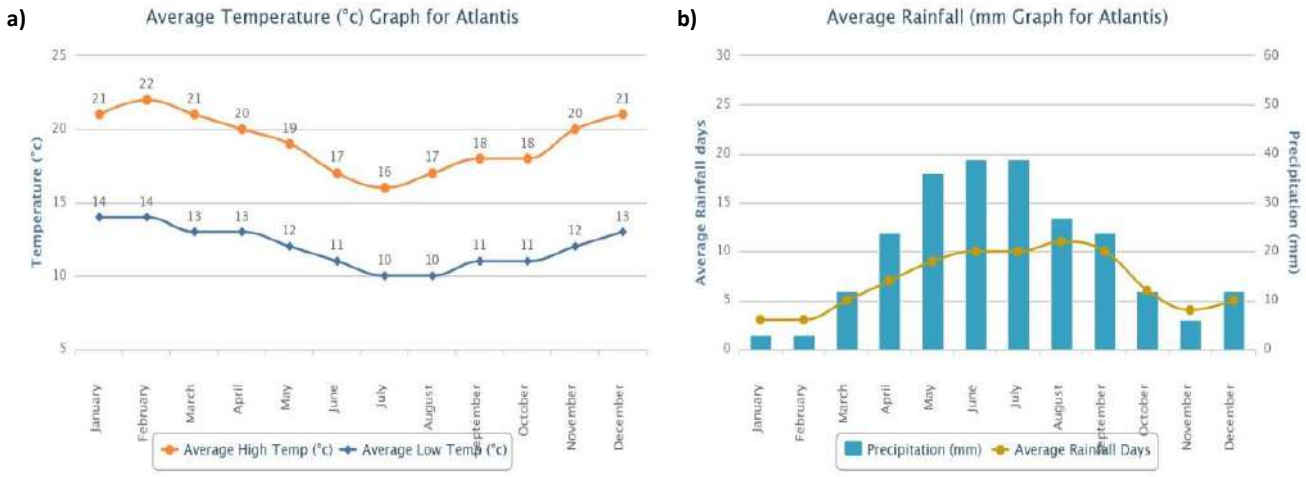

Figure 3.4: Long-term mean a) temperatures (°C); and b) mean precipitation (mm) for Atlantis, Western Cape (Worldweatheronline.com, 2015).

3.3.2 Geology

The geological formation of the CoCT is dominated by the Malmesbury Group which is composed of sedimentary rocks, mudstones and sandstones, the Cape Granite made up of metamorphic rocks containing feldspar, black mica and quartz, the Table Mountain Group composed of sedimentary rocks and sandstone, and the Sandveld Group. The Blaauwberg district is composed of the Malmesbury Group with overlaps of the Cape Granite deposits (CoCT Spatial Development Plan & Environmental Management Framework, 2011).

The Atlantis SEZ consists of low to moderate vegetated dunes, which are characteristic of the surrounding area. The dunes are of aeolian origin, underlain by fine- to medium- grained sand. These contain detrital carbonate (mainly finely broken sea shells) of the Witzand Formation (Figure 3.5). The sands associated with most of the sites in the SEZ are alkaline due to the high calcium content. Some parts of the SEZ contains aeolian deposits, however, the detrital carbonate (sea-shells) has been leached from the original dune sands and they are therefore most likely acidic.

3.3.3 Topography

The Blaauwberg district is characterised by plains and hills, with the plains extending from the Cape Peninsula to Atlantis. The coastal belt has relatively low lying hills of between 100m and 200m above sea level. The topography of the Atlantis area is relatively flat with minor slopes. The slope of the area is southward, and largely undeveloped, with the exception of partial agriculture (CoCT Spatial Development Plan & Environmental Management Framework, 2011). The vegetation of the area consists of the Cape Flats Dune Strandveld and the Atlantis Sand Fynbos (Mucina, *et al*., 2005). The area comprises of vegetated dunes of low to moderate size, with the site however in isolation from the main dune system. Based on site inspections (as well as ecological impact assessments conducted on the neighboring site), most parts of the Greater SEZ have been transformed by alien invasive plants, with some remaining parts dominated by the small trees of the Cape Flats Dune Strandveld and the partially disturbed Atlantis Sand Fynbos vegetation (McDonald, 2012).

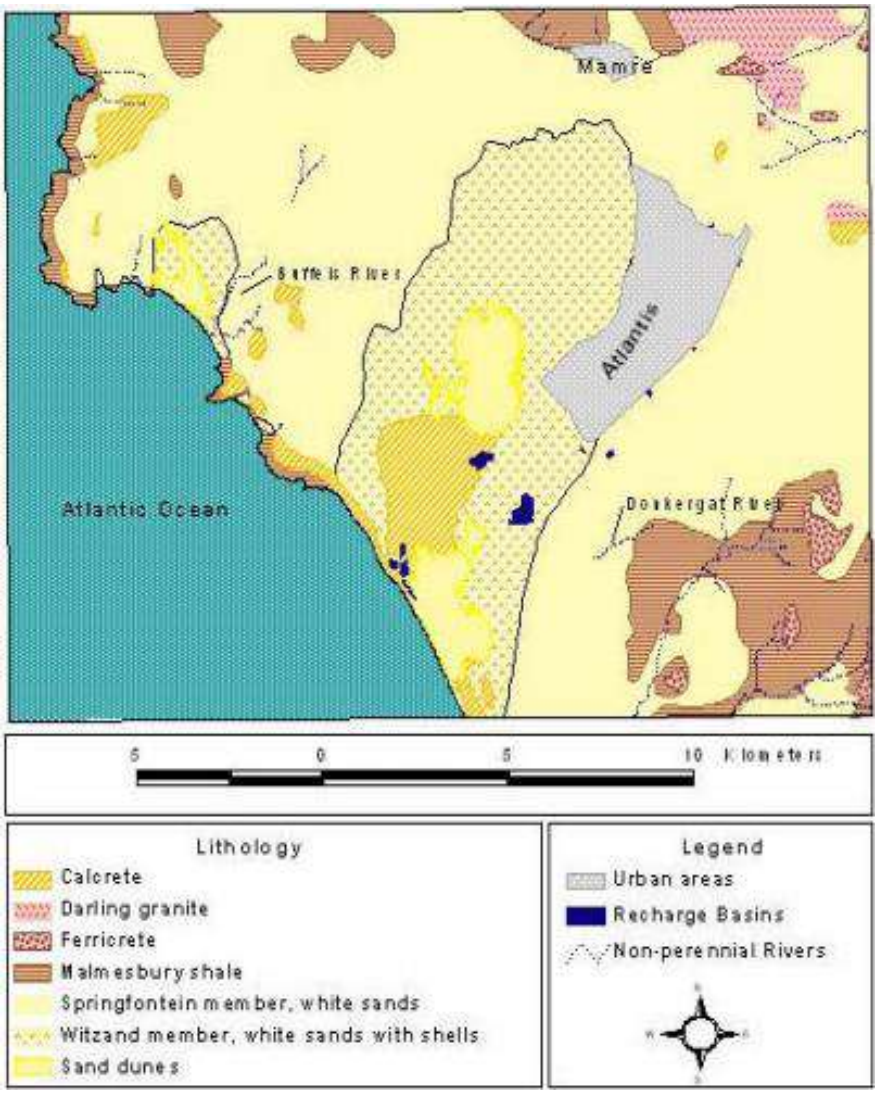

Figure 3.5: Geological features of the Atlantis Area

3.3.4 Agricultural Capability and Sensitivity

The limiting factor to agricultural expansion in the Atlantis area is water availability. While different soil types are suitable for differing crops cognisance must be taken of the need for appropriate crop selection, which can have a substantial influence on water requirements and the sustainability thereof. For example, the sandy soils of the Sandveld on the west coast are not suitable for most crops, but are highly suited to seed potato farming. However, the West Coast is a low rainfall area, and irrigation of these potato crops is heavily reliant on groundwater. These crops also rely heavily on pesticides and fertilisers, which can contaminate the runoff into the freshwater resources in the area.

The land capability of the proposed GreenTech facility and surrounds are moderately arable, whilst annual crops/planted pastures are located approximately south of the Site. Although the area is indicated as having a moderate potential productive farming, it is zoned for industrial land-uses and is not expected to be considered for agricultural activities. The Atlantis Industrial area is lies within the Atlantis Coastal Plain, which is characterized by white sandy soils that are not suitable for agriculture, making the area undesirable for agricultural activities (Atlantis Foundries Draft EIA Report, 2015).

3.3.5 Soil Types and Soil Potential

As a result of chemical and mechanical weathering of the Malmesbury Group geological form, the derived soils towards the eastern and north-eastern boundary of the Blaauwberg district are rich in clay. The site is characterised by low to moderate aeolin origin dunes of fine to medium grained sand, containing detrital carbonate. Majority of the site's sands are alkaline and the southern portion of the site consisting of Aeolian deposits acidic sands. As previously stated, the sandy soils of the Sandveld on the west coast are not suitable for most crops, but are highly suited to seed potato farming. However, the West Coast is a low rainfall area, and irrigation of these potato crops is heavily reliant on groundwater.

3.3.6 Existing Groundwater Data

The study area falls within the Berg River Water Management Area (WMA) and extends over portions of four Quaternary Catchments, namely G10L, G21A, G21B and G21D. The central parts of the study area are poorly drained due to the flat-lying nature of the terrain and an extensive cover of unconsolidated Cenozoic sands which absorb most of the rainfall. The easterly and northerly-flowing Modder and Groën Rivers drain the northern part of the area. The southern boundary of the study area is formed by the Sout River which discharges into the Atlantic Ocean between Riebeeckstrand and Melkbosstrand. The southerly flowing Swart and Diep Rivers occur to the east of the study area. The hydrogeological environment in the Blaauwberg district is diverse as a result of the variety of the geological formations. The area hosts fractured aquifers, intergranular aquifers, and fractured and intergranular aquifers (CoCT Spatial Development Plan & Environmental Management Framework, 2011).

According to the Preliminary Assessment done for the Ankerlig Power Station (Woodford, 2007), the Atlantis Primary Aquifer System (APAS) forms part of an almost continuous coastal primary aquifer system that extents from Cape Town in the south to the Olifants River in the north (Bredenkamp and Vandoolaeghe, 1982). The Aquifer System has been subdivided into a number of groundwater units namely: ƒ Silverstroom; ƒ Witzand; ƒ Brakkefontein; and Wesfleur. These units were defined according to the groundwater flow regime, as well as palaeo-channels and topographic 'highs' within the Malmesbury bedrock. Therefore groundwater can flow freely between the units in the APAS. Sediments of the Springfontein Member form the main transmissive zone of this Aquifer System. The Malmesbury rocks are generally regarded as forming the base of the APAS, although exploration drilling at the Koeberg Nuclear Power Station (Murray and Saaiman, 2000) and in the Langebaan Road Aquifer System has indicated that it is not uncommon to intersect substantial yields (>10 L/s) of groundwater in the Malmesbury bedrock where it is overlain by thick, saturated Cenozoic sands. At places along the coast there is evidence of groundwater emerging from fractures in the bedrock and flowing into the sea (Visser, 1972).

Table 3.1: Estimated Volumes of Groundwater stored in the Atlantis Primary Aquifer System (Bredenkamp and Vandoolaeghe, 1982)

Groundwater Resource Unit	Area (km^2)	Volume Groundwater in Storage ($x\ 10^6\ m^3$)	
		Total	Abstractable
Silverstroom	52.6	71	50
Witzand	44.8	189	130
Wesfleur	36.5	79	55*
TOTAL	-	**339**	**235**

Source: Bredenkamp and Vandoolaeghe (1983)
Note: The Matroosbaai GRU has been included in the Silverstroom Unit.
The extend / boundary of the Witzand GRU towards Melkbosstrand is unknown and was estimated.
* - boundary condition are unkown

3.3.7 Terrestrial Environment

Protected Areas

The proposed Atlantis GreenTech facility is situated within the Cape West Coast Biosphere reserve and approximately 8 km west of Camphill Private Nature Reserve. The site is also is approximately 1.1 km north-east of the White Sands Aquifer Protected Area, approximately, 3.16 km north-west of Klein Dassenberg Protected Area, approximately 5 km north-east of the Koeberg Private Nature Reserve and approximately 2.3 km north-east of three protected areas that are yet to be proclaimed. Furthermore, the site is approximately 9.3 km south-west of Burgherspost Wine Estate CapeNature stewardship site and the Pela Nature Reserve; as well as approximately 10.5 km west of Groenfontyn Nr 48 Voluntary Conservation Area, 15 km south-west of the Riverlands Nature Reserve (Figure 3.6). The proposed development of the Atlantis GreenTech facility may have a visual impact on surrounding protected areas. However, the landscape has already been altered by industrial infrastructure (e.g. Ankerlig power station), and therefore the proposed development is anticipated to have limited visual impacts on sensitive visual receptors.

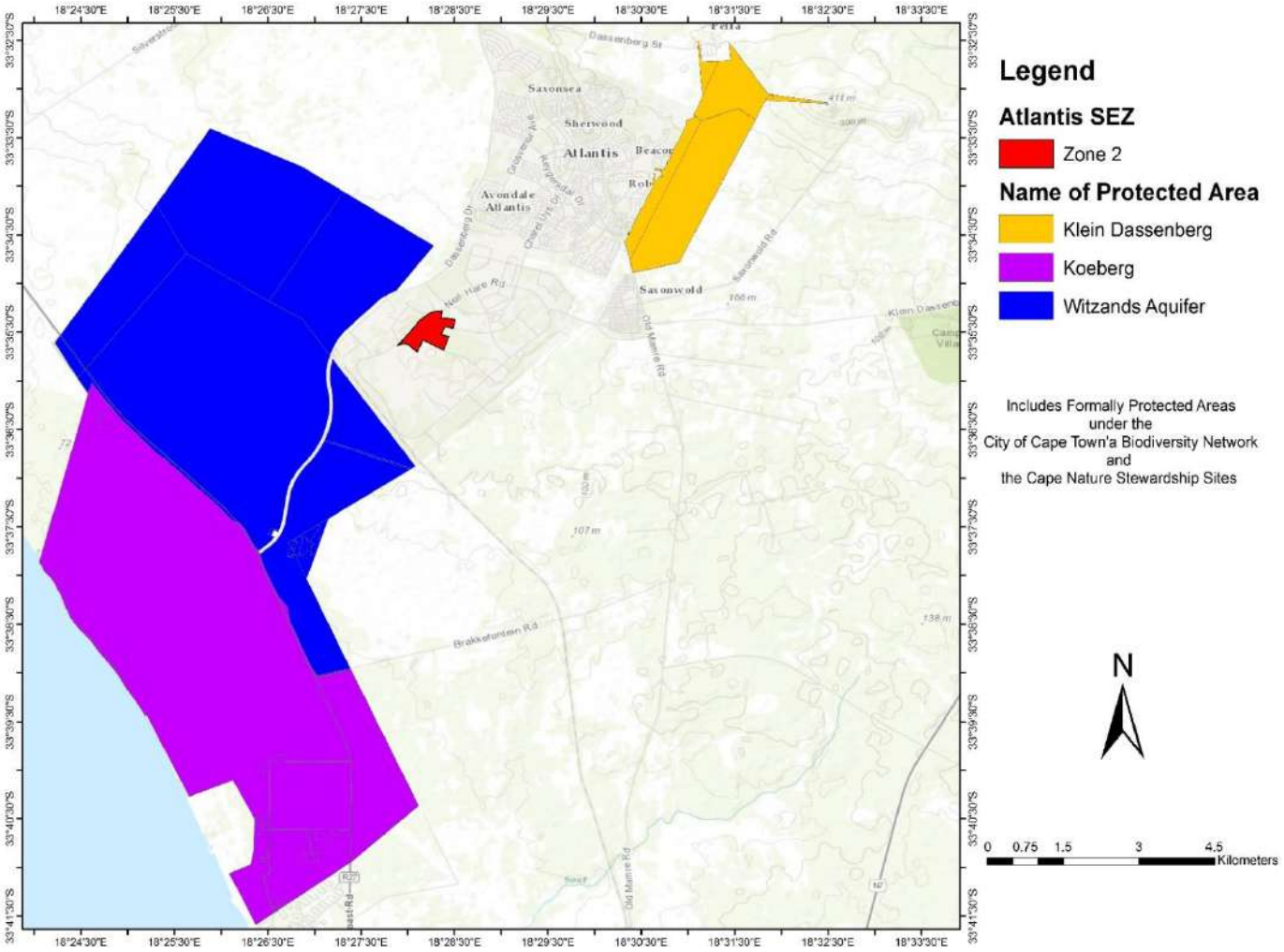

Figure 3.6: National Protected Areas within 15 km of the proposed Atlantis SEZ (Note: Klein Dassenberg is the protected area designated as a biodiversity offset for the Atlantis SEZ – refer to Appendix C of this report).

3.3.8 Threatened ecosystems (remaining extent)

A national list of threatened ecosystems is provided for in The National Environmental Management: Biodiversity Act (NEMBA) (No. 10 of 2004) (South Africa, 2004). There are three classes of threatened ecosystems namely: i) Critically endangered (CR) vegetation types which have less than 25 % of its original cover remaining, have undergone severe degradation of ecological structure, function or composition due to human activities, and are subject to an extremely high risk of irreversible transformation; ii) Endangered (EN) vegetation types have lost more than 60% of its original extent and have undergone degradation of ecological structure, function, or composition due to human activities, although they are not critically endangered ecosystems; and iii) Vulnerable (VU) vegetation types that have lost approximately 50 % of its original extent and are at a high risk of undergoing significant degradation of ecological structure, function or composition due to human activities, although they are not critically endangered ecosystems or endangered ecosystems.

Cape Flats Dune Strandveld is listed as being Endangered, whilst the Atlantis Sand Fynbos is listed as being Critically Endangered (South Africa, 2004). The proposed Atlantis GreenTech facility is partly situated in the Cape Flats Dune Strandveld vegetation types (Figure 3.7).

In response to high demand and need for development within the Atlantis urban edge, the City of Cape Town adopted a pro-active stance towards the conservation of the highly threatened biodiversity within the Atlantis district. The vegetation types in this area are Endangered or Critically Endangered and there are remnants of these vegetation types occurring within the urban edge.

The City of Cape Town consequently embarked on the Atlantis Industrial Incentives Scheme, which has also been termed a Land Banking Mechanism. The project entails the pro-active purchase or obtaining of land for formal conservation, which then forms part of the land bank against which development of natural areas within the Atlantis urban edge can be used as a debit against the proactively secured land and therefore act as an incentive for industrial development within the Atlantis urban edge.

The biodiversity offset property consists of Critically Endangered Atlantis Sand Fynbos in very good condition with a low level of alien invasive species infestation (very rare within an urban context) and contains several Red Listed threatened species. The subject property is therefore suitable for offsetting the fragments of natural vegetation within the urban edge, which are more fragmented and heavily infested with alien invasive species, however still of conservation importance due to the threatened status and possibility of threatened species present, but unlikely to be viable in the long term. **Refer to Appendix C of this Draft Scoping Report for the Biodiversity Offset Report, which covers for the loss of vegetation that will be incurred for this proposed development.**

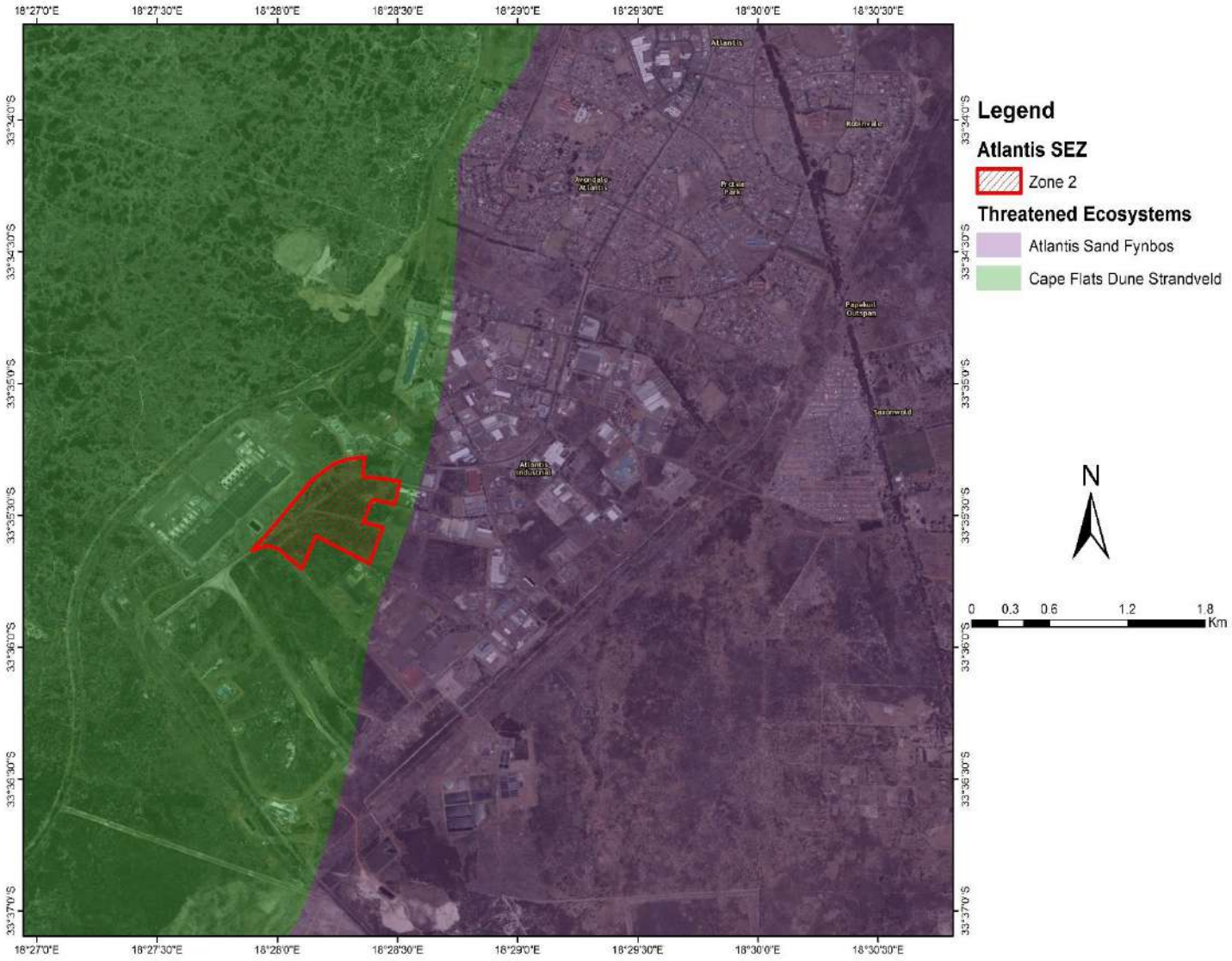

Figure 3.7: Threatened ecosystems in the area proposed for the GreenTech facility

3.3.8.1 Conservation planning and aquatic systems

The CoCT Biodiversity Network (BioNet) employed a systematic biodiversity planning approach to prioritise remnants of indigenous vegetation based on factors such as habitat connectivity and condition, as well as the distribution of threatened flora (Holmes *et al*., 2012). The CoCT BioNet spatial information includes Protected Areas, Critical Biodiversity Areas (CBAs), and Ecological Support Areas (ESAs). The protected areas are divided into i) conservation areas that have not yet been proclaimed, ii) protected areas proclaimed in perpetuity, and iii) protected areas proclaimed for a limited period. The BioNet also includes levels of CBAs and ESAs such as areas critical for landscape connectivity, irreplaceable core flora sites, and natural / transformed ecosystems of conservation significance.

The proposed Atlantis SEZ is located in an area identified by the BioNet as ***Other natural vegetation***, which entails that the activities in the area is negotiable, but low-medium impact activities are preferable as the vegetation in some parts of the site is still in a good condition and should be sustainably managed (refer to Table).

Table 3.2: Description, significance and permissible actions for the Critical Biodiversity Areas as defined by the CoCT BioNet (adapted from Holmes *et al*, 2012).

BioNet CBA category	Description	Significance of habitat	Objective	Action	Compatible action
Other natural vegetation[2]	Natural vegetation in endangered, vulnerable and least concern in good or restorable condition.	Local significance. Will result in impaired ability to meet targets, given that higher categories will not always be achievable.	Sustainable management within general rural land-use principles.	Negotiable. Low priority, no urgency. Invasive alien control.	Until BioNet is secured elsewhere, these areas may become important if required as biodiversity offset sites. **Higher impact activities could be considered on degraded portions**. Vegetation in good condition should be subject to low impact activities only.

3.3.9 Heritage Profile

3.3.9.1 Historical Background

The proposed development site is located on a portion of the original farm Brakkefontein. During the Verenigde Oosindichse Compangie (VOC) period, this farm occupied a strategic position in the *Slagtersveld* - the area around the outposts Ganze Kraal and Groene Kloof, largely used for grazing cattle, for slaughter, and for sale to passing ships. The farm continued to be occupied and was farmed by successive owners until 1855. A desktop heritage impact assessment will be included in the EIA Phase.

3.3.9.2 Archaeology

The terrain is largely flat and there are a number of dune fields. Where agriculture is not taking place, alien plant species have taken over. Previous archaeological surveys have described the poor visibility due to dense ground cover of alien vegetation as a limiting factor in surveying the site. A large number of Heritage and Archaeological Impact Assessments have been conducted in this area, including a survey by Hart *et al*. (2007). Hart *et al* reported that no significant archaeological material was recovered. A Heritage desktop will be conducted in EIA phase.

3.3.9.3 Palaeontology

The Palaeontological report of the neighbouring site suggested that peaty deposits occur in deeper sediments in the Atlantis SEZ. Traces of Pleistocene age terrestrial fossils have been located in sediments along the west bank of the Diep River entrance to Rietvlei and in sediments underlying Rietvlei. Early Pliocene marine mammal remains (whale bone) have been recovered from the Potsdam Sewerage pumping station (Graham Avery pers. observation), on Milnerton Beach at the Diep River estuary and Ysterplaats. During construction of the Koeberg Nuclear Power Station, Early Pliocene sediments yielded marine mammals, mainly whales. Further North, Middle Pleistocene terrestrial fossils and Middle Stone Age stone artefacts occur at Bokbaai. 20 km inland of

[2] The area proposed for the Atlantis SEZ is identified by the BioNet as this CBA category *Other natural vegetation*

Langebaan (Klein, *et al*. 2007), has yielded important Middle Pleistocene animal fossils (700 ka to 400 ka) and the earliest human remains (archaic *Homo sapiens*) found so far in the Western Cape. Late Pleistocene animal fossil occurrences occur along the coast from Melkbosstrand to Ysterfontein (Graham Avery pers. obs.) and at Elandsfontein. It is clear that the area is of palaeontological important and thus will be addressed as part of the EIA phase in a palaeontological impact assessment.

3.3.10 Socio-Economic Environment

Atlantis SEZ is located 7 km inland on the Cape West Coast. Important landmarks in the greater area are the Ankerlig Power Station, Koeberg Nuclear Power Station (approximately 9 km south-west of the site) and the small village of Mamre (approximately 4 km north of the site). The Atlantis Industrial was established as a recognized "growth-point" in the mid- 1970's and was established with infrastructure and services which could facilitate growth in the future. The Industrial area includes an already established set of services such as tarred road network, stormwater, sewer, street lighting and water supply services. The site is zoned **General-Industrial** and the area surrounding the proposed facility is visually dominated by industrial stacks, buildings and transmission lines.

- ***Demographic Profile***

In 2011 the population of 2011 Census suburb Atlantis was 67 491 and the number of households was 15 564. The average household size was 4.34 and Afrikaans is the most common spoken language in Atlantis (87%). As seen in Table 3.3 below, Gender distribution is relatively equal across the study area, with slightly more females than males. The age distribution, shown inFigure 3.8, is slightly younger than the average for the City of Cape Town, with a larger percentage aged under 17 years.

Table 3.3: Demographic Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011)

Atlantis Population	Male		Female		Total	
	Num	%	Num	%	Num	%
Black African	4 626	6.9%	4 087	6.1%	8 713	12.9%
Coloured	27 536	40.8%	29 835	44.2%	57 371	85.0%
Asian	144	0.2%	99	0.1%	243	0.4%
White	49	0.1%	51	0.1%	100	0.1%
Other	672	1.0%	391	0.6%	1 063	1.6%
Total	33 027	48.9%	34 463	51.1%	67 490	100.0%

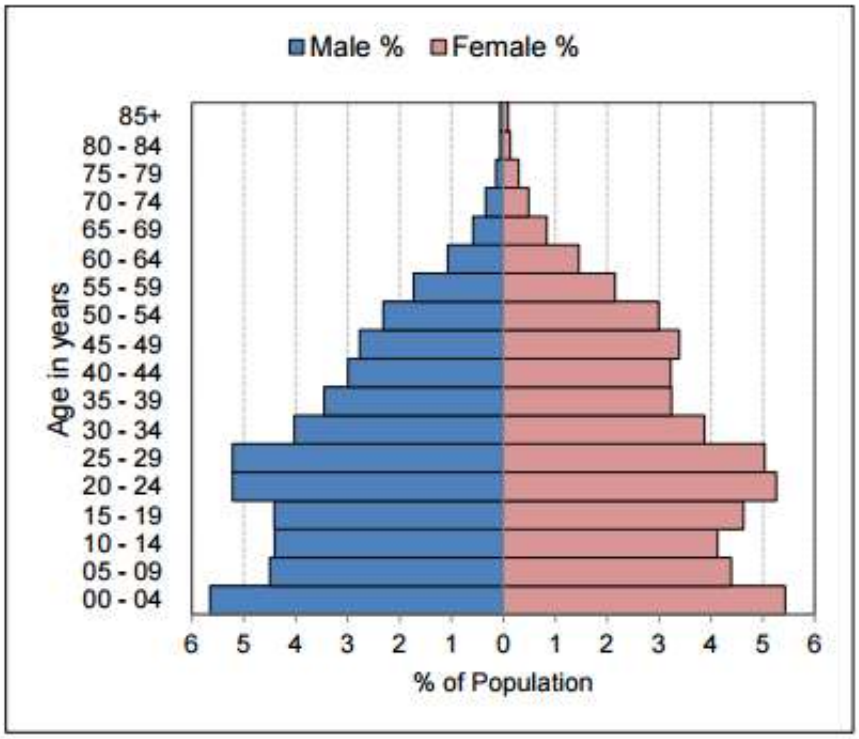

Figure 3.8: Age profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011)

The education profile of Atlantis, as depicted in Table 3.4, shows that approximately 29% of the Atlantis residents aged 20+ had completed Matric in 2011, and less than 4% had attained any further levels of education. The percentage with "no schooling" was slightly lower than that of Cape Town as a whole at 2 %. As a matter of contrast, the nearby town of Melkbosstrand had less than 2% with no education, over three quarters of the population had completed matric and just under a third had attained some level of tertiary education.

Table 3.4: Education Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011)

Atlantis Adult Education (for all aged 20+)	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No schooling	102	1.8%	681	1.9%	3	1.9%	0	0.0%	36	4.6%	822	2.0%
Some primary	621	10.7%	3 990	11.3%	15	9.4%	6	8.0%	63	8.0%	4 695	11.2%
Completed primary	303	5.2%	2 454	7.0%	9	5.7%	0	0.0%	18	2.3%	2 784	6.6%
Some secondary	2 874	49.6%	16 926	48.0%	57	35.8%	36	48.0%	219	28.0%	20 112	47.8%
Grade 12	1 728	29.8%	10 059	28.5%	60	37.7%	27	36.0%	345	44.1%	12 219	29.1%
Higher	156	2.7%	1 071	3.0%	9	5.7%	6	8.0%	78	10.0%	1 320	3.1%
Other	9	0.2%	60	0.2%	6	3.8%	0	0.0%	24	3.1%	99	0.2%
Total	5 793	100.0%	35 241	100.0%	159	100.0%	75	100.0%	783	100.0%	42 051	100.0%

- ***Employment and Income Profile***

The economically active population (i.e the labour force) of Atlantis comprises approximately 60% of the population, as seen in Table 3.5. 26% of Atlantis residents are unemployed which is slightly higher than the average for Cape Town as a whole. Of the economically active residents of Atlantis, approximately 12% commute to jobs outside Atlantis. The remainder is employed by local industries, and small-to-medium and micro-enterprises (SMME's). Furthermore, a significant number of jobs in Atlantis (approximately 3000) are held by outsiders who commute to the area, of which the majority fall into the educational and other professional occupations. In terms of monthly household income, over half of the households in Atlantis earn less than R6 400 per month (Table 3.6).

Table 3.5: Employment Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011)

Atlantis Labour Force Indicators	Black African	Coloured	Asian	White	Other	Total
Population aged 15 to 64 years	**6 366**	**38 769**	**168**	**75**	**819**	**46 197**
Labour Force	**4 467**	**22 641**	**120**	**51**	**618**	**27 897**
Employed	3 117	16 734	93	42	495	20 481
Unemployed	1 350	5 907	27	9	123	7 416
Not Economically Active	**1 899**	**16 128**	**48**	**24**	**201**	**18 300**
Discouraged Work-seekers	429	2 091	6	0	27	2 553
Other not economically active	1 470	14 037	42	24	174	15 747
Rates %						
Unemployment rate	30.22%	26.09%	22.50%	17.65%	19.90%	26.58%
Labour absorption rate	48.96%	43.16%	55.36%	56.00%	60.44%	44.33%
Labour Force participation rate	70.17%	58.40%	71.43%	68.00%	75.46%	60.39%

Table 3.6: Household Income Profile of the Atlantis Area (City of Cape Town Suburbs Census, 2011)

Atlantis Monthly Household Income	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No income	747	22.7%	1 164	9.7%	9	17.6%	3	12.5%	36	16.0%	1 959	12.6%
R 1 - R 1 600	933	28.4%	1 758	14.7%	12	23.5%	3	12.5%	39	17.3%	2 745	17.6%
R 1 601 - R 3 200	825	25.1%	2 268	18.9%	3	5.9%	0	0.0%	48	21.3%	3 144	20.2%
R 3 201 - R 6 400	465	14.2%	2 838	23.7%	9	17.6%	6	25.0%	51	22.7%	3 369	21.7%
R 6 401 - R 12 800	198	6.0%	2 316	19.3%	15	29.4%	0	0.0%	30	13.3%	2 559	16.5%
R 12 801 - R 25 600	72	2.2%	1 164	9.7%	0	0.0%	9	37.5%	15	6.7%	1 260	8.1%
R 25 601 - R 51 200	33	1.0%	375	3.1%	3	5.9%	3	12.5%	6	2.7%	420	2.7%
R 51 201 - R 102 400	6	0.2%	39	0.3%	0	0.0%	0	0.0%	0	0.0%	45	0.3%
R 102 401 or more	6	0.2%	48	0.4%	0	0.0%	0	0.0%	0	0.0%	54	0.3%
Unspecified	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	3 285	100.0%	11 970	100.0%	51	100.0%	24	100.0%	225	100.0%	15 555	100.0%

The economy of the Atlantis Area is dominated by industry and agriculture and contributes greatly to the economy of the Western Cape. Atlantis offers significant potential for economic development, and the City of Cape Town Metropolitan Municipality IDP (2004) identified Atlantis as one of the focal areas for residential upgrading. The Atlantis Industrial area is ideal and unique in its suitability and potential to contribute to industrial and economic development, specifically in terms of South Africa's power mix. It has been noted that there are no major tourist destinations in close proximity to the site (Figure 3.9 below), which adds to the suitability of this site for the proposed GreenTech facility. Due to the zoning of this area as a Special Economic Zone, earmarked for industrial development, the CoCT IDP indicates that industrial development is one of the most important economic sectors in the Western Cape, specifically in Atlantis, due to its locality and existing infrastructure.

3.3.11 Proximity to the Koeberg Nuclear Power Station's Urgent Protection Zone (UPZ)

The site is situated between the 5- 16 km Urgent Protective Action Planning Zone (UPZ) boundary of the Koeberg Nuclear Power Station (KNPS). Figure 3.9 indicates the location of the site in relation to the Koeberg UPZ.

It is difficult to estimate the exact number of people to be employed on a temporary and permanent basis as well as the amount sourced locally or non-locally, as this may only be finalized in the development phase (and may fluctuate). [3] However, it is important to provide a high-level assessment and anticipation of the population increase to the UPZ under the circumstance of a nuclear emergency. Thus, this increase needs to be tested against the KNPS Traffic Evacuation Model (TEM), as seen in Table 3.7 below.

Table 3.7: Anticipated population increase affecting the Koeberg Nuclear Power Station's TEM

Proposed Atlantis GreenTech facility's population increase for the Koeberg TEM					
PLEASE SPECIFY THE TYPE OF LAND USE:	SG CODE OR X,Y - COORDINATES	(GLA m²) / Nr OF DWELLING UNITS / HOUSEHOLDS	INCOME GROUP (LOW/MIDDLE/HIGH FOR TYPE OF LAND USE)	POP INCREASE FROM INSIDE UPZ (RESIDENTS, WORKERS, OTHER OCCUPENTS)	POP INCREASE FROM OUTSIDE UPZ (RESIDENTS, WORKERS, OTHER OCCUPENTS)
General Industrial (GI)	SG Code: C01600000000118300004 C01600000001183000000 C01600000000118300008 C01600000001183000074	GreenTech facility i.e. warehouse-type structure (also consisting of an office for personnel)	Skilled personnel working on site will be predominaely from a high income group, where as the unskilled personnel from low-middle income groups.	~200 (Staff, skilled and support labour, construction and/or operation)	~20 (Specialist shutdown and outage personnel to be mobilised into the area for short periods)

[3] This table will be updated in the development phase when the size of the project as well as the number of personnel needed is finalized by the Applicant.

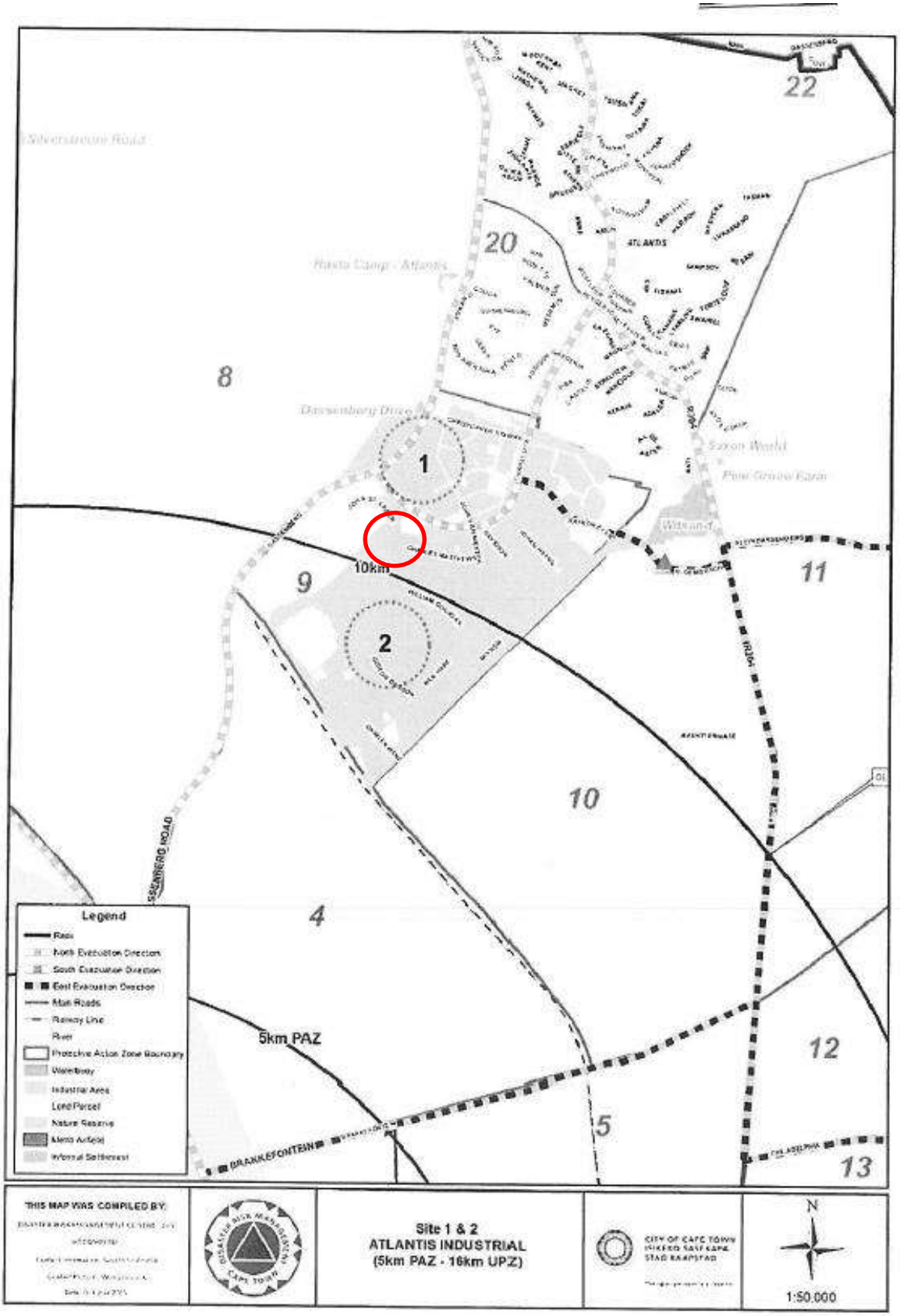

Figure 3.9: Location of preferred site **(highlighted in red)** in relation to the Koeberg UPZ

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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

CHAPTER 4

APPROACH TO EIA PROCESS AND PUBLIC PARTICIPATION

CONTENTS

4 APPROACH 4-2

4.1 LEGAL CONTEXT FOR THIS EIA 4-2

4.2 LEGISLATION AND GUIDELINES PERTINENT TO THIS EIA 4-5
4.2.1 National Legislation 4-5
4.2.3 International Finance Corporation Performance Standards 4-10

4.3 PRINCIPLES FOR SCOPING AND PUBLIC PARTICIPATION 4-11

4.4 OBJECTIVES OF THE SCOPING PROCESS 4-12

4.5 TASKS IN THE SCOPING PHASE 4-12

4.6 SCHEDULE FOR THE EIA 4-15

TABLES

Table 4.1: Listed Activities in GN R327, R325 and R324 that potentially form part of the proposed Atlantis GreenTech EIA 4-2

Table 4.2: Project schedule for the Atlantis GreenTech Project 4-16

FIGURES

Figure 4.1: Threatened ecosystems in the area proposed for the Atlantis GreenTech site. 4-4

4 APPROACH

This chapter presents the EIA Process to be conducted for the proposed development and gives particular attention to the legal context and guidelines that apply to this EIA, the steps in the Scoping and Public Participation component of the EIA (in accordance with Regulations 41, 42, 43 and 44 of GN R326), and the schedule for the EIA Process.

4.1 LEGAL CONTEXT FOR THIS EIA

Section 24(1) of the NEMA states:

- *"In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported to the competent authority charged by this Act with granting the relevant environmental authorization."*

The reference to "listed activities" in Section 24 of the NEMA relates to the regulations promulgated in GN R327, R326, R325 and R324 in Government Gazette 40772, dated 7 April 2017. The relevant Government Notices published in terms of the NEMA collectively comprise the NEMA EIA Regulations listed activities that require either a Basic Assessment, or Scoping and EIA (that is a "full EIA") be conducted. As noted in Chapter 1 of this Scoping Report, the proposed project requires a full EIA, as it particularly includes, *inter alia*, the inclusion of , the inclusion of Activity 2 listed in GN R325 (Listing Notice 2):

"15. The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; (ii) maintenance purposes undertaken in accordance with a maintenance management plan."

All the listed activities potentially forming part of this proposed development and therefore requiring Environmental Authorisation (EA) were included in the Notice of Intent to Develop (NID) and will form part of the Application Form for EA that will be prepared and submitted to the DEA&DP. At the time of release of this Draft Scoping Report to Interested and Affected Parties (I&APs) for review, the letter of acknowledgement from the DEA&DP stipulating the EIA Reference Number for the proposed project was pending. The listed activities potentially triggered by the proposed project are indicated in Table 4.1.

Table 4.1: Listed Activities in GN R327, R325 and R324 that potentially form part of the proposed Atlantis GreenTech EIA

Activity No.	Description as per the Regulations	Description as per the project specifics
GNR 327		
47	The expansion of facilities or infrastructure for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.	This project will entail the upgrading of the electrical infrastructure to service the facility.
GNR 325		

Activity No.	Description as per the Regulations	Description as per the project specifics
15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) Maintenance purposes undertaken in accordance with a maintenance management plan.	This project entails the clearance of approximately 33 ha of indigenous vegetation for the development of a GreenTech manufacturing facility.
GNR 324		
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Western Cape i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans.	This project entails the clearance of approximately 33 ha of indigenous vegetation for the development of a GreenTech manufacturing facility. A preliminary screening of the vegetation types for Zone 2 in the Atlantis SEZ indicated that the land parcels comprising this Zone consist of the Endangered Cape Flats Dune Strandveld.

Notes regarding the identification of potential listed activities:

- It should be noted that a precautionary approach was followed when identifying listed activities (for inclusion in the NID and Application for EA and to be assessed as part of the Scoping and EIA Process), i.e. if the activity potentially forms part of the project, it is listed. However, the final project description will be shaped by the findings of the EIA Process and certain activities may be added or removed from the project proposal. The DEA&DP and I&APs will be informed in writing of such amendments accordingly.
- Although internal roads are being constructed, **Activity 24 (ii) in GNR 327** relating to the construction of roads is not being applied for as the property falls **within the urban edge.**
- Based on the preliminary sensitivity screening undertaken for the site, the proposed project area does fall within a threatened ecosystem. A national list of threatened ecosystems is provided for in The National Environmental Management: Biodiversity Act (NEMBA) (No. 10 of 2004) (South Africa, 2004). There are three classes of threatened ecosystems namely: i) Critically endangered (CR) vegetation types which have less than 25 % of its original cover remaining, have undergone severe degradation of ecological structure, function or composition due to human activities, and are subject to an extremely high risk of irreversible transformation; ii) Endangered (EN) vegetation types have lost more than 60% of its original extent and have undergone degradation of ecological structure, function, or composition due to human activities, although they are not critically endangered ecosystems; and iii) Vulnerable (VU) vegetation types that have lost approximately 50 % of its original extent and are at a high risk of undergoing significant degradation of

ecological structure, function or composition due to human activities, although they are not critically endangered ecosystems or endangered ecosystems.

The proposed Site (Zone 2 of the Atlantis SEZ) is situated in the Cape Flats Dune Strandveld vegetation type, which is classified as an **Endangered ecosystem** (Fynbos Forum, 2016). The proposed site is also situated immediately West of the Atlantis Sand Fynbos vegetation type, a Critically Endangered ecosystem (Fynbos Forum, 2016), (Figure 4.1 below):

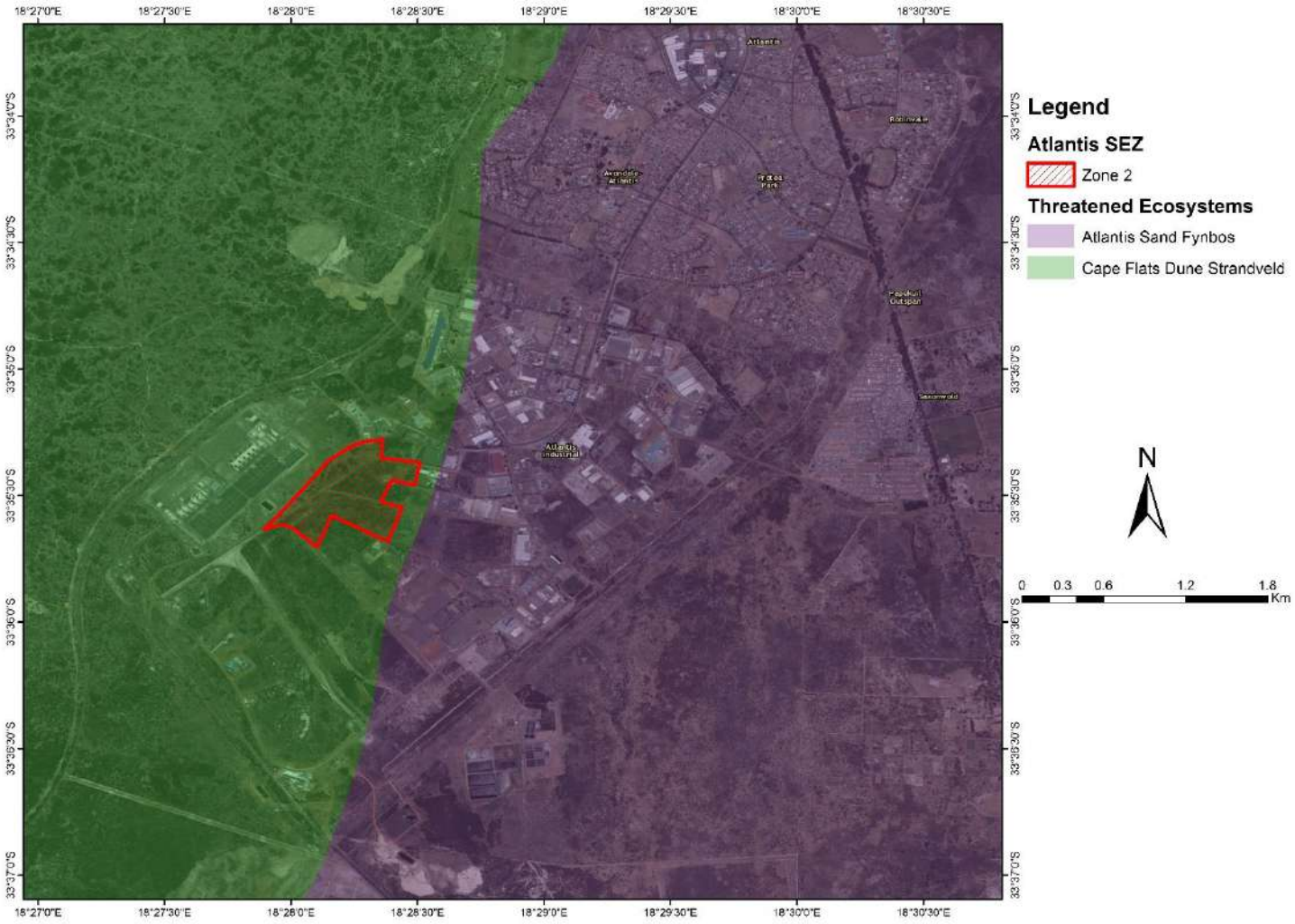

Figure 4.1: Threatened ecosystems in the area proposed for the Atlantis GreenTech site.

It is important to note that a biodiversity offset for the Atlantis SEZ (including the site for this proposed facility) been secured (**Appendix C**).

4.2 LEGISLATION AND GUIDELINES PERTINENT TO THIS EIA

The scope and content of this Scoping Report has been informed by the following legislation, guidelines and information series documents:

4.2.1 National Legislation

The Constitution of the Republic of South Africa (Act 108 of 1996)
The Constitution, which is the supreme law of the Republic of South Africa, provides the legal framework for legislation regulating environmental management in general, against the backdrop of the fundamental human rights. Section 24 of the Constitution states that:

- "Everyone has the right:
    - to an environment that is not harmful to their health or well-being; and
    - to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that –
        - prevent pollution and ecological degradation;
        - promote conservation; and
        - secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

Section 24 of the Bill of Rights therefore guarantees the people of South Africa the right to an environment that is not detrimental to human health or well-being, and specifically imposes a duty on the State to promulgate legislation and take other steps that ensure that the right is upheld and that, among other things, ecological degradation and pollution are prevented.

In support of the above rights, the environmental management objectives of proposed project is to protect ecologically sensitive areas and support sustainable development and the use of natural resources, whilst promoting justifiable socio-economic development in the towns nearest to the project site.

NEMA and EIA Regulations published under Chapter 5 of the NEMA on 8 December 2014, as amended on 7 April 2017 (GN R327, GN R326, GN R325 and GN R324)
The NEMA sets out a number of principles (Chapter 1, Section 2) to give guidance to developers, private land owners, members of public and authorities. The proclamation of the NEMA gives expression to an overarching environmental law. Various mechanisms, such as cooperative environmental governance, compliance and non-compliance, enforcement, and regulating government and business impacts on the environment, underpin NEMA. NEMA, as the primary environmental legislation, is complemented by a number of sectoral laws governing marine living resources, mining, forestry, biodiversity, protected areas, pollution, air quality, waste and integrated coastal management. Principle number 3 determines that a development must be socially, environmentally and economically sustainable. Principle Number 4(a) states that all relevant factors must be considered, inter alia i) that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied; vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised; and viii) that negative impacts on the environment and on peoples' environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

National Environmental Management: Biodiversity Act (Act 10 of 2004)
The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for "the management and conservation of South Africa's biodiversity within the framework of the NEMA, the protection of species and ecosystems that warrant national protection, and the use of indigenous biological resources in a

sustainable manner, amongst other provisions". The Act states that the state is the custodian of South Africa's biological diversity and is committed to respect, protect, promote and fulfil the constitutional rights of its citizens.

Furthermore, NEMBA states that the loss of biodiversity through habitat loss, degradation or fragmentation must be avoided, minimised or remedied. The loss of biodiversity includes inter alia the loss of threatened or protected species. Biodiversity offsets are a means of compensating for the loss of biodiversity after all measures to avoid, reduce or remedy biodiversity loss have been taken, but residual impacts still remain and these are predicted to be medium to high. Chapter 5 of NEMBA (Sections 73 to 75) regulates activities involving invasive species, and lists duty of care as follows:

- the land owner/land user must take steps to control and eradicate the invasive species and prevent their spread, which includes targeting offspring, propagating material and regrowth, in order to prevent the production of offspring, formation of seed, regeneration or re-establishment;
- take all required steps to prevent or minimise harm to biodiversity; and
- ensure that actions taken to control/eradicate invasive species must be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment.

An amendment to the NEMBA has been promulgated, which lists 225 threatened ecosystems based on vegetation types present within these ecosystems. Should a project fall within a vegetation type or ecosystem that is listed, actions in terms of NEMBA are triggered. Based on the preliminary sensitivity screening undertaken for the proposed site, none of the threatened ecosystems occur within the study area. This will be confirmed as part of the Ecological Impact Assessment study undertaken during the EIA Phase.

The National Heritage Resources Act (Act 25 of 1999)

The National Heritage Resources Act (Act 25 of 1999) (NHRA) introduces an integrated and interactive system for the managements of national heritage resources (which include landscapes and natural features of cultural significance).

Parts of sections 35(4), 36(3) (a) and 38(1) (8) of the NHRA apply to the proposed project:

Archaeology, palaeontology and meteorites:

Section 35 (4) No person may, without a permit issued by the responsible heritage resources authority:

a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
c) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves:

Section 36 (3) (a) No person may, without a permit issued by South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority:

a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Heritage resources management:
38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as:

a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
b) the construction of a bridge or similar structure exceeding 50 m in length;
c) any development or other activity which will change the character of the site –
    (i) exceeding 5000 m^2 in extent, or
    (ii) involving three or more erven or subdivisions thereof; or
    (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;
d) the re-zoning of a site exceeding 10 000 m^2 in extent; or
e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list "historical settlements and townscapes" and "landscapes and natural features of cultural significance" as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value. Section 38 (2a) of the NHRA states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted.

NOTE: A Desktop Heritage Assessment will be undertaken as part of the EIA Phase. Based on existing heritage information for the area and confirmation from Heritage Western Cape that there are no significant heritage resources present on *neighbouring* sites, it is unlikely that any significant heritage concerns will be raised.

Conservation of Agricultural Resources Act (Act 43 of 1983)
The objectives of the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) are to provide for the conservation of the natural agricultural resources of South Africa by the:

- maintenance of the production potential of land;
- combating and prevention of erosion and weakening or destruction of the water sources; and
- protection of the vegetation and the combating of weeds and invader plants.

The CARA states that no land user shall utilise the vegetation of wetlands (a watercourse or pans) in a manner that will cause its deterioration or damage. This includes cultivation, overgrazing, diverting water run-off and other developments that damage the water resource. The CARA includes regulations on alien invasive plants. According to the amended regulations (GN R280 of March 2001), declared weeds and invader plants are divided into three categories:

- Category 1 may not be grown and must be eradicated and controlled,
- Category 2 may only be grown in an area demarcated for commercial cultivation purposes and for which a permit has been issued, and must be controlled, and
- Category 3 plants may no longer be planted and existing plants may remain as long as their spread is prevented, except within the flood line of watercourses and wetlands. It is the legal duty of the land user or land owner to control invasive alien plants occurring on the land under their control.

Should alien plant species occur within the study area; this will be managed in line with the EMPr. Rehabilitation after disturbance to agricultural land is also managed by CARA. The DAFF reviews and approves applications in terms of these Acts according to their Guidelines for the evaluation and review of applications pertaining to renewable energy on agricultural land, dated September 2011.

National Water Act (Act 36 of 1998)

One of the important objectives of the National Water Act (Act 36 of 1998) (NWA) is to ensure the protection of the aquatic ecosystems of South Africa's water resources. Section 21 of this Act identifies certain land uses, infrastructural developments, water supply/demand and waste disposal as 'water uses' that require authorisation (licensing) by the Department of Water and Sanitation (DWS). Chapter 4 (Part 1) of the NWA sets out general principles for the regulation of water use. Water use is defined broadly in the NWA, and includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering the bed, banks, course or characteristics of a watercourse, removing water found underground for certain purposes, and recreation. In general a water use must be licensed unless it is listed in Schedule I, is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence. The Minister may limit the amount of water which a responsible authority may allocate. In making regulations the Minister may differentiate between different water resources, classes of water resources and geographical areas.

All water users who are using water for agriculture: aquaculture, agriculture: irrigation, agriculture: watering livestock, industrial, mining, power generation, recreation, urban and water supply service must register their water use. This covers the use of surface and ground water.

Section 21 of the Act lists the following water uses that need to be licensed:

a) taking water from a water resource;
b) storing water;
c) impeding or diverting the flow of water in a watercourse;
d) engaging in a stream flow reduction activity contemplated in section 36;
e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
g) disposing of waste in a manner which may detrimentally impact on a water resource;
h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
i) altering the bed, banks, course or characteristics of a watercourse;
j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
k) using water for recreational purposes.

Any activities that take place within a water course or within 500 m of a wetland boundary require a Water Use Licence (WUL) under the Section 21 (c) and Section 21 (i) of the NWA. The need for a Water Use Licence will be determined in the EIA Phase.

National Environmental Management: Air Quality Act (Act 39 of 2004)

The aim of this act is to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures.

Development Facilitation Act (Act 67 of 1995)

The Development Facilitation Act (Act 67 of 1995) (DFA) sets out a number of key planning principles which have a bearing on assessing proposed developments in light of the national planning requirements. The planning principles most applicable to the study area include:

- Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Promoting integrated land development in rural and urban areas in support of each other;
- Promoting the availability of residential and employment opportunities in close proximity to or integrated with each other;
- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Promoting the establishment of viable communities; and
- Promoting sustained protection of the environment.

Hazardous Substances Act (Act 15 of 1973)

This Act provides for the control of substances which may cause injury or ill health to, or death, of human beings by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature. To provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products.

Other Applicable Legislation

Other applicable national legislation that may apply to the proposed project include:

- Integrated Resource Plan for Electricity (IRP) (GN R400, 6 May 2011)
- Electricity Act (Act 41 of 1987);
- Electricity Regulations Amendments (August 2009);
- Energy Efficiency Strategy of the Republic of South Africa (Department of Minerals and Energy (DME) now operating as Department of Mineral Resources (DMR), March, 2005);
- Promotion of Administrative Justice Act (Act 2 of 2000);
- Integrated Resource Plan for South Africa (2010);
- Occupational Health and Safety Act (Act 85 of 1993), as amended by Occupational Health and Safety Amendment (Act 181 of 1993);
- Fencing Act (Act 31 of 1963);
- National Environmental Management: Protected Areas Act (NEM:PA) (Act 31 of 2004);
- National Environmental Management: Waste Management Act (Act 59 of 2008); and
- National Road Traffic Act (Act 93 of 1996).

4.2.2 Regional Planning Legislation

Blaauwberg District Spatial Development Plan and Environmental Management Framework (2011)

Due to the relatively large amounts of undeveloped land within the urban edge of the Blaauwberg district, combined with the fact that land outside the urban edge in the district is of lower agricultural quality than in other areas of the City, the district is viewed as a major growth axis of the City. However, the undeveloped land parcels within the Blaauwberg district contain some of the last remaining tracts of two of South Africa's rarest vegetation types, namely Sand Plain Fynbos and West Coast Renosterveld. From a biodiversity perspective, it is imperative that high conservation worthy remnants is protected and that ecological corridors are provided to allow for the movement of fauna and flora.

This situation often leads to conflict between environmental and developmental objectives within the district. The challenge is therefore to create a balance between these competing needs to ensure the sustainability of the district, the environment and communities. The form and location of development therefore needs to happen in a way that allows for the provision and accommodation of the development needs of a growing City, but still ensures the sustainable conservation of valuable natural assets. The direction, form and phasing of growth within the district needs to be managed and directed to ensure resource protection and linked infrastructure provision. The district SDP needs to begin to provide guidance in this regard, particularly in relation to the phasing of development in the short and medium term as a guide to infrastructure provision. The phasing of development in the district should take guidance from the City SDF in terms of overall City growth.

The removal of tax relief incentives for industrial development in Atlantis and the poor historic settlement patterns resulting in isolated nodes with very limited access to employment opportunities (Atlantis and Mamre) have been identified as pressures and constraints for this district that need to be addressed. Also to be addressed are high levels of unemployment, and the associated socio-economic pressures, particularly in Doornbach, Du Noon, Saxonworld, Witsand, Tafelozono and the outlying settlements of Atlantis and Mamre.

Guidelines, Frameworks and Protocols

- Public Participation Guideline, October 2012 (Government Gazette 35769);
- DEADP and DEA Guidelines published in terms of the NEMA EIA Regulations, in particular:
    - Guideline on Transitional Arrangements (DEADP, March 2013);
    - Guideline on Alternatives (DEADP, March 2013);
    - Guideline on Public Participation (DEADP, March 2013); and
    - Guideline on Need and Desirability (DEADP, March 2013);
- Information Document on Generic Terms of Reference for EAPs and Project Schedules (March 2013);
- Integrated Environmental Management Information Series (Booklets 0 to 23) (Department of Environmental Affairs and Tourism (DEAT), 2002 – 2005);
- Guidelines for Involving Specialists in the EIA Processes Series (DEADP; CSIR and Tony Barbour, 2005 – 2007);
- United Nations Framework Convention on Climate Change (1997); and
- Kyoto Protocol (which South Africa acceded to in 2002).

4.2.3 International Finance Corporation Performance Standards

In order to promote responsible environmental stewardship and socially responsible development, the proposed Atlantis GreenTech project will, as far as practicable, incorporate the environmental and social policies of the International Finance Corporation (IFC). These policies provide a frame of reference for lending institutions to review of environmental and social risks of projects, particularly those undertaken in developing countries.

Through the Equator Principles, the IFC's standards are now recognised as international best practice in project finance. The IFC screening process categorises projects into A, B or C in order to indicate relative degrees of environmental and social risk. The categories are:

- Category A - Projects expected to have significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented.
- Category B - Projects expected to have limited adverse social and/or environmental impacts that can be readily addressed through mitigation measures.
- Category C - Projects expected to have minimal or no adverse impacts, including certain financial intermediary projects.

Accordingly, projects such as the proposed Atlantis GreenTech project are categorised as Category B projects. The EA Process for Category B projects examines the project's potential negative and positive environmental

impacts and compares them with those of feasible alternatives (including the 'without project' scenario). As required for Category B projects a Scoping and EIA Process is being undertaken.

Other Acts, standards and/or guidelines which may also be applicable will be reviewed in more detail as part of the specialist studies to be conducted for the EIA.

4.3 PRINCIPLES FOR SCOPING AND PUBLIC PARTICIPATION

The public participation process (PPP) for this Scoping and EIA Process is being driven by a stakeholder engagement process that will include inputs from authorities, I&APs, technical specialists and the project proponent. Guideline 4 on "Public Participation in support of the EIA Regulations" published by DEAT in May 2006, states that public participation is one of the most important aspects of the EA Process. This stems from the requirement that people have a right to be informed about potential decisions that may affect them and that they must be afforded an opportunity to influence those decisions. Effective public participation also improves the ability of the Competent Authority (CA) to make informed decisions and results in improved decision-making as the view of all parties are considered.

An effective PPP could therefore result in stakeholders working together to produce better decisions than if they had worked independently.

- It provides an opportunity for I&APs, EAPs and the CA to obtain clear, accurate and understandable information about the environmental impacts of the proposed activity or implications of a decision;
    - Provides I&APs with an opportunity to voice their support, concern and question regarding the project, application or decision;
    - Enables an applicant to incorporate the needs, preferences and values of affected parties into its application;
    - Provides opportunities for clearing up misunderstanding about technical issues, resolving disputes and reconciling conflicting interests;
    - Is an important aspect of securing transparency and accountability in decision-making; and
    - Contributes toward maintaining a health, vibrant democracy.

To the above, one can add the following universally recognised principles for public participation:

- Inclusive consultation that enables all sectors of society to participate in the consultation and assessment processes;
- Provision of accurate and easily accessible information in a language that is clear and sufficiently non-technical for I&APs to understand, and that is sufficient to enable meaningful participation;
- Active empowerment of grassroots people to understand concepts and information with a view to active and meaningful participation;
- Use of a variety of methods for information dissemination in order to improve accessibility, for example, by way of discussion documents, meetings, workshops, focus group discussions, and the printed and broadcast media;
- Affording I&APs sufficient time to study material, to exchange information, and to make contributions at various stages during the assessment process;
- Provision of opportunities for I&APs to provide their inputs via a range of methods, for example, via briefing sessions, public meetings, written submissions or direct contact with members of the EIA team.
- Public participation is a process and vehicle to provide sufficient and accessible information to I&APs in an objective manner to assist I&APs to identify issues of concern, to identify alternatives, to suggest opportunities to reduce potentially negative or enhance potentially positive impacts, and to verify that issues and/or inputs have been captured and addressed during the assessment process.

At the outset it is important to highlight two key aspects of public participation:

- There are practical and financial limitations to the involvement of all individuals within a PPP. Hence, public participation aims to generate issues that are representative of societal sectors, not each individual. Hence, the PPP will be designed to be inclusive of a broad range of sectors relevant to the proposed project.
- The PPP will aim to raise a diversity of perspectives and will not be designed to force consensus amongst I&APs. Indeed, diversity of opinion rather than consensus building is likely to enrich ultimate decision-making. Therefore, where possible, the PPP will aim to obtain an indication of trade-offs that all stakeholders (i.e. I&APs, technical specialists, the authorities and the development proponent) are willing to accept with regard to the ecological sustainability, social equity and economic growth associated with the project.

4.4 OBJECTIVES OF THE SCOPING PROCESS

This Scoping Process is being planned and conducted in a manner that is intended to identify and provide sufficient information to enable the authorities to reach a decision regarding the scope of issues to be addressed in this EIA Process, and in particular to convey the range of specialist studies that will be included as part of the Environmental Impact Reporting Phase of the EIA, as well as the approach to these specialist studies.

As highlighted in Chapter 1 of this Scoping Report, within this context, the objectives of this Scoping Process (as per the 2014 EIA Regulations, as amended) are to:

- Identify and inform a broad range of stakeholders about the proposed development;
- Confirm the process to be followed and opportunities for stakeholder engagement;
- Clarify the project scope to be covered;
- Identify and confirm the preferred activity and technology alternative;
- Identify and confirm the preferred site for the preferred activity;
- Clarify the alternatives being considered and ensure due consideration of alternative options regarding the proposed development, including the "No-go" option;
- Conduct an open, participatory and transparent approach and facilitate the inclusion of stakeholder issues in the decision-making process;
- Identify and document the key issues to be addressed in the impact assessment phase (through a process of broad-based consultation with stakeholders) and the approach to be followed in addressing these issues; and
- Confirm the level of assessment to be undertaken during the impact assessment

4.5 TASKS IN THE SCOPING PHASE

This section provides an overview of the tasks being undertaken in the Scoping Phase, with a particular emphasis on providing a clear record of the PPP followed. As discussed in Chapter 1 of this Scoping Report, a GreenTech project is being proposed by the Applicant which requires a Scoping and EIA Process.

TASK 1: I&AP IDENTIFICATION, REGISTRATION AND THE CREATION OF AN ELECTRONIC DATABASE

Prior to advertising the EA Process in the local print media an initial database of I&APs (including key stakeholders and organs of state) was developed for the Scoping Process. This was supplemented with input from the EIA Project Managers, CSIR, and the Project Applicant, CoCT. A total of 95 I&APs were included on the project database in this manner. Appendix B of this Scoping Report contains the current I&AP database, which has been updated to include requests to register interest in the project, and comments received. At the time of compiling this Scoping Report, the database stands at 95 I&APs, who will be informed about the availability of the Draft Scoping Report for comment.

While I&APs have been encouraged to register their interest in the project from the start of the process, following the public announcements (refer to Task 2), the identification and registration of I&APs will be ongoing for the duration of the study. Stakeholders from a variety of sectors, geographical locations and/or interest groups can be expected to show an interest in the proposed project, for example:

- Provincial and Local Government Departments;
- Local interest groups, for example, Councillors and Rate Payers associations;
- Surrounding landowners;
- Farmer Organisations;
- Environmental Groups and NGOs; and
- Grassroots communities and structures.

In terms of the electronic database, I&AP details are being captured and automatically updated as and when information is distributed to or received from I&APs. This ongoing record of communication is an important component of the PPP. It must be noted that while not required by the regulations, those I&APs proactively identified at the outset of the Scoping Process will remain on the project database throughout the EIA Process and will be kept informed of all opportunities to comment and will only be removed from the database by request.

TASK 2: ANNOUNCEMENT OF THE SCOPING PROCESS

In order to notify and inform the public of the proposed project and invite I&APs to register on the project database, the project and EIA Process will be advertised in the Cape Times (English) and Die Burger (Afrikaans) concurrently with the release of this Draft Scoping Report. Copies of the advertisements placed will be contained within the Final Scoping Report.

Regulation 41 (2) (a) of the 2014 EIA Regulations require that a notice board providing information on the project and EIA Process is fixed at a place that is conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the application will be undertaken or any alternative site. A copy of the notice boards and proof of placement thereof will be included in the Final Scoping Report.

TASK 3: ONGOING COMMUNICATION AND CAPACITY BUILDING

The process for this Scoping and EIA aims to ensure that people are involved from the outset, that we proactively solicit the involvement of stakeholders representing all three dimensions of sustainability (i.e. biophysical, social and economic dimensions), and that we provide them with sufficient and accessible information to contribute meaningfully to the process. In this manner, the PPP aims to build the capacity of stakeholders to participate.

Within the context of the EIA Process, capacity building is not viewed as a "once off" event, but rather a series of events and/or information sharing which provides information on a continuous basis thereby building the capacity and knowledge of I&APs to effectively participate in the EIA Process and raise issues of concern.

One of the challenges facing the PPP is the diversity of South African society. Public participation by its very nature is a dynamic process with various sectors of society having varying needs, values and interests. The core question for public participation is "*How can I, the interested and affected party, meaningfully participate in the process?*" This varies according to the needs of I&APs. The PPP should be inclusive of all I&APs, and afford them the opportunity to raise their issues and concerns in a manner that suits them. Coupled with this South African society is characterized by varying socio-economic, literacy and language levels all of which need to be considered in the participation process. For example, certain I&APs may want to receive documentation only and not attend meetings, some I&APs may want to only attend meetings, other I&APs may not want to attend meetings and send their comments in writing, and some I&APs may want to be actively involved throughout the process.

In order to accommodate the varying needs of I&APs and develop their capacity to participate in the process, information sharing forms an integral and ongoing component of the EIA Process to ensure effective public participation. The following provides an overview of how information sharing is being effected throughout the EIA Process in order to develop the capacity of I&APs to effectively engage in the PPP:

- **Website** – placing EIA related project information on the project website https://www.csir.co.za/environmental-impact-assessment
- **Language** – encouraging I&APs to use the language of their choice at meetings or during telephonic discussions and providing translations at meetings in Afrikaans, when required;
- **Newspaper Advertisements** *(to be placed at the same time as the release of this DSR)* - requesting I&APs to register their interest in the project, raise issues of concern or notifying I&APs of potential public meetings (if required to be held);
- **Report Distribution** – providing hard copies of the Scoping and EIA Reports at local library (Avondale Public Library) for I&APs to access for viewing. Electronic copies of the reports will also be loaded onto the project website for access. Key organs of state will be provided with hard copies and/or electronic copies of the reports;
- **Public Meeting** – a public meeting could possibly be held during the review of the EIA Report if warranted and if there is substantial public interest during the EIA Phase. Furthermore, telephonic consultations with key I&APs will take place, upon request; and
- **Focus Group Meetings** – may be undertaken (depending on the interest in the projects) with key I&AP groups (Councillors, ratepayers association, surrounding landowners, affected organs of state, environmental organisations).

Documents will continuously being posted onto the project website (https://www.csir.co.za/environmental-impact-assessment) as and when they become available and I&APs will be notified accordingly.

TASK 4: CONSULTATION WITH AUTHORITIES

All public participation documentation will reach the DEA&DP, as well as other relevant authorities and organs of state included on the I&AP database. Comments received on the NID and the Scoping Process from the authorities will be included in the Comments and Response Trail as an appendix to the Final Scoping Report (which will be submitted to the DEA&DP for decision-making in line with Regulation 22 of the 2014 EIA Regulations, as amended).

TASK 5: TECHNICAL SCOPING WITH PROJECT PROPONENT AND EIA TEAM

The Scoping Process has been designed to incorporate two complementary components: a stakeholder engagement process that includes the relevant authorities and wider I&APs; and a technical process involving the EIA team and the project proponent.

The purpose of the technical Scoping Process is to draw on the past experience of the EIA team and the project proponent to identify environmental issues and concerns related to the proposed project, and confirm that the necessary specialist studies have been identified. The specialist team has worked with the CSIR on several other projects in the Western Cape, as well as projects specifically in the Atlantis SEZ. The specialists were therefore able to identify issues (as shown in Chapter 6 of this Scoping Report) to be addressed in the EIA based on their experience and knowledge of the area and type of activity. Their inputs have informed the scope and Terms of Reference for the specialist studies (as included in Chapter 7 of this Scoping Report). The findings of the Scoping Process with the public and the authorities will inform the specialist studies, which will only be completed after the public Scoping Process has been finalised.

TASK 6: REVIEW OF THE DRAFT SCOPING REPORT (CURRENT STAGE)

The process is currently at this stage, when I&APs are invited to review the Draft Scoping Report and register as an I&AP. This stage and the forthcoming steps in the Scoping Process are presented below.

This stage in the process entails the release of the Draft Scoping Report for a 30-day period for public review (in line with Regulation 3 (8) and Regulation 21 (1) of the 2014 EIA Regulations, as amended). All I&APs on the project database will be notified in writing of the release of the Draft Scoping Report for review. Please note that the Competent Authority (DEA&DP) is included in this review process, as comments from the Competent Authority on the Draft Scoping Report are **required** by Regulation 21 (1) of the 2014 EIA Regulations.

The following mechanisms and opportunities will be utilised to notify I&APs of the release of the Draft Scoping Report for comment:

- **Correspondence to I&APs** - Letter to notify I&APs of the the project and the opportunity to comment on the Draft Scoping Report. The comment period will be sent via registered mail and email (where postal, physical and email addresses are available for I&APs and organs of state on the project database).
- **Availability of Information** - the Draft Scoping Report will be made available for review by I&APs and key authorities through the following means:
    - The Draft Scoping Report will be placed on the project website (https://www.csir.co.za/environmental-impact-assessment)
    - The Draft Scoping Report will be placed at the Avondale Public Library
    - Key authorities will be provided with either a hard copy and/or CD of the Draft Scoping Report.
    - Telephonic consultations will be held with key I&AP and organs of state groups, as necessary.

Following the 30 day review of the Draft Scoping Report, all issues will be captured in an comments and responses trail which will be included in the Final Scoping Report to be submitted to the Competent Authority (DEA&DP).

TASK 7: SUBMISSION OF SCOPING REPORTS TO THE DEA FOR DECISION-MAKING

An updated Scoping Report, reflecting the comments received during the above mentioned commenting period, will be submitted to the DEA for decision-making in line with Regulation 22 of the 2014 EIA Regulations. In line with best practice, I&APs on the project database will be notified of the submission of the Scoping Reports to the DEA for decision-making.

The Final Scoping Report that is submitted for decision-making will also include proof of the PPP that was undertaken to inform organs of state and I&APs of the availability of the Draft Scoping Report for the 30 day review (during Task 7, as explained above). It will also include proof of the newspaper advertisements placed. Site notices places and all other communications with I&APs.

The DEA&DP will have 43 days (from receipt of the Final Scoping Report) to either accept the Scoping Reports with or without conditions, or refuse EA. This step marks the end of the PPP for the Scoping Phase. The PPP for the subsequent EIA Phase is presented in the Plan of Study for EIA (Chapter 7).

4.6 SCHEDULE FOR THE EIA

The proposed schedule for the EIA, based on the legislated EIA Process, is presented in Table 4.2. The table highlights actions going forward for the proposed project. It should be noted that this schedule could be revised during the EIA Process, depending on factors such as the time required for decisions from authorities.

Table 4.2: Project schedule for the Atlantis GreenTech Project

	Sep-18				Oct-18				Nov-18				Dec-18				Jan-19				Feb-19				Mar-19				Apr-19				May-19				Jun-19				Jul-19			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Prepare Scoping Report and Plan of Study for EIA (PSEIA) and Application for EA																																												
Client review																																												
Printing of reports (DCP printers - 1 week)																																												
Scoping Report public review period. Including Public Meeting (PPP 2)																																												
Collate comments received and integrate into Scoping Report																																												
Client sign-off and printing (DCP)																																												
Submission of Final Scoping Report to Competent Authority																																												
Specialist studies Draft Reports due for review by CSIR and Green Cape																																												
CSIR and Green Cape review of specialist studies																																												
Competent Authority to Accept Scoping Reports or Refuse EA.																																												
Prepare EIR and EMPR																																												
Green Cape review of EIR and EMPR																																												
Printing of reports (DCP printers - 1 week)																																												
EIR public review period																																												
Collate comments received and integrate into EIR and EMPR																																												
Client sign-off and printing (DCP)																																												
Submission of EIR to Competent Authority																																												
Competent Authority to Grant or Refuse EA																																												
Notify I&APs of the EA decision.																																												

NOTES:

Client review of scoping Report: 26 Sept

Date of release of Scoping Report: 28 Sept

Final Specialist studies must be in before Dec break

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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

CHAPTER 5

PROJECT ALTERNATIVES

CONTENTS

5 PROJECT ALTERNATIVES 5-2

5.1 NO-GO ALTERNATIVE 5-2

5.2 LAND-USE ALTERNATIVE 5-4

5.3 TECHNOLOGY ALTERNATIVES 5-5
- 5.3.1 Technological Alternative 1: Wind 5-5
- 5.3.2 Technological Alternative 2: Photo Voltaic (PV) 5-5
- 5.3.3 Technological Alternative 3: Inverters 5-5

5.4 LAYOUT ALTERNATIVES 5-6

5.5 LOCATION/SITE ALTERNATIVES 5-6
- 5.5.1 Key environmental attributes 5-7
- 5.5.2 Spatial character 5-7
- 5.5.3 Proximity to sensitive human structures 5-7
- 5.5.4 Preferred site alternative and site selection matrix 5-10

5.6 CONCLUDING STATEMENT ON PREFERRED ALTERNATIVES 5-11

TABLES

Table 5.1: Costs and benefits of implementing the 'no-go' alternative (i.e. no GreenTech facility development). 5-3

Table 5.2: Potentially sensitive features considered for the preferred location of the Atlantis GreenTech site. 5-9

Table 5.3: Site selection matrix for determining the preferred location of the Atlantis GreenTech site. 5-10

FIGURES

Figure 5.1: Locality of the proposed Atlantis GreenTech site (Zone 2 - highlighted in blue) 5-8

5 PROJECT ALTERNATIVES

The 2014 NEMA EIA Regulations (GN R326), as amended on 7 April 2017, define "alternatives", in relation to a proposed activity, as "*different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:*

- property on which or location where the activity is proposed to be undertaken;
- type of activity to be undertaken;
- design or layout of the activity;
- technology to be used in the activity; or
- operational aspects of the activity; and
- includes the option of not implementing the activity".

Additionally, Appendix 2 of the 2014 NEMA EIA Regulations (as amended) provides the objectives of the Scoping Process in relation to alternatives as **identification and confirmation** of the:

- **preferred activity and technology** alternative through an impact and risk assessment and ranking process; and
- **preferred site**, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment.

The Scoping Report is therefore required to provide a full description of the process followed to reach the proposed preferred activity, technology, site and location within the site, including details of all the alternatives considered and the outcome of the site selection matrix.

The need to include investigation and assessment of impacts associated with alternatives to the proposed project within an EIA are also highlighted within Sections 24(4) (b) (i) and 24(4A) of the NEMA. In addition, Section 24O (1)(b)(iv) also requires that the Competent Authority, when considering an application for EA, takes into account "where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment".

As such, the assessment of alternatives should, as a minimum, include the following:

- The consideration of the no-go alternative as a baseline scenario;
- A comparison of the reasonable and feasible alternatives; and
- Providing a methodology for the elimination of an alternative.

This chapter discusses the selection of the preferred alternatives that will be assessed as part of the EIA Phase.

5.1 NO-GO ALTERNATIVE

The no-go alternative assumes that the proposed project will not go ahead i.e. the proposed Atlantis GreenTech project is not constructed and developed into an operational energy facility. This alternative entails that the development of the proposed GreenTech facility would not drive any environmental change and result in no environmental impacts on the site or surrounding local area. It provides the *status quo* or baseline against which other alternatives are compared and will be considered throughout the report. At present the proposed site is zoned for "General Industrial" use, and is not being utilized (natural vegetation). Preliminary investigations indicate that area is classified as non-arable and low potential grazing land – hence, utilising the area for continued agricultural land-use is not a preferred or sustainable alternative.

The costs/implications and benefits of implementing the 'no-go' alternative is presented in Table 5.1. Implementing the 'no-go' alternative entails that this **GreenTech facility will not be contributing to environmental, social and economic change** (positive/negative) in the area surrounding the proposed project site.

Table 5.1: Costs and benefits of implementing the 'no-go' alternative (i.e. no GreenTech facility development).

COSTS	BENEFITS
• No opportunities for investment in the green economy in Atlantis and the Western Cape will arise through means of GreenTech manufacturing by this project at this location. • A GreenTech facility is not present to assist Government in achieving its renewable energy generation targets. • No diversification of the local economy. • The local municipality's vulnerability to economic downturns will increase because of limited access to capital. • No additional employment opportunities will be created. Both skilled and unskilled employment opportunities are anticipated to be created for the construction and operation of the GreenTech facility. • No additional opportunities for skills transfer and education/training of local communities created. • Potential positive socio-economic impacts likely to result from the project, such as increased local spending and the creation of local employment opportunities, will not be realised.	• No threatened vegetation will be disturbed or removed. • The current landscape character will not be altered by a GreenTech facility. • No influx of people (mainly job-seekers), driven by the development of a facility will occur, which entails that there would not be additional pressures on the infrastructure and service delivery of local municipalities and towns in the area. • No fragmentation of habitat or disturbance to faunal species.

South Africa is an energy intensive country, largely as a result of our historic economic focus on energy intensive industries such as mining and primary metal processing. With current energy and electricity demands projected to continue increasing, new investments in electricity generation capacity are required. The planned roll-out of renewable energy in South Africa will result in investments of R10-20 billon every year for the next 20 years. The manufacturing industry to support this renewable energy roll-out will be significant. It is estimated that about 2200 blue collar jobs will be created in this new industry. The Provincial strategic vision and intent is that the Western Cape has a secure supply of quality, reliable, clean, safe energy, which delivers social, economic and environmental benefits to the Province's citizens, while also addressing the climate change challenges facing the region and eradicating energy poverty. The Western Cape Provincial Government and the City of Cape Town (CoCT) have joined together in support of the renewable energy industry.

On the other hand, the development of the proposed Atlantis GreenTech project will also result in negative environmental impacts (as detailed in Chapter 6 of this report). However, given the socio-economic and environmental realities relevant to the project area; it is expected that the positive impacts of the proposed project will outweigh its negative impacts. Importantly, CSIR anticipates that the balance of positive and negative impacts resulting for the proposed project will result in a nett benefit when compared to the no-go alternative.

In summary, it is generally assumed that the "no-go" alternative will not directly drive any negative environmental and social impacts. However, the assumption that the *status quo* merely represents an environmentally-neutral, and value-neutral stable state is incorrect on at least two accounts. Firstly, the status quo may be unsustainable or unjust (e.g. the *status quo* might be driving the growth and spread of alien invasive species; or might prevent a highly marginalised community from accessing employment). It follows that merely allowing an unsustainable/unjust *status quo* to continue, will not result in a value-neutral state where no further negative impacts will manifest as a result of the proposed project not being developed. Secondly, socio-

economic and environmental processes do not cease to function in a *status quo* environment. Accordingly, the vagaries of changing environmental and macro/micro economic conditions will continue to result in both positive and negative impacts to the local environment; regardless of whether the proposed project is developed or not. It is therefore important not to reflectively ascribe neutral values to the no-go option.

Similarly, developers often depreciate the *status quo* as not being able to provide positive benefits to the local community in the absence of a proposed project. Clearly, such an approach also offends against the principle that the *status quo* is not a neutral condition.

However, given the socio-economic and environmental realities of the receiving environment (Table 5.1); the costs of the no-go alternative appear to outweigh its potential benefits. Based on the above, the "no-go" alternative is **not deemed to be the preferred alternative** but will be taken forward and indirectly considered within the EIA Phase as this alternative will serve as the baseline against which the potential impacts associated with the project are assessed.

5.2 LAND-USE ALTERNATIVE

When determining the appropriate land-use activity for the Atlantis GreenTech project site, there are several aspects that are essential in order to justify the rationale for this activity. The Integrated Resource Plan for South Africa for the period 2010 to 2030 (referred to as "IRP2010") and the IRP Updated Report (2013) proposes to secure 17 800 MW of renewable energy capacity by 2030. The DOE subsequently has entered into a bidding process for the procurement of 3725 MW of renewable energy from IPPs by 2016 and beyond to enable the Department to meet this target. On 18 August 2015, an additional procurement target of 6300 MW to be generated from renewable energy sources was added to the REIPPPP for the years 2021 - 2025, as published in Government Gazette 39111. The additional target allocated for wind energy, solar PV energy, and solar CSP energy is 3040 MW, 2200 MW, and 600 MW respectively. These are substantial amounts, translating to approximately 200 wind turbines annually and about 3 000 000 square meters of PV. Broadly, the cost to install wind or PV is R15-30mil per MW, in other words, the investment on these installations will be in the order of R10 – 20 billion per year, every year for the next 20 years.

The Department of Energy, aided by the National Treasury will issue a request for proposals (RFP). The conditions of this RFP will be based on BEE, local content, project readiness and price. The local content requirement will lead to the manufacture of components in South Africa. This anticipated local content will result in an investment of R1bn in manufacturing facilities. The combined turnover of these factories will be in the order of R 6 – 7 billion and employ approximately 6000 blue collar workers.

The Provincial strategic vision and intent is that the Western Cape has a secure supply of quality, reliable, clean, safe energy, which delivers social, economic and environmental benefits to the Province's citizens, while also addressing the climate change challenges facing the region and eradicating energy poverty. It is a political and economic imperative that the Western Cape attracts a portion of the investment in Renewable Energy. Support for the economic activity behind renewable energy led to a research paper 'GreenTech' and the Provincial government to establish the GreenCape initiative – this initiative has the task of creating and supporting the manufacturing industry that will supply components for the roll-out of renewable energy in the Western Cape and South Africa. There has been further tacit support from the PGWC in investigations around defining the 'Green Economy' and reviewing the legislative framework looking to identify possible levers for development of this industry.

Atlantis has been identified as a development priority by National, Provincial and Regional government. Historically, Atlantis was a decentralisation zone for manufacturing. But, since the lifting of sanctions the manufacturing industry in Atlantis has struggled. The extension of the Bus Rapid Transit (BRT) system to Atlantis has created a public transport link between the City and Atlantis. This has increased labour mobility and supports industrial development. There is serviced, industrially zoned, vacant, City land in Atlantis. Atlantis is

strategically located to supply large components to the wind developments along the West Coast. The transport of these larger components is a costly and logistically challenging operation. Atlantis's proximity to the N7 and R27 allow a significant transportation advantages to all of the West coast developments.

It is for the above reasons that, not only is GreenTech the preferred land-use alternative for this site, but the manufacturing of renewable energy products through the establishment of a GreenTech manufacturing facility in Atlantis is considered the preferred activity alternative above all others.

5.3 TECHNOLOGY ALTERNATIVES

Based on the quantity of renewable energy in the IRP2010, it is anticipated that there will be enough demand to justify the following investments in manufacturing of the original equipment used in renewable energy power plants. In addition, the REIPPP specifically included local content as a prerequisite due to the lack of local manufacturing of renewable components.

A combination of the manufacturing of the technological alternatives below will form part of the GreenTech project in the Atlantis SEZ and therefore all three are considered viable alternatives and will form part of the proposed activity description:

5.3.1 Technological Alternative 1: Wind

The global wind turbine industry is among the fastest growing industries globally, with an average annual growth rate of nearly 30% between 2000 and 2010 (Grant Thornton, 2012). This growth has been driven mainly by significant cost reductions and efficiency improvements in the core components, supportive policies and the rising costs of alternative sources of energy, such as oil and diesel. The creation of a domestic manufacturing base for wind-turbine components has been a strategic priority for the government of South Africa in driving industrialisation and economic development. The domestic wind-turbine industry has therefore been supported by various promotional policies, such as local content requirements (LCRs) and economic incentives provided by the government. There is enough demand in the IRP2010 to justify 1 or more utility scale blade manufacturer. Currently there are few companies in South Africa that manufacture utility scale wind turbine blades. There is scope for 1 or 2 manufacturers of wind turbine towers.

5.3.2 Technological Alternative 2: Photo Voltaic (PV)

It has been noted that key impediments of the localisation of solar PV is the lack of key local resources such as silicon, glass and skilled personnel, as well as the lack of sufficient demand to entice manufacturing facilities. It is estimated that a minimum annual demand of 600 MW is required in order for PV module manufacturers to be enticed to set up full PV module manufacturing facilities (Solar PV Baseline Report, SAPVIA, 2013). There is enough demand in the IRP2010 to justify 1 or 2 photo voltaic (PV) manufacturing facilities. Currently in South Africa there are 3 PV manufacturers (Tenesol, Solairedirect and Setsolar). These are all located in Cape Town and currently employ 250 people. There in an opportunity for these companies (or a new player) to set up a factory to supply the new demand. While developers have been able to meet local content requirements without sourcing modules from South Africa, additional solar manufacturers will increase the domestic supply of modules ahead of the upcoming bidding rounds.

5.3.3 Technological Alternative 3: Inverters

With the Government's policy commitment on localisation, it is imperative that the private sector responds to their renewable energy policy imperatives. The REIPPP specifically included local content as a prerequisite due to the lack of local manufacturing of renewable components, such as inverters. As mentioned above, a lack of local

manufacturers is a major barrier to many bidders. There are several benefits to locating an inverter manufacturer within the Western Cape's green cluster, close to the supply chain. It is anticipated that there will be 1 inverter manufacturer established. There are currently two inverter manufacturers (MLT-Drives), however, they would need to scale up tenfold to meet this demand.

5.4 LAYOUT ALTERNATIVES

It is to be assumed that the entire site (32.6 ha) (in accordance with local planning policies) will be utilised for the activity. The buildings (coverage, height etc.) to be located on site will be in accordance with the existing zoning of the site and the location in which the site is situated i.e. 'General Residential' and the Atlantis Industrial Area. The CoCT's building regulations and planning policies will be adhered to. Layout alternatives are therefore not possible to design at this stage as it would depend on the investors who are successful in terms of the bidding process to lease the land and in terms of what types of technology are being manufactured in accordance with the types of renewable energy alternatives e.g. wind, photo voltaic and/ or inverters.
Refer to Chapter 2, Section 2.4 which describes the "Envelope Approach" to be applied in this EIA. In addition, a "typical" layout is provided in Chapter 2 (Figure 2.2) for reference.

5.5 LOCATION/SITE ALTERNATIVES

CoCT has made several land portions in **Zone 2** of the Atlantis SEZ available for a green technology (Greentech) hub in Atlantis, Western Cape, for the purpose of developing a GreenTech facility (Figure 5.1, *Note:* although CA1183-72 are included in Zone 2 in this map, it does not form part of this EIA, as this portion is already utilised):

- Portion Rem of 277
- 246
- 254
- Portion Rem of 171

A site selection overview was undertaken to determine which sites within the SEZ (owned by the CoCT) were suitable for the proposed activity. The main determinant for Zone 2 as the preferred Alternative, is the size of the ERF's (combined) which allow for the suitability of such activities. In addition, Zone 2 is further away from sensitive receptors that some of the other zones in the SEZ. Some of the biggest contributing factors in selecting the Atlantis Industrial Area as the only viable site (in comparison to other industrial areas e.g. Montagu Gardens, Epping etc.) were as follows:

- Large portions of land were required in excess of 10-20 ha in order to accommodate the large factories/ lay-down areas required to manufacture the abnormal structures found within the Renewable Energy sector e.g. wind turbine blades. Land of this size, owned by the CoCT, is not available within the industrial areas of the City and therefore areas such as Montague Gardens, Epping, etc. are not feasible alternatives.
- In addition to the above, the transport network found within the City is not appropriate for transporting abnormal loads associated with the Renewable Energy sector. Cape Town Port facilities are also not appropriate for gaining access for the purposes of shipping and therefore finding land north of the City's central hub would be far more desirable.
- Furthermore, Atlantis is a distressed area in severe socio-economic crisis being a spatially and economically isolated area with little economic activity. Established in the apartheid era, Atlantis has a population of approximately 70 000 of which 98% belong to the group previously classified as coloured. With the removal of regional industrial incentives offered during the apartheid area, the attraction of Atlantis as a business location declined, contributing to the area's long-term economic decline and existence as a dormitory urban area that is in many senses disarticulated from the urban core of Cape Town. Despite notable industrial potential, Atlantis has limited commercial (mainly manufacturing) and service economic activity that has experienced severe curtailment given impacts of the recent economic crisis. Furthermore, Atlantis has been hard hit by the global and domestic economic crisis,

with a loss of business and jobs. Rising unemployment is further compounded by high food price inflation, the hikes in electricity pricing and the current fuel price shock has had severe social implications in an already distressed area. Poverty and economic exclusion are rife. Out-dated 2001 Census estimates suggested that even then over half of Atlantis' population (51%) earned between R1 600 and R6 400 a month, while just over a third of the population (34%) earned below R1 600 a month. Over ten years on, economic hardship has exacerbated further given the impact of the recent global and economic recession, and social ills that are driven by crime, gangs, drugs and domestic violence, dominate daily reality in the area. The draft Atlantis Revitalization Framework is one of many policies that have been established with the aim to "articulate a constructive and meaningful working relationship where responsibilities between the key stakeholders – government, business, and civil society are agreed and shared, so as to enable successful implementation of the strategies and actions for the revitalisation and thereafter growth and development of Atlantis". The proposed activity will assist with the aforementioned goals.

It is for the above reasons Zone 2 in the Atlantis SEZ is considered the only viable site alternative within the CoCT and is therefore the preferred site alternative above all others.

5.5.1 Key environmental attributes

As is evident from the positive Environmental Authorisations obtained for the same type of activities on one neighbouring and another nearby site in the Atlantis SEZ in 2012 (Proposed 'green technology manufacturing cluster' industrial development and associated infrastructure on portion 0 of farm CA1183 and portion 93 of farm ca4, Atlantis; Proposed 'green technology manufacturing cluster' industrial development and associated infrastructure on farm CA118 portion 4 and portion 1, Atlantis – Doug Jeffrey Environmental Consultants, 2012), the proposed site recommended for the proposed Atlantis GreenTech facility poses limited risk to biophysical, agricultural and human infrastructure.

The site contains remnants of endangered Cape Flats Dune Strandveld (Chapter 3) and a biodiversity offset has been secured for the site (**Appendix C**) in order to compensation for any potential loss of endangered vegetation resulting from subsequent development. The site does not fall within a CBA.

5.5.2 Spatial character

The site falls within an area earmarked by CoCT for the development of future green technology hub. Furthermore, the site is located in an area zoned for industrial development and is in close proximity to the existing Ankerlig CCGT and its supporting infrastructure. As a result, development of the proposed GreenTech facility on the site will be in keeping with the existing development character and zoning of the area.

5.5.3 Proximity to sensitive human structures

It is apparent that development on the site will have limited impact on potential sensitive human features present in the area, such as local community structures, purely as a result of it being located a good distance away from these structures (Table 5.2). This is a noteworthy consideration both in terms of potential noise emission, but also in terms of the inherent human health risk associated with manufacturing. The proposed development of the project may have a visual impact on sensitive visual receptors (e.g. members of the public and visitors to protected areas). However, the landscape has already been altered by industrial infrastructure (e.g. Ankerlig power station), and therefore limited visual impacts are anticipated from the proposed Atlantis SEZ development.

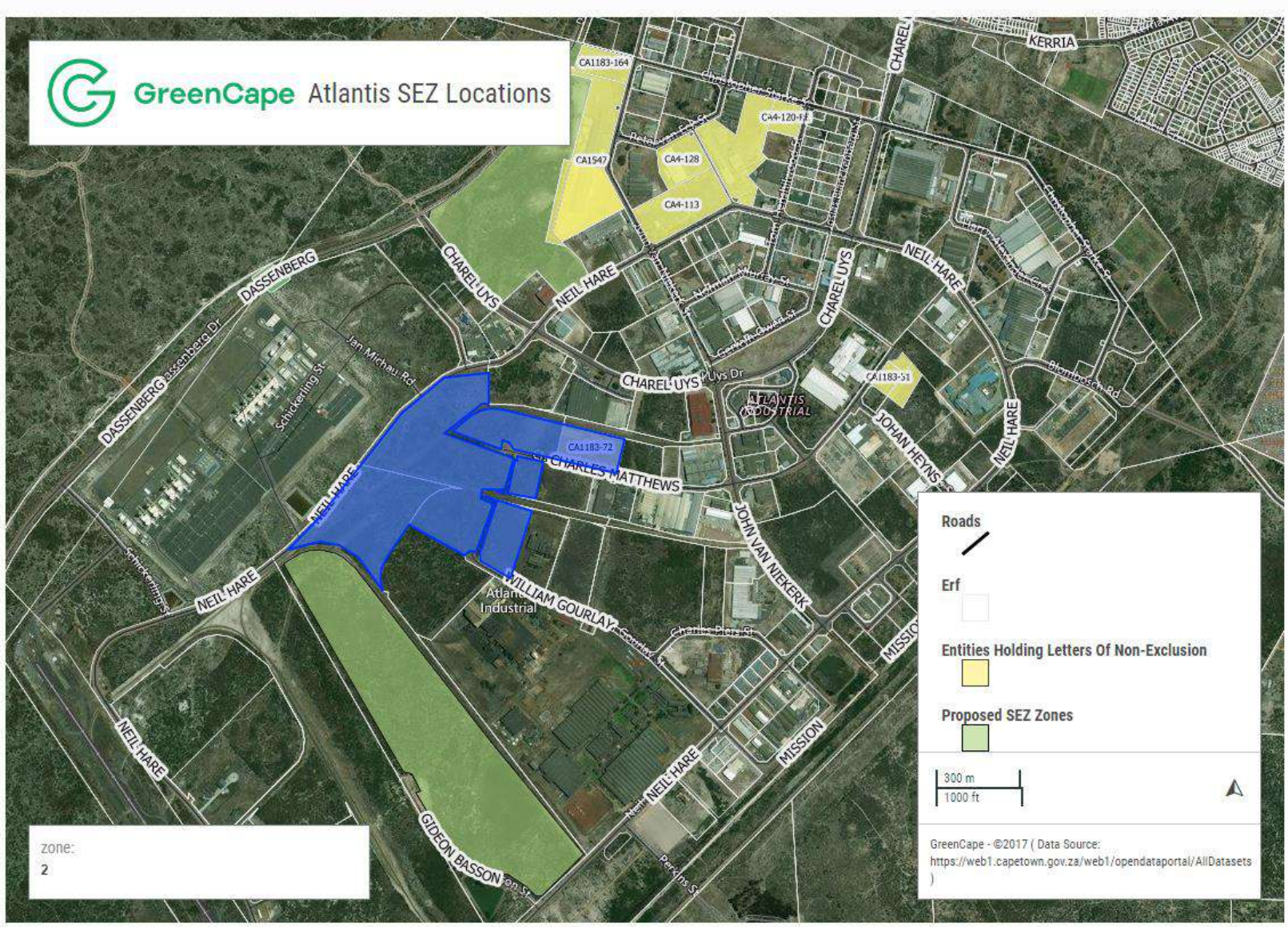

Figure 5.1: Locality of the proposed Atlantis GreenTech site (Zone 2 - highlighted in blue)

Table 5.2: Potentially sensitive features considered for the preferred location of the Atlantis GreenTech site.

Human infrastructure		Distance (km)
		Site
Community centre	Atlantis Thusong Service Centre	5.31
	Avondale Hall and Library	3.55
	Rebecca Van Amsterdam Hall	3.66
	Robinvale Hall	4.23
	Saxonsea Hall	5.76
	Saxonsea Minor Hall	5.74
Education	Atlantis Secondary School	3.87
	Avondale Primary School	3.31
	Berzelia Primary School	3.50
	Kerria Primary School	3.99
	Parkview Primary School	3.73
	Protea Park Primary School	4.07
	Proteus Secondary School	4.00
	Reygersdal Primary School	4.11
	Robinvale High School	4.84
	Saxonsea Primary School	5.20
	Wesfleur Primary School	3.46
Government	Department Of Home Affairs - Atlantis Service Point	4.49
	Department of Justice and Constitutional Development - Atlantis	4.34
Medical	Ampath Private Hospital - Atlantis Depot	4.53
	Atlantis Pharmacy	4.53
	G R Pharmaceuticals (1967)	1.95
	Medirite Pharmacy Atlantis	4.64
	Medirite Pharmacy Atlantis	4.64
	Protea Park Clinic - Atlantis	3.62
	Saxon Sea Clinic	5.19
	Town Centre Pharmacy	4.82
	Wesfleur Hospital	4.43
	Wesfleur Hospital Pharmacy	4.54
	Wesfleur Private Clinic	4.53
Other MIH	Ankerlig power station	1.25
Place of worship	New Apostolic Church-Cape - Atlantis - Avondale	3.31
	New Apostolic Church-Cape - Atlantis - Protea Park	3.69
	New Apostolic Church-Cape - Atlantis - Robinvale	4.48
	New Apostolic Church-Cape - Atlantis - Saxonsea	5.79
	Old Apostolic Church Of Africa - Atlantis - Avondale	3.59
	Old Apostolic Church Of Africa - Atlantis - Robinvale	4.08
Services	Atlantis fire station	2.15
	Atlantis SAPS Station	4.41
	Avbob - Atlantis	4.43
	Dassenberg Post Office	2.17
	Reygersdal Post Office	4.63
Sportsgrounds	Avondale Sports Field	3.18
	Protea Park Sports Field	3.23
	Robinvale Sports Complex	4.66
	Wesfleur Sports Complex	4.92
	Wesfleur swimming pool	4.82
Tourism	Blaauwberg Tourism Bureau - Robinvale	4.51

5.5.4 Preferred site alternative and site selection matrix

The preferred site location for the Atlantis GreenTech facility is Zone 2 (Figure 5.1). Zone 2's suitability over that of other Zone's has been determined in terms of the site selection requirements associated with GreenTech facilities and discussed above; namely: (i) key environmental attributes; (ii) spatial character; (iii) proximity to sensitive human structures (Table 5.2) and (iv) other significant feasibility factors. Sensitive features will be additionally identified through specialist investigations during the EIA phase to avoid impacts on sensitive features as far as possible. No other site alternatives will therefore be considered in the EIA Phase.

Table 5.3: Site selection matrix for determining the preferred location of the Atlantis GreenTech site.

Site considered	Key environmental attributes	Spatial character	Proximity to sensitive human structures	Other NB factors	Site selected (Y/N)
Zone 1	• Endangered Cape Flats Dune Strandveld and Critically Endangered Atlantis Sand Fynbos. • No CBAs on site • Biodiversity offset in place	• Zoned for industrial use • Located in area earmarked for future green technology hub	Comparatively the Closest Zone to Sensitive human structures and features.	• Several portions have been leased and utilized making not the entire site available.	No
Zone 2	• Endangered Cape Flats Dune Strandveld • No CBAs on site • Artificial NFEPA wetland on site, but will not be impacted by development • Biodiversity offset in place	• Zoned for industrial use • Located in area earmarked for future green technology hub	Comparatively further away from sensitive human structures than other Zones	• No EA • Enough available land portions to constitute an appropriate site for the development	**Yes (preferred alternative)**
Zone 3	• Endangered Cape Flats Dune Strandveld and Critically Endangered Atlantis Sand Fynbos. • No CBAs on site • Artificial NFEPA wetland on site, • Biodiversity offset in place	• Zoned for industrial use • Located in area earmarked for future green technology hub	Furthest from sensitive human structures than other Zones	• Existing EA for GreenTech AND gas-to-power.	Not for this EIA process *(considered and approved as part of a previous EIA process)*
Zone 4	• Critically Endangered Atlantis Sand Fynbos. • No CBAs on site • Biodiversity offset in place	• Zoned for industrial use • Located in area earmarked for future green technology hub	Comparatively also one of the closest Zones to Sensitive human structures and features.	• Very small amount of land, not feasible for such a facility. • Land already utilized.	No

5.6 CONCLUDING STATEMENT ON PREFERRED ALTERNATIVES

As per Appendix 2, Section 2 (xi) of the 2014 EIA Regulations (as amended on 7 April 2017), details on the preferred alternative that will be taken forward into the EIA Phase are presented inTable 5.3. Based on the aspects considered in this Chapter, the concluding statement of the preferred alternatives that will be considered in the EIA Phase is:

This EIA will assess the development of the proposed Atlantis GreenTech facility, manufacturing renewable energy components (i.e. solar, wind or invertors – all feasible), in the preferred location, **the Atlantis SEZ,** on the preferred site, namely Zone 2 (**Portion remainder of 277, 246, 254 and Portion remainder of 171).**

GreenCape
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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

CHAPTER 6

POTENTIAL ENVIRONMENTAL IMPACTS

CONTENTS

6 POTENTIAL ENVIRONMENTAL RISKS AND IMPACTS 6-2

6.1 ASSESSMENT OF POTENTIAL IMPACTS (SCOPING LEVEL) 6-2
- 6.1.1 Method 6-2
- 6.1.2 Scoping-level impact assessment 6-4

6.2 IMPACTS TO BE ASSESSED IN THE EIA PHASE 6-7
- 6.2.1 Terrestrial Ecology 6-7
  - 6.2.1.1 Key Issues 6-7
  - 6.2.1.2 Biodiversity Offset 6-8
  - 6.2.1.3 Assessment to be undertaken during the EIA Phase 6-8
- 6.2.2 Paleontology 6-9
  - 6.2.2.1 Key Issues 6-9
  - 6.2.2.2 Assessment to be undertaken during the EIA Phase 6-9
- 6.2.3 Heritage 6-9
  - 6.2.3.1 Key Issues 6-9
  - 6.2.3.2 Assessment to be undertaken during the EIA Phase 6-10
- 6.2.4 Traffic 6-10
  - 6.2.4.1 Key Issues 6-10
  - 6.2.4.2 Assessment to be undertaken during the EIA Phase 6-11
- 6.2.5 Cumulative Impacts 6-11

TABLES

Table 6.1: Scoping level assessment of potential and residual risks/impacts, with high-level mitigation measures. 6-5

FIGURES

Figure 6.1: Guide to assessing risk/impact significance as a result of consequence and probability. 6-2

Figure 6.2: Schematic Diagram for the assessment of Cumulative Impacts 6-12

6 POTENTIAL ENVIRONMENTAL RISKS AND IMPACTS

6.1 ASSESSMENT OF POTENTIAL IMPACTS (SCOPING LEVEL)

6.1.1 Method

A risk assessment approach was used to preliminarily assess (at a scoping level) the potential risks/impacts that the proposed development may impose on the receiving environment. Potential issues have been identified and assessed based on available information on generally expected impacts associated with GreenTech facilities. Information was sourced from existing information sources (refer to Table 7.6 in Chapter 7) as well as scoping-level inputs from specialists.

The risk assessment approach followed for this Scoping Phase incorporates internationally recognised methods from the Intergovernmental Panel on Climate Change (IPCC) (2014) assessment of the effects of climate change. The approach is based on an interpretation of existing information in relation to the proposed activity, to generate an integrated picture of the risks related to a specified activity in a given location, with and without mitigation. Risk is assessed for each significant stressor (e.g. physical disturbance), on each different type of receiving entity (e.g. the municipal capacity, a sensitive wetland), qualitatively (very low, low, moderate, high, very high) against a predefined set of criteria (Figure 6.1).

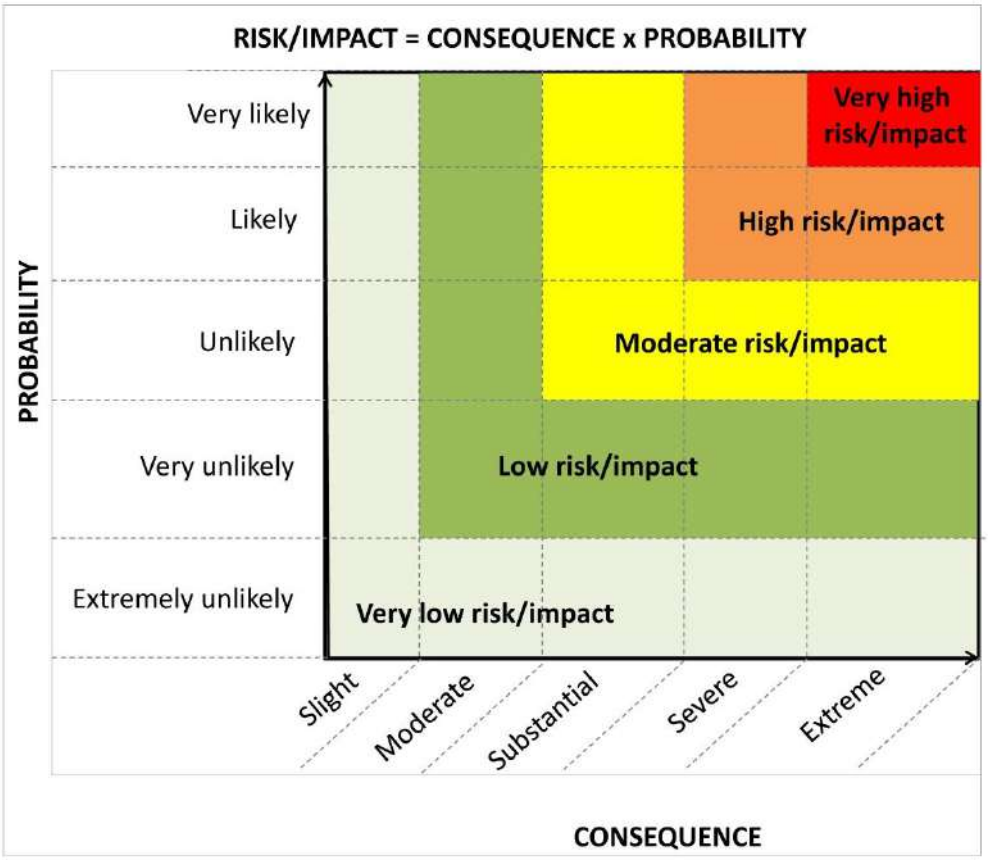

Figure 6.1: Guide to assessing risk/impact significance as a result of consequence and probability.

The following criteria have been considered in the assessment of risk/impacts of the location alternatives:

- **Status** - Whether the risk/impact on the overall environment will be:
  - Positive - environment overall will benefit from the impact; or
  - Negative - environment overall will be adversely affected by the impact.

- **Spatial extent** – The size of the area that will be affected by the risk/impact:
  - Site;
  - Local (<10 km from site);
  - Regional (<100 km of site);
  - National; or
  - International (e.g. Greenhouse Gas emissions or migrant birds).

- **Duration** – The timeframe during which the risk/impact will be experienced:
  - Very short term (instantaneous);
  - Short term (less than 1 year);
  - Medium term (1 to 10 years);
  - Long term (the impact will occur for the project duration); or
  - Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e. the impact will occur beyond the project decommissioning)).

- **Consequence** – The anticipated consequence of the risk/impact:
  - Slight;
  - Moderate;
  - Substantial;
  - Severe; and
  - Extreme.

- **Probability** – The probability of the impact occurring:
  - Very likely;
  - Likely;
  - Unlikely;
  - Very unlikely; and
  - Extremely unlikely.

- **Reversibility** of the Impacts - the extent to which the risks/impacts are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):
  - Yes: High reversibility of impacts (impact is highly reversible at end of project life);
  - Partially: Moderate reversibility of impacts; or
  - No: Impacts are non-reversible (impact is permanent).

- **Irreplaceability** of Receiving Environment/Resource Loss caused by risk/impacts – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):
  - High irreplaceability of resources (project will destroy unique resources that cannot be replaced);
  - Moderate irreplaceability of resources; or
  - Low irreplaceability of resources.

The **significance** of the risk/impact is then determined through a combination of the consequence and probability and is rated qualitatively as follows:

- Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Low (the risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Moderate (the risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated);
- High (the risk/impact will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making); and
- Very high (the impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making (i.e. the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).

Please note that impacts with a positive status (e.g. employment opportunities and diversified economy) may also be indicated as having high or very high. In these cases high and very high ratings are desirable and indicate benefits to the particular receiving environment.

With the implementation of mitigation measures, the residual impacts/risks are **ranked** as follows in terms of significance:

- Very low = 5;
- Low = 4;
- Moderate = 3;
- High = 2; and
- Very high = 1.

6.1.2 Scoping-level impact assessment

Please note that this Scoping Phase impact assessment was conducted by the CSIR project team based on existing information (i.e. Table 7.6 in Chapter 7). The results of this high-level preliminary impact assessment will be verified by relevant specialists during the EIA Phase. Please see Chapter 7 for the EIA Plan of study (PoS) and Terms of Reference for a list of proposed specialist studies.

Potential impacts associated with the Atlantis GreenTech project are anticipated to mainly be of very low to moderate negative significance after mitigation, whilst some high positive socio-economic impacts may be expected (Table 6.1).

Table 6.1: Scoping level assessment of potential and residual risks/impacts, with high-level mitigation measures.

	Impact pathway	Nature of potential impact/risk	Status[1]	Phase where impact is most anticipated[2]			Extent[3]	Duration[4]	Consequence	Probability	Significance of impact/risk = consequence x probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Can impact be avoided?	Can impact be managed or mitigated ?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/ risk
				C	O& M	D												
Biophysical	**Clearing of 32.6 ha of vegetation**	**Habitat and species loss**	–	✓			Site	Long-term	Substantial	Very likely	Moderate	Yes (biodiversity offset for the site in place)	Low (biodiversity offset for the site in place)	x	✓	Biodiversity offset for the site in place	Low	4
		Exposed soil susceptible to erosion	–	✓			Site	Medium-term	Moderate	Likely	Low	Yes (biodiversity offset for the site in place)	Low (biodiversity offset for the site in place)	x	✓	Erosion Management Plan (EMPr)	Very low	5
	Water runoff	**Altered hydrological regimes and water quality**	–	✓	✓	✓	Local	Permanent	Substantial	Likely	Low	Yes (rehab after decommissioning)	Low	x	✓	Storm Water Management Plan (EMPr)	Low	4
	Disturbance of soils	**Alien plant invasions in disturbed areas**	–	✓			Site	Long-term	Severe	Very likely	High	Yes (rehab after decommissioning)	Low (biodiversity offset for the site in place)	x	✓	Plant Search and Rescue (EMPr)	Low	4
	Spills, pollution	**Contamination of Atlantis Aquifer**	–	✓	✓	✓	Local/ regional	Long-term	Severe	Likely	High	No	Low	✓	✓	Pollution management (EMPr)	Moderate	3
Social	**Influx of people (jobseekers)**	**Disruption of social fabric (e.g. crime) and pressure on available services (e.g. housing)**	–	✓	✓	✓	Regional	Short-term	Moderate	Very likely	Low	Yes	Low	x	✓	'Locals first' employment policy; Complaints register	Very low	5
	Labour required for project development and operation	**Employment opportunities**	+	✓	✓	✓	Regional	Short-term	Moderate	Likely	High (positive)	Yes	Low	x	✓	'Locals first' employment policy considering the skills are adequate	High (positive)	2 (positive)
Air Quality	**Air Quality disturbance due to emissions**	**Decrease in the quality of the air**	–		✓		Local & regional	Long-term	Substantial	Likely	Low	No	High	x	✓	Keep within regulated acceptable emissions standards & consider cumulative impacts	Low	4
Economic	**Project expenditure (incl. direct capital investment, and compulsory social investment)**	**Investment and growth in local economy**	+	✓	✓	✓	Regional	Long-term	Severe	Very likely	High (positive)	Yes	Moderate	x	✓	None	High (positive)	2 (positive)
	Development of the proposed project	**Decreased property values**	–	✓	✓	✓	Regional	Long-term	Slight	Unlikely	Very low	Yes	High	✓	✓	Proper construction and management; minimise other potential impacts (e.g. tourism)	Very low	5
	Buffer Zone around development	**Land Sterilization**	–	✓	✓		Local	Long term (while facility is operational)	Slight	Very likely	Very low	Yes	Low	x	x	Neighbouring properties consist mostly of industry & the area is zoned general Industrial (GI)	Very low	5
Noise	**Noise disturbance during construction, operation and decommissioning**	**Disruption of noise levels**	–	✓	✓	✓	Local	Long-term	Severe	Likely	Moderate	No	High	x	✓	Adaptive project design to avoid excessive noise disturbance, keep within GI zoning regulations	Moderate	3
Heritage	**Development of the proposed facility causing damage to or**	**Destruction of heritage resources (also palaeontology, archaeology and built**	–	✓			Local	Permanent	Severe	Unlikely	Low	Partially	Low	x	✓	Adaptive project design to avoid heritage resources (if applicable)	Low	4

[1] Status: Positive (+) ; Negative (-)
[2] Construction (C); Operation and Maintenance (O&M); Decommissioning (D)
[3] Site; Local (<10 km); Regional (<100); National; International
[4] Very short-term (instantaneous); Short-term (<1yr); Medium-term (1-10 yrs); Long-term (project duration); Permanent (beyond project decommissioning)

	Impact pathway	Nature of potential impact/risk	Status[1]	Phase where impact is most anticipated[2]			Extent[3]	Duration[4]	Consequence	Probability	Significance of impact/risk = consequence x probability	Reversibility of impact	Irreplaceability of receiving environment/ resource	Can impact be avoided?	Can impact be managed or mitigated ?	Potential mitigation measures	Significance of residual risk/impact (after mitigation)	Ranking of impact/ risk
				C	O& M	D												
	impact on potential heritage resources	**environment)**																
Visual	**Visual intrusion of the project during construction, operation and decommissioning**	**Transformed visual landscape**	**–**	✓	✓		Regional	Long-term	Moderate	Very likely	Low	Yes (General Industrial area)	Low	x	x	Maintain appearance of physical structures	Low	4
Traffic	**Increased traffic and abnormal loads causing congestion to the road network**	**Pressure on the road network**	**–**	✓	✓	✓	Local	Short term	Moderate	Very Likely	Moderate	Yes	Low	x	✓	Traffic Management Plan	Moderate	3
Risk Factors	**Explosions, leakages, poisoning etc. during all phases of the project**	**Gas accidents**	**–**	✓	✓	✓	Local & Regional	Permanent	Severe	Unlikely (proper maintenance)	Moderate	No	Low	x	✓	Routine maintenance, safety measure, good technology (EMPr)	Low	4
Climate Change	**Increase in harmful emissions and Greenhouse gases into the atmosphere**	**Air emissions**	**–**	✓	✓	✓	local, regional and national (cumulative)	Permanent	Severe	Unlikely	Low	No	Low	x	✓	Ensure emission levels are managed and the air quality of the Atlantis area is acceptable to human and ecological health	Low	4
CUMULATIVE IMPACTS																		
Air emissions	**Decrease in ambient air quality**	**Release of air emissions**	**–**		✓		local, regional and national	Long term	Moderate	Likely	Low	No	Moderate	x	✓	Ensure air emission levels take into account nearby facilities and are managed to acceptable levels	Low	4
Vegetation type loss	**Clearing of vegetation and loss of particular species in the region**	**Loss of species**	**–**	✓			Local and regional	Permanent	Moderate	Very likely	Moderate	Yes (biodiversity offset in place)	Moderate (biodiversity offset in place)	x	✓	Offset has been implemented for the whole Atlantis area which takes into account the cumulative loss of species	Low	4
Visual disturbance	**Construction of a GreenTech facility**	**Disturbance of the visual landscape**	**–**	✓	✓		Local	Long term	Low	Very likely	Low	Yes	Moderate	x	x	The Atlantis Industrial area is heavily transformed and the facility is not in view of the local residents.	Low	4
Noise Disturbance	**Construction and operation of a GreenTech facility**	**Increase in noise levels**	**–**	✓	✓	✓	Local	Long-term	Low	Very Likely	Low	Yes	Moderate	x	✓	Noise levels must be kept to acceptable standards taking into consideration the nearby facilities and their noise levels.	Low	4
Job creation	**Construction and operation of a GreenTech facility**	**Increase in jobs**	✓	✓	✓	✓	Local, regional and potentially national/inter national	Short-long term	High (positive)	Likely	High (Positive)	Yes	Low	x	✓	This facility will add to employment creation in the area which is socio-economically challenged.	High (positive)	2 (positive)

6.2 IMPACTS TO BE ASSESSED IN THE EIA PHASE

The issues and impacts presented in this chapter have been identified via the environmental *status quo* of the receiving environment (environmental, social and heritage features present on site), an assessment of the extensive existing information sources for the Atlantis SEZ, a review of environmental impacts from other similar GreenTech projects, and input from specialists that form part of the project team. Potential environmental risks/impacts will be confirmed during the EIA phase. The main potential risks/impacts that the proposed GreenTech development may pose to the receiving environmental and socio-economic environment are discussed below[5].

Impacts and issues to be addressed in the specialist studies are described below. This is based on a reasonable amount of information available (due to Atlantis being an industrial and heavily transformed area) to specialists prior to their specialist studies. These issues will be expanded upon and studied in greater detail in the EIA phase.

6.2.1 Terrestrial Ecology

6.2.1.1 Key Issues

The proposed development will result in a number of actions that will arise in both the construction and operation phases of the project and include *inter alia*:

- Possible levelling of topographic features;
- Clearance of approximately 32.6 ha of vegetation;
- Establishment of warehouse-like structures;
- Fencing of the site;
- Other supportive infrastructure.

The construction phase is a relatively short term undertaking, although "intensive" in terms of the rapid physical changes that arise on site. Given this, it is expected that the following impacts of an ecological nature may arise during the construction and operational phases.

Construction Phase

The proposed GreenTech development would impact on one vegetation types, which includes a large portion of ENDANGERED, good quality Cape Flats Dune Strandveld.

The transitional area - where the soil interface gives rise to a changeover and interchange of species between the vegetation types is of high conservation importance since such ecotones usually drive speciation and are important in terms of ecological processes.

The large portion of Cape Flats Dune Strandveld (population of *Leucospermum parile* found on the neighboring site) is of high conservation importance. However, these occur within an area overtaken by alien vegetation and with limited connectivity to the Atlantis dune area. Restoration, although possible, is unlikely to occur in the near future, which means that the land will undergo further degradation through alien invasion. In order for the land

[5] The list of assessments described in this section pertains to the specialist studies that will be conducted as per Chapter 8 of this report. Other impacts relating to the project (i.e. noise, visual, social etc.) will be assessed using the extensive amount of information available for the Atlantis SEZ. This will be expanded upon and assessed in the EIA phase

to hold any conservation value in the future, the alien vegetation would have to be eradicated and biodiversity corridors created to link with the Atlantis dune area.

The offset (Appendix C) is supported by the specialist since this would ensure the conservation of an unfragmented area greater than the existing site that will be lost and it would become a well-managed conservation area. Thus although the impacts would be HIGH NEGATIVE these would more than adequately compensate in the offset scenario which could be a gain for biodiversity conservation.

Operational Phase

- Alteration of ecological processes on account of the exclusion of certain species inherent to the functional state of land within the facility generally leading to possible variations in populations of other species that remain within the site, with concomitant ecological change;
- The fencing of the site, possibly with electric fencing, is likely to impact upon faunal behaviour, leading to the exclusion of certain species and possible mortalities.

6.2.1.2 Biodiversity Offset

There has been a biodiversity offset secured and implemented (with regular audits by CapeNature) for the entire Atlantis SEZ, including the site for this proposed GreenTech facility. This was deemed necessary as the area has been ear-marked for development, which meant measures needed to be taken to ensure that species of special concern were not lost. The full report on the details of the Biodiversity Offset (known as the **Klein Dassenberg Nature Reserve)** can be found as **Appendix C.**

The Klein Dassenberg Nature Reserve is situated about 45 km from Cape Town's Central Business District (CBD), immediately east of Atlantis and directly adjacent to Pella on the northern boundary, Western Cape, South Africa (Map 1 – Appendix C). The approximate coordinates are (Google Earth, 2013):

- 18°30'29.888"E
- 33°32'26.044"S

The Reserve is currently 371.97 ha in extent consisting of the farm Klein Dassenberg No 20/9 and farms No 7, 8, 10 and an unregistered portion of 1502 Cape road and Cape Farm No 17/1. Portion 3 of the farm Papekuil Outspan No 6 is currently unregistered state land and is being managed as part of the current reserve network. This portion is 183.5218ha in extent.

The Botanical specialist assessment will take this information into account in the impact assessment, noting that the proposed offset is a gain for biodiversity conservation since this would ensure the conservation of an unfragmented area **greater than the existing site** that will be lost and it would become a well-managed conservation area. Thus although the impacts would be high, these would more than adequately compensate in the offset scenario.

6.2.1.3 Assessment to be undertaken during the EIA Phase

An Ecological Impact Assessment will be undertaken during the EIA Phase, which will include a site investigation. The findings of the assessment will be utilised to identify the most appropriate location of the project within the development footprint, and any significant or fatal flaws that may arise within the particular development footprint.

6.2.2 Paleontology

6.2.2.1 Key Issues

A review of published sources and personal observations indicates that the proposed development falls on land under which deposits of potential palaeontological significance may exist. The area is within the Duinefontyn Dune Plume where wind erosion has in other parts exposed deeper sediments that underlie the Holocene (<10 000 year old (10 ka) Witzand Formation. Vegetation comprises a mix of indigenous Strandveld and alien Acacia species. Absolute dates place some fossil material at 330 ka, but there are even older known marine fossiliferous deposits dating back to at least 5 Ma (Million years ago) at the coast. Sparse scatters of stone artefacts of probable Early Stone Age occur with some of the fossils; Middle and Later Stone Age artefacts also occur, the latter on or within the Witzand Formation and most likely the result of activities of Khoekhoe herders, who arrived in the Western Cape some 2000 years ago. Similar occurrences may have been located during the archaeological survey of the proposed area.

Collaboration between the contractor and a suitably-qualified palaeontologist (or archaeologist with appropriate experience) will be required during excavations for foundations and infrastructure so that information and/or material can be recorded appropriately. Prior access to geotechnical information and accurate foundation depths would help to determine the likelihood of this and the best strategy. Provided that the recommendations of this assessment are complied with, there is no palaeontological reason why the erection of the proposed development should not proceed. The recommendations from the specialist are as follows:

- Excavations for foundations/infrastructure should be monitored by an appropriate palaeontologist. The frequency of this to be worked out a priori with the contractor to minimize time spent on site.
- If possible, geotechnical information, together with the proposed depths of excavations for foundations and/or infrastructure, should be provided prior to the commencement of construction. This may enable a better estimation of the time(s) when monitoring will take place and even the extent of recovery work.
- Protocols for dealing with palaeontological monitoring/mitigation must be included in the Environmental Management Plan (EMP). Any such material is likely to be fragile and due care must be exercised.
- Any material recovered will be lodged in the collections of Iziko South African Museum.

6.2.2.2 Assessment to be undertaken during the EIA Phase

From the above, it is clear that the proposed development is in an area under which potentially important palaeontological remains may occur. Such palaeontological remains are likely to be rare and sparsely distributed but, if encountered, must be carefully exposed and recorded by an appropriately qualified person. Due to the paleontological sensitivity of the area, a desktop Paleontological Heritage Assessment will be undertaken during the EIA Phase and it will include recommendations for inclusion in the EMPr.

6.2.3 Heritage

6.2.3.1 Key Issues

Significant impacts to heritage resources are likely to be limited to archaeological resources and may be easily avoided by the final layout. Surface archaeological sites in Bushmanland tend to be very easy to record and sample and, as such, mitigation could be very easily effected should this be required. The terrain is largely flat and there are a number of dune fields. Where agriculture is not taking place, alien plant species have taken over. Previous archaeological surveys have described the poor visibility due to dense ground cover of alien vegetation. A large number of Heritage and Archaeological Impact Assessments have been conducted in this area, including

a survey by Hart *et al*. (2007) which also covered the two sites identified for the current development. He reported that no significant archaeological material was recovered.

A literature survey of the Atlantis area strongly suggests that the likelihood of uncovering any significant archaeological remains on the site which is proposed for the GreenTech development are minimal. Prior surveys have been conducted on the neighboring properties which has been identified for the current proposed GreenTech development. No significant archaeological remains were reported. However, human remains can occur anywhere on the landscape. In the event that human remains are uncovered, certain protocols must be observed. The area around the burial should be cordoned off and both Heritage Western Cape and the police must be notified. No further construction should take place until the authorities have investigated the remains and made their recommendations.

Key issues during the construction and operational phases are:

- Direct disturbance and/or destruction of archaeological material;
- Direct impacts to the landscape through introduction of industrial type facilities; and
- Direct disturbance and/or destruction of possible heritage features or graves.

6.2.3.2 Assessment to be undertaken during the EIA Phase

A Heritage Impact Assessment will be during the EIA Phase, which will include an assessment of the potential impacts associated with the proposed development on the heritage features present on site and the mitigation measures to be implemented to adequately protect these heritage features.

6.2.4 Traffic

6.2.4.1 Key Issues

The purpose of the Traffic Impact Study is to investigate the traffic impact of the proposed development on the surrounding road network and to propose mitigating measures if required. At the time of this draft Report there are no known planned changes to the existing road infrastructure in the study area that will have an effect on the future development. There are also no planned road links in the study area that will have an impact on trip distribution or traffic volumes in the study area. No known latent rights exist within the immediate study area that will have an impact on the local intersection performance, which indicates a low cumulative impact. The trip generation for a large industrial site of ±33ha to which a typical trip rate per 100 square metre Gross Leasable Area (GLA) is calculated indicates there will be traffic impacts associated with this proposed development. Impacts expected to arise in the phases of the project as described below:

Construction and Decommissioning Phase

- Increase in vehicles coming to site (increase in traffic) to transport various components of the development to site including an increase in noise, dust and exhaust emissions.
- Increase in vehicles coming to site to transport workers and contractors to site including an increase in noise, dust and exhaust emissions.
- Increase in vehicles coming to site (increase in traffic) from during the construction phase to transport various components of the development to site including an increase in noise, dust and exhaust emissions.

Operational Phase

- Increase in vehicles coming to site to transport permanent employees to site including an increase in noise, dust and exhaust emissions.

- Increase in trucks carrying abnormal heavy loads from site causing increased congestion, traffic, noise dust and exhaust emissions and pressure on the road network.

6.2.4.2 Assessment to be undertaken during the EIA Phase

Due to the industrial nature of the site and the surrounding area, the traffic volumes contributed by the construction and operation phases of the facility on the existing traffic volumes and road network are considered acceptable, with mitigation. A Traffic Impact Statement will be undertaken during the EIA Phase and it will include road maintenance measures and other traffic management measures within the EMPr.

6.2.5 Cumulative Impacts

The cumulative impacts will be assessed by identifying other applicable projects, such as manufacturing facilities and other industrial developments in the local Atlantis SEZ area. In terms of cumulative impacts, the fact that the Atlantis SEZ is heavily transformed and demarcated for future industrial development has resulted in the City of Cape Town Municipality, DEA&DP and other organs of state such as CapeNature, finding ways in which these impacts can be managed and/or offset. The proximity of the proposed Atlantis GreenTech facility to Ankerlig and future potential gas import infrastructure means that the impacts can be concentrated to the Atlantis Industrial area. This is why the biodiversity offset has been secured for the entire Atlantis SEZ **(Appendix C).** However it is still important to promote sustainable and environmentally responsible development, which is why cumulative impacts for this development will be more thoroughly assessed in the EIA phase.

At a scoping phase level, cumulative effects associated with these similar types of projects include inter alia:

- Traffic generation;
- Habitat destruction and fragmentation;
- Removal of vegetation;
- Increase in air emissions and decrease in overall regional air quality;
- Increased contribution to climate change;
- Increase in noise disturbance;
- Increase in visual disturbance to sensitive receptors
- Increase in stormwater run-off and erosion;
- Job creation;
- Social upliftment; and
- Contribution of resources to the local renewable energy sector.

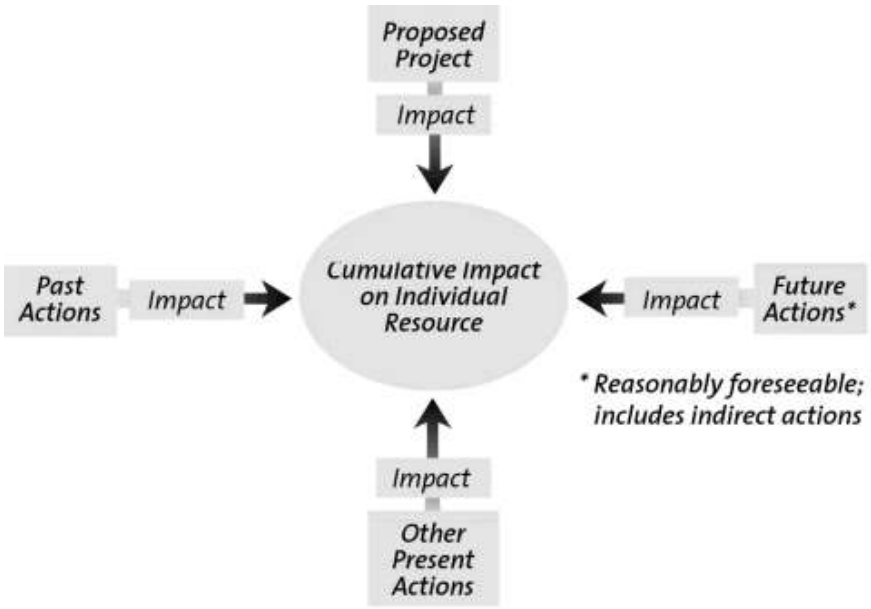

Figure 6.2: Schematic Diagram for the assessment of Cumulative Impacts

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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

CHAPTER 7

PLAN OF STUDY FOR EIA

CONTENTS

7 PLAN OF STUDY FOR EIA 7-1

7.1 PURPOSE OF EIA AND REQUIREMENTS OF THE 2014 EIA REGULATIONS 7-1

7.2 OVERVIEW OF APPROACH TO PREPARING THE EIA REPORT AND EMPR 7-2

7.3 PUBLIC PARTICIPATION PROCESS 7-2

7.4 APPROACH TO IMPACT ASSESSMENT AND SPECIALIST STUDIES 7-5
7.4.1 Generic TOR for the Assessment of Potential Impacts 7-5

7.5 ISSUES TO BE ADDRESSED IN THE SPECIALIST STUDIES 7-9

7.6 ALTERNATIVES TO BE ASSESSED IN THE EIA PHASE 7-10

7.7 TOR FOR THE SPECIALIST STUDIES 7-10

7.8 MILESTONES IN THE EIA PROCESS 7-12

TABLES

Table 7.1: Requirements for Plan of Study for EIA in accordance with the 2014 EIA Regulations (as amedned on 7 Aoril 2017) 7-1

Table 7.2: Authority Communication Schedule 7-5

Table 7.3: Example of Table for Assessment of Impacts 7-8

Table 7.4: Brief summary of Issues to be addressed during the EIA Phase as part of the specialist studies 7-9

Table 7.5: Specialist Studies and Associates Specialists 7-11

Table 7.6: Lisrt of exisiting information and studies that will inform this EIA process 7-11

7 PLAN OF STUDY FOR EIA

This chapter presents the Plan of Study for the EIA (PSEIA), which sets out the process to be followed in the EIA Phase (as required by the 2014 EIA Regulations, as amended). The PSEIA is based on the outcomes of the Scoping Phase (to date) and provides the Terms of Reference (TOR) for the specialist studies that have been identified, the alternatives that will be considered and assessed, as well as the PPP that will be undertaken during the EIA Phase.

7.1 PURPOSE OF EIA AND REQUIREMENTS OF THE 2014 EIA REGULATIONS

The purpose of the EIA Phase is to:

- Address issues that have been identified through the Scoping Process;
- Assess alternatives to the proposed activity in a comparative manner;
- Assess all identified impacts and determine the significance of each impact; and
- Recommend actions to avoid/mitigate negative impacts and enhance benefits.

The EIA Phase consists of three parallel and overlapping processes:

- Central assessment process through which inputs are integrated and presented in an EIA Report that is submitted for approval to the DEA and other commenting authorities
- Undertaking of a PPP whereby findings of the EIA Phase are communicated and discussed with I&APs and responses are documented
- Undertaking of specialist studies that provide additional information/assessments required to address the issues raised in the Scoping Phase

Table 7.1 below shows the requirements for the PSEIA in accordance with Appendix 2 (2) (i) of the 2014 EIA Regulations (as amended on 7 April 2017.

Table 7.1: Requirements for Plan of Study for EIA in accordance with the 2014 EIA Regulations (as amedned on 7 Aoril 2017)

Section of the EIA Regulations: Appendix 2 (2) (i)	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (GN R982)	Location in this Chapter
i.	A plan of study for undertaking the EIA process to be undertaken, including - ▪ a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Section 7.7
ii.	▪ a description of the aspects to be assessed as part of the environmental impact assessment process;	Section 7.8
iii.	▪ aspects to be assessed by specialists;	Section 7.8
iv.	▪ a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;	Section 7.5
v.	▪ a description of the proposed method of assessing duration and significance;	Section 7.5
vi.	▪ an indication of the stages at which the competent authority will be consulted;	Section 7.3 and Section 7.4
vii.	▪ particulars of the public participation process that will be	Section 7.3 and Section 7.4

Section of the EIA Regulations: Appendix 2 (2) (i)	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (GN R982)	Location in this Chapter
	conducted during the environmental impact assessment process;	
viii.	▪ a description of the tasks that will be undertaken as part of the environmental impact assessment process; and	Section 7.2, Section 7.3 and Section 7.4
ix.	▪ identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 7.8

7.2 OVERVIEW OF APPROACH TO PREPARING THE EIA REPORT AND EMPR

The results of the specialist studies and other relevant project information for the Atlantis GreenTech project will be summarised and integrated into the EIA Report. The Draft EIA Report will be released for a 30-day I&AP and authority review period, as outlined in Sections 7.3 and 7.4 of this chapter. All registered I&APs on the project database will be notified in writing of the release of the Draft EIA Report for review. Should it be deemed necessary (based on feedback on the Scoping Process), one public meeting can be arranged during this review period, or following requests from stakeholders, several focus group meetings with key I&APs and stakeholders can instead be arranged. The purpose of these meetings (if deemed necessary) will be to provide an overview of the outcome and recommendations from the specialist studies, as well as provide opportunity for comment. Comments raised, through written correspondence (emails, comments, forms) and at meetings (public meeting and/or focus group meetings) will be captured in a Comments and Responses Trail for inclusion in the EIA Reports that will be submitted to the DEA&DP for decision-making in terms of Regulation 23 (1) (a) of the 2014 EIA Regulations (as amended). Comments raised will be responded to by the EIA team and/or the applicant. These responses will indicate how the issue has been dealt with in the EIA Process. Should the comment received fall beyond the scope of this EIA, clear reasoning will be provided. All comments received (and the associated responses from the EIA team) will be attached as an appendix to the EIA Report for submission to the DEA&DP.

The EIA Report will include an EMPr, which will be prepared in compliance with the relevant regulations (i.e. Appendix 4 of the 2014 EIA Regulations, as amended). This EMPr will be based broadly on the environmental management philosophy presented in the ISO 14001 standard, which embodies an approach of continual improvement. Actions in the EMP will be drawn primarily from the management actions in the specialist studies for the construction and operational phases of the project. If the project components are decommissioned or re-developed, this will need to be done in accordance with the relevant environmental standards and clean-up/remediation requirements applicable at the time.

7.3 PUBLIC PARTICIPATION PROCESS

The key steps in the PPP for the EIA Phase are described below. This approach will be confirmed with the provincial and national environmental authorities through their review of the PSEIA.

TASK 1: I&AP REVIEW OF THE DRAFT EIA REPORT AND EMPR

The first stage in the process will entail the release of the Draft EIA Report for a 30-day I&AP and stakeholder review period. Relevant organs of state and I&APs will be informed of the review process in the following manner:

- Placement of one English advertisement in The Cape Times newspaper and one Afrikaans advertisement in Die Burger to notify potential I&APs of the availability of the EIA Reports;
- A letter will be sent via registered mail and email to all registered I&APs and organs of state (where postal, physical and email addresses are available) on the database. The letter will include notification

of the 30-day comment period for the Draft EIA Report, as well as an invitation to attend the public meeting and/or focus group meetings, if required.
- A public meeting could possibly be held during the review of the Draft EIA Report, if warranted, and if there is substantial public interest during the EIA Phase. Furthermore, telephonic consultations with key I&APs will take place, upon request; and
- Meeting(s) with key authorities involved in decision-making for this EIA (if required and requested).

The Draft EIA Report will be made available and distributed through the following mechanisms to ensure access to information on the project and to communicate the outcome of specialist studies:

- Copies of the report will be placed at the local library (i.e. Avondale Public Library) for I&APs to access for viewing;
- Key authorities will be provided with either a hard copy and/or CD of the Draft EIA Report;
- The Draft EIA Report will be uploaded to the project website (https://www.csir.co.za/environmental-impact-assessment) and
- Telephonic consultations will be held with key I&AP and organs of state groups, as necessary.

TASK 2: COMMENTS AND RESPONSES TRAIL

A key component of the EIA Process is documenting and responding to the comments received from I&APs and the authorities. The following comments on the Draft EIA Report will be documented:

- Written and emailed comments (e.g. letters and completed comment and registration forms);
- Comments made at public meetings and/or focus group meetings (if required);
- Telephonic communication with CSIR project team; and
- One-on-one meetings with key authorities and/or I&APs (if required).

The comments received during the 30-day review of the Draft EIA Report will be compiled into a Comments and Responses Trail for inclusion in an appendix to the Final EIA Report that will be submitted to the DEA&DP in terms of Regulation 23 (1) (a) for decision-making. The Comments and Responses Trail will indicate the nature of the comment, as well as when and who raised the comment. The comments received will be considered by the EIA team and appropriate responses provided by the relevant member of the team and/or specialist. The response provided will indicate how the comment received has been considered in the EIA Reports for submission to the DEA&DP and in the project design or EMPRs.

TASK 3: COMPILATION OF FINAL EIA REPORT FOR SUBMISSION TO THE DEA

Following the 30-day commenting period of the Draft EIA Report and incorporation of the comments received into the reports, the Final EIA Report (i.e. hard copies and electronic copies) will be submitted to the DEA&DP for decision-making in line with Regulation 23 (1) of the 2014 EIA Regulations, as amended. In line with best practice, I&APs on the project database will be notified via email (where email addresses are available) of the submission of the Final EIA Report to the DEA&DP for decision-making.

The Final EIA Report that is submitted for decision-making will also include proof of the PPP that was undertaken to inform organs of state and I&APs of the availability of the Draft EIA Report for the 30 day review (during Task 1, as explained above). The DEA&DP will have 107 days (from receipt of the Final EIA Report) to either grant or refuse EA (in line with Regulation 24 (1) of the 2014 EIA Regulations, as amended).

TASK 4: EA AND APPEAL PERIOD

Subsequent to the decision-making phase, if an EA is granted by the DEA&DP for the proposed project, all registered I&APs and stakeholders on the project database will receive notification of the issuing of the EA and the appeal period. The 2014 EIA Regulations (as amended on 7 April 2017) (i.e. Regulation 4 (1)) states that after the Competent Authority has a reached a decision, it must inform the Applicant of the decision, in writing, within

5 days of such decision. Regulation 4 (2) of the EIA Regulations stipulates that I&APs need to be informed of the EA and associated appeal period within 14 days of the date of the decision. All registered I&APs will be informed of the outcome of the EA and the appeal procedure and its respective timelines.

The following process will be followed for the distribution of the EA (should such authorisation be granted by the DEA&DP) and notification of the appeal period:

- Placement of one English advertisement and one Afrikaans advertisement in local Newspapers to notify I&APs of the EA and associated appeal process;
- A letter will be sent via registered mail and email to all registered I&APs and organs of state (where postal, physical and email addresses are available) on the database. The letter will include information on the appeal period, as well as details regarding where to obtain a copy of the EA;
- A copy of the EA will be uploaded to the project website(https://www.csir.co.za/environmental-impact-assessment) and
- All I&APs on the project database will be notified of the outcome of the appeal period in writing.

Authority Consultation during the EIA Phase

Authority consultation is integrated into the PPP, with additional one-on-one meetings held with the lead authorities, where necessary. It is proposed that the Competent Authority (DEA&DP) as well as other lead authorities will be consulted at various stages during the EIA Process. At this stage, the following authorities have been identified for the purpose of this EIA Process (additional authorities might be added to this list as the EIA Process proceeds):

- National DEA;
- Department of Environmental Affairs and Development Planning Western Cape Province;
- DWS of the Western Cape Province;
- Department of Energy of the Western Cape Province;
- Eskom Holdings SOC Ltd;
- Transnet SOC Ltd;
- South African National Parks;
- National Energy Regulator of South Africa;
- National DAFF;
- DAFF of the Western Cape Province;
- Department of Agriculture, Land Reform & Rural Development of the Western Cape Province;
- Department of Public Works, Roads and Transport of the Western Cape Province;
- Department of Labour;
- SAHRA;
- South African National Road Agency Limited;
- City of Cape Town Metropolitan Municipality

The authority consultation process for the EIA Phase is outlined in Table 7.2 below.

Table 7.2: Authority Communication Schedule

STAGE IN EIA PHASE	FORM OF CONSULTATION
During the EIA Process	Site visit for authorities, if required.
During preparation of EIA Reports	Communication with the DEA&DP on the outcome of Specialist Studies.
On submission of Final EIA Report for decision-making	Meetings with dedicated departments, if requested by the DEA&DP, with jurisdiction over particular aspects of the project (e.g. Local Authority) and potentially including relevant specialists.

7.4 APPROACH TO IMPACT ASSESSMENT AND SPECIALIST STUDIES

This section outlines the assessment methodology and legal context for specialist studies, as recommended by the DEA 2006 Guideline on Assessment of Impacts.

7.4.1 Generic TOR for the Assessment of Potential Impacts

The identification of potential impacts should include impacts that may occur during the construction, operational and decommissioning phases of the development. The assessment of impacts is to include direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed projects is well understood so that the impacts associated with the projects can be assessed. The process of identification and assessment of impacts will include:

- Determining the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur if the activity does not proceed;
- Develop an understanding of the activity in sufficient detail to understand its consequences; and
- The identification of significant impacts which are likely to occur if the activity is undertaken.

As per the DEAT Guideline 5: Assessment of Alternatives and Impacts the following methodology is to be applied to the predication and assessment of impacts. Potential impacts should be rated in terms of the direct, indirect and cumulative:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.

- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. The cumulative impacts will be assessed by identifying other solar energy project proposals and other applicable projects, such as construction and upgrade of electricity generation, and transmission or distribution facilities in the local area (i.e. within 20 km of the proposed Atlantis GreenTech project) that have been approved (i.e. positive EA has been issued) or is currently underway. The proposed and existing electrical and solar developments that will be considered as part of the EIA Phase is provided in Chapter 6 of this Scoping Report.

- **Spatial extent** – The size of the area that will be affected by the impact:
  - Site specific;
  - Local (<2 km from site);
  - Regional (within 30 km of site);
  - National; or
  - International (e.g. Greenhouse Gas emissions or migrant birds).

- **Intensity** – The anticipated severity of the impact:
  - High (severe alteration of natural systems, patterns or processes);
  - Medium (notable alteration of natural systems, patterns or processes); or
  - Low (negligible alteration of natural systems, patterns or processes).

- **Duration** – The timeframe during which the impact will be experienced:
  - Temporary (less than 1 year);
  - Short term (1 to 6 years);
  - Medium term (6 to 15 years);
  - Long term (the impact will cease after the operational life of the activity); or
  - Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient).

- **Reversibility of the Impacts** - the extent to which the impacts are reversible assuming that the project has reached the end of its life cycle (decommissioning phase) will be
  - High reversibility of impacts (impact is highly reversible at end of project life);
  - Moderate reversibility of impacts;
  - Low reversibility of impacts; or
  - Impacts are non-reversible (impact is permanent).

- **Irreplaceability of Resource Loss caused by impacts** – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase) will be:
  - High irreplaceability of resources (project will destroy unique resources that cannot be replaced);
  - Moderate irreplaceability of resources;
  - Low irreplaceability of resources; or
  - Resources are replaceable (the affected resource is easy to replace/rehabilitate).

Using the criteria above, the impacts will further be assessed in terms of the following:

- **Probability** –The probability of the impact occurring:
  - Improbable (little or no chance of occurring);
  - Probable (<50% chance of occurring);
  - Highly probable (50 – 90% chance of occurring); or
  - Definite (>90% chance of occurring).

- **Significance** – Will the impact cause a notable alteration of the environment?
  - Low to very low (the impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
  - Medium (the impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated); or

  - High (the impacts will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making).

- **Status** - Whether the impact on the overall environment will be:
  - Positive - environment overall will benefit from the impact;
  - Negative - environment overall will be adversely affected by the impact; or
  - Neutral - environment overall not be affected.

- **Confidence** – The degree of confidence in predictions based on available information and specialist knowledge:
  - Low;
  - Medium; or
  - High.

Impacts will then be collated into the EMPr and these will include the following:

- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness.
- Identifying negative impacts and prescribing mitigation measures to avoid or reduce negative impacts. Where no mitigatory measures are possible this will be stated.
- Positive impacts will be identified and augmentation measures will be identified to potentially enhance positive impacts where possible.

Other aspects to be taken into consideration in the assessment of impact significance are:

- Impacts will be evaluated for the construction and operation phases of the development. The assessment of impacts for the decommissioning phase will be brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- Impacts will be evaluated with and without mitigation in order to determine the effectiveness of mitigation measures on reducing the significance of a particular impact;
- The impact evaluation will, where possible, take into consideration the cumulative effects associated with this and other facilities/projects which are either developed or in the process of being developed in the local area; and
- The impact assessment will attempt to quantify the magnitude of potential impacts (direct and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

Table 7.3 is to be used by specialists for the rating of impacts.

Table 7.3: Example of Table for Assessment of Impacts

Nature of impact	Spatial Extent	Duration	Intensity	Probability	Reversibility	Irreplaceability	Mitigation Measures	Significance and Status		Confidence Level
								Without Mitigation	*With Mitigation*	
CONSTRUCTION PHASE (EXAMPLE)										
Scenario 1: Vegetation loss during construction										
Loss of vegetation during the construction of internal roads	Local, i.e. less than 2 km from Facility	Long term, i.e. the impact will cease after the operational life span of the project	High, since there will be severe alteration of the natural system	Highly probable, since construction of the infrastructure cannot progress if vegetation is not cleared.	Moderate	High	Demarcate the construction footprint with hazard tape and ensure workers stay within this area, wherever practical. Educate workers on the need to stay on paths and established tracks wherever practical.	Medium (Negative Impact)	Low (Negative Impact)	High, since the prediction is made on available information

7.5 ISSUES TO BE ADDRESSED IN THE SPECIALIST STUDIES

The issues that will be addressed in the specialist studies/input are included in Chapter 7 of this Scoping Report, however they have been summarised below inTable 7.4 for ease of reference.

Table 7.4: Brief summary of Issues to be addressed during the EIA Phase as part of the specialist studies

(*Note*: other issues that are not included in the table below (i.e. social impacts, noise impacts etc) but will still be assessed by the EAP using the extensive existing information available for the project area – refer to Chapter 6)

SPECIALIST STUDY/INPUT	ISSUES TO BE ADDRESSED
Ecological Impact Assessment	**Construction and Operational Phase:** ▪ Ousting of fauna through increased anthropogenic activities, disturbance of refugia (location of an isolated population that was widespread in the past) and general change in habitat. ▪ Increased electrical light pollution leading to changes in nocturnal behavioural patterns amongst fauna. ▪ Exclusion (or entrapment) of in particular, larger fauna on account of the fencing of the site. ▪ Changes in edaphics (soils) on account of excavation and import of material, leading to alteration of plant communities and fossorial species in and around these points. ▪ Alteration of ecological processes on account of the exclusion of certain species inherent to the functional state of land. ▪ Increased shading of vegetation as a consequence of the PV arrays, will lead to changes in plant water relations and possible changes in plant community structures within the site. ▪ Changes in meteorological factors at a localised scale on account of the facility is likely to arise leading to long term, but generally latent changes in habitat. ▪ Loss of vegetation type which are endangered (CFDS and ASF)
Heritage Impact Assessment (Archaeology and Cultural Landscape)	**Construction and Operational Phases:** ▪ Direct disturbance and/or destruction of archaeological material; ▪ Direct impacts to the landscape through introduction of industrial type facilities; and ▪ Direct disturbance and/or destruction of possible graves.
Desktop Palaeontological Impact Assessment	**Construction Phase:** ▪ Potential damage to or destruction of fossil heritage at or near the surface within the study area.
Traffic Impact Statement	**Construction, Operational and Decommissioning Phases:** ▪ Increased traffic volumes impacting the local and regional road network; ▪ Impact of abnormal loads on the road network and traffic flow.

7.6 ALTERNATIVES TO BE ASSESSED IN THE EIA PHASE

A description of the alternatives that will be assessed or considered during the EIA Phase is provided in Chapter 6 of this Scoping Report. However, they have been summarised below for ease of reference:

- **No-go Alternative:**
  - The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed GreenTech facility. This alternative would result in no environmental impacts on the site or surrounding local area, as a result of the facility. It will provide a baseline against which other alternatives will be compared and considered during the EIA Phase.

- **Land Use Alternative:**
  - No other manufacturing types were deemed to be appropriate for the site and therefore these technologies will not be further assessed during the EIA Phase. The implementation of a GreenTech facility at the proposed project site is more favourable than other alternative energy facilities and other industrial land uses due to the following:
    - The support of the green economy in South Africa (and specifically the Western Cape) through the provision of locally manufactured renewable energy technologies.
    - The proposed GreenTech facility currently falls within the Atlantis SEZ which has been identified by the City of Cape Town as being of strategic importance for industrial and economic development (as discussed in Chapter 1 and Chapter 2 of this Scoping Report);
    - The zoning of the site as General Industrial allowing for its suitability and reduced sensitivity to sensitive receptors.

- **Location Alternatives within the Selected Site:**
  - The selection of the site (i.e. Zone 2 of the Atlantis SEZ) is described in Chapter 6 of this Scoping Report. During the EIA Phase, possible layout plans within the preferred Atlantis GreenTech project site will be discussed.

- **Technology Alternatives:**
  - Applicable and relevant technology options will be described during the EIA Phase, such as those relating to different renewable energy technology manufacturing.

- **Layout Alternatives:**
  - Layout alternatives for the project will be discussed following the input from the various specialists. The studies will aim to identify various environmental sensitivities present on the preferred site that should be avoided, which will be taken into account during the determination of the proposed layout of the GreenTech facility.
  - The use of the existing service roads will also be discussed during the EIA Phase.

It is important to note that where alternatives are not feasible or will not be assessed, a motivation has been provided in Chapter 6 of this Scoping Report. The preferred alternatives will be assessed during the EIA Phase.

7.7 TOR FOR THE SPECIALIST STUDIES

The TOR for the specialist studies will essentially consist of the generic assessment requirements and the specific issues identified for each discipline. The TOR will be updated to include relevant comments received from I&APs and authorities during the 30-day review of the Draft Scoping Report.

The following additional specialist studies have been identified based on the issues identified to date, as well as potential impacts associated with the project. The TOR for each specialist study is discussed in detail below. The

specialist studies and associated specialists are shown in Table 7.5 below. Additional specialist studies could possibly be commissioned as a result of issues raised during the Scoping Process.

Table 7.5: Specialist Studies and Associates Specialists

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Environmental Management Services (CSIR)		
Paul Lochner	CSIR	Technical Advisor and Quality Assurance (EAPSA) Certified
Kelly Stroebel	CSIR	Project Manager (Appointed EAP)
Rirhandzu Marivate	CSIR	Project Officer and GIS specialist
Specialists		
Paul Emms	Bergwind Botanical Surveys and Tours	Ecological Impact Assessment (including Terrestrial Ecology)
Christo Bredenhann	WSP	Traffic Impact Statement
Jonathan Kaplan	Agency for Cultural Resource Management (ACRM)	Heritage Impact Assessment
John Pether	N/A	Desktop Palaeontological Impact Assessment

As explained in Chapter 7 of this Scoping Report, it is important to note at the outset that cumulative impacts will be assessed in the specialist studies (as applicable) by identifying other applicable projects, such as manufacturing facilities in the local area (i.e. within 20 km of the proposed Atlantis GreenTech projects) that have been approved (i.e. positive EA has been issued) or for which an EIA process is currently underway.

This Scoping and EIA process will make use of the extensive existing information and studies for the Atlantis area, as previously mentioned in this report. The reason for this is to preserve resources and to avoid the duplication of efforts for studies that have already been conducted. The Atlantis SEZ included a range of pre-feasibility studies which included information on the social, economic and biophysical environment. The Table below indicates the range of existing information and studies that will be used to inform his Scoping and EIA process (*Note:* this list is not exhaustive and this table will be updated should additional information be used):

Table 7.6: Lisrt of exisiting information and studies that will inform this EIA process

INFORMATION SOURCE	AUTHOR/DATE
Basic Assessment (and all associated specialist studies) conducted for proposed 'green technology manufacturing cluster' industrial development and associated infrastructure on Portion 0 of Farm CA1183 and Portion 93 of farm CA4, Atlantis	Doug Jeffrey Environmental Consultants (Pty) Ltd - 2012
Basic Assessment (and all associated specialist studies) conducted for proposed 'green technology manufacturing cluster' industrial development and associated infrastructure on Farm CA1183, Portion 4 and Portion 1 , Atlantis	Doug Jeffrey Environmental Consultants (Pty) Ltd - 2012
EIA for the proposed Atlantis Gas-to-Power facility on Portion 1 and Portion 4 of Cape Farm 1183, Western Cape	CSIR – 2017
Feasibility Report: Atlantis SEZ	Deloitte (commissioned by the Department of Trade and Industry) - 2014
Atlantis Special Economic Zone: Technical Investor Brochure	GreenCape
Economic Analysis of the Proposed Green-tech Special	Stratecon - 2015

INFORMATION SOURCE	AUTHOR/DATE
Economic Zone at Atlantis	
GreenTech Atlantis Special Economic Zone: Annual Report 2016/17	GreenCape – 2016/17
The socio-economic impact of importing LNG into the West Coast of the Western Cape	Deloitte - 2015

7.8 MILESTONES IN THE EIA PROCESS

KEY MILESTONES ACTIVITIES	PROPOSED TIMEFRAME
I&AP, Stakeholder and Authority Review of the Draft Scoping Report: 30 days	October 201 – November 2018
Submit Final Scoping Report to the DEA&DP for Decision-making.	November 2018
Review of the Final Scoping Report by the DEA&DP (i.e. accept or refuse EA): 43 days since receipt of the Final Scoping Report.	November 2018 – January 2019
I&AP, Stakeholder and Authority Review of the Draft EIA Reports: 30 days	February 2019– March 2019
Submit Final EIA Reports to the DEA&DP for Decision-making.	March 2019
Review of the Final EIA Reports by the DEA&DP (i.e. grant or refuse EA): 107 days since receipt of the Final EIA Report.	March 2019 – July 2019
Next steps: 5 days for notification to applicant	

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DRAFT SCOPING REPORT

CHAPTER 8

REFERENCES

CONTENTS

8 REFERENCES 8-2

8 REFERENCES

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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

APPENDICES

Appendix A:	Curriculum Vitae of the Environmental Assessment Practitioner(s) and Declaration
Appendix B:	Database of Interested and Affected Parties
Appendix C:	Biodiversity offset Information: Integrated Reserve Management Plan
Appendix D:	Other information

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Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

APPENDIX A

Curriculum Vitae of the Environmental Assessment Practitioner(s) and Declaration

CONTENTS

1 CURRICULUM VITAE OF PAUL LOCHNER – PROJECT LEADER 2

2 CURRICULUM VITAE OF KELLY STROEBEL – PROJECT MANAGER 10

3 CURRICULUM VITAE OF RIRHANDZU MARIVATE – PROJECT MEMBER 13

4 EAP DECLARATION 17

1 Curriculum Vitae of Paul Lochner – Project Leader

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Name of firm	CSIR
Name of staff	Paul Lochner
Profession	Environmental Assessment and Management
Position in firm	Manager: CSIR Environmental Management Services
Years' experience	24 years
Nationality	South African

Biographical Sketch

Paul Lochner commenced work at CSIR in 1992, after completing a degree in Civil Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work at CSIR focused on sediment dynamics and soft engineering applications in the coastal zone, in particular, beach and dune management. He conducted several shoreline erosion analyses and prepared coastal zone management plans for beaches. He also prepared wetland management plans.

As the market for environmental assessment work grew, he led Environmental Impact Assessments (EIAs), in particular for coastal resort developments and large-scale industrial developments located on the coast; and Environmental Management Plans (EMPs), in particular for wetlands, estuaries and coastal developments. He has also been involved in researching and applying higher-level approaches to environmental assessment and management, such as Strategic Environmental Assessment (SEA). In 1998-1999, he coordinated the SEA research programme within the CSIR, which led to him being a lead author of the Guideline Document for SEA in South Africa, published by CSIR and national Department of Environmental Affairs (DEA) in February 2000.

In 1999 and 2000, he was the project manager for the legal, institutional, policy, financial and socio-economic component of the Cape Action Plan for the Environment ("CAPE"), a large-scale multi-disciplinary study to ensure the sustainable conservation of the Cape Floral Kingdom. This was funded by the Global Environmental Fund (GEF) and prepared for WWF-South Africa. The study required extensive stakeholder interaction, in particular with government institutions, leading to the development of a Strategy and Action Plan for regional conservation.

In July 2003, he was certified as an Environmental Assessment Practitioner by the Interim Certification Board for Environmental Assessment Practitioners of South Africa.

He has authored several guidelines for government. In 2004, he was lead author of the *Overview of IEM* document in the updated Integrated Environmental Management (IEM) Information Series published by national Department of

Environmental Affairs and Tourism (DEAT). In 2005, he was part of the CSIR team that prepared the series entitled *Guidelines for involving specialists in EIA processes* for the Western Cape Department of Environmental Affairs and Development Planning (DEADP); and he authored the *Guideline for Environmental Management Plans* published by Western Cape government in 2005. In 2006-2007, he worked closely with the (then) Dept of Minerals and Energy (DME) of South Africa to prepare a Guideline for Scoping, Environmental Impact Assessment and Environmental Management Plans for mining in South Africa.

Over the past 20 years has been closely involved with several environmental studies for industrial and port-related projects in Coega Industrial Development Zone (IDZ), near Port Elizabeth. This included the SEA for the establishment of the Coega IDZ in 1996/7, an EIA and EMP for a proposed aluminium smelter in 2002/3, and assistance with environmental permit applications for air, water and waste. At the Coega IDZ and port, he has also conducted environmental assessments for port development, LNG storage and a combined cycle gas turbine power plant, manganese export, rail development, marine pipelines, and wind energy projects.

Since 2009, he has undertaken numerous EIAs for the renewable energy sector, in particular for wind and solar photovoltaic energy projects. In these EIAs, he has been project leader and integrated the specialist findings from a range of specialist disciplines.

He is currently project leader on two Strategic Environmental Assessments (SEAs) that are being undertaken for national DEA. These SEAs are to support the implementation of the Strategic Integrated Projects (SIPs) that are being promoted by the Presidential Infrastructure Coordinating Committee (PICC). The SEA for Wind and Solar Photovoltaic Energy for South Africa is being conducted over 2013-2014, and the SEA for electricity grid infrastructure commenced January 2014.

Since 2009, Paul has been the manager of the Environmental Management Services (EMS) group within CSIR. This group currently consists of approximately 20 environmental assessment practitioners and a group assistant, with offices in Stellenbosch and Durban. EMS focuses on conducting complex environmental studies in challenging environments, such as remote and data poor regions in Africa (e.g. Cameroon, Gabon, Angola, Namibia and Ethiopia). We also specialise in environmental studies for emerging and innovative technologies, drawing on research and applied scientific expertise within CSIR. Our role is to assist in ensuring the sustainability of projects in terms of environmental and social criteria, by providing a range of environmental services that extend across the project lifecycle, from the pre-feasibility stage through to feasibility, commissioning, operations and closure. We provide this service to government, international agencies, private sector and non-government organisations.

EMPLOYMENT TRACK RECORD

The following table presents a sample of the projects that Paul Lochner has been involved in to this date:

Completion Date	Project description	Role	Client
In progress	**SEA for Aquaculture** Development in South Africa (marine and freshwater)	Project leader	DEA and DAFF
In progress	**SEA for the Square Kilometre Array** radio-telescope in the Karoo, South Africa	Project leader	DEA and DST
2015-2017	**SEA for Shale Gas Development** in South Africa	Project co-leader	Dept of Environmental Affairs (DEA), DMR, DOE, DST, DWS
2015-2016	SEA for the development of **Electrical Grid Infrastructure** for South Africa	Project leader	DEA
2016-2017	EIA for the 75 MW x 12 **solar photovoltaic** energy projects near Dealesville, Free State	Project Leader	Mainstream Renewable Power SA
2014-2015	SEA of **planning** for the far south Cape Peninsula	Project Leader	City of Cape Town
2013-2015	EIA for the Ishwati Emoyeni 140 MW **wind energy project** and supporting electrical infrastructure near Murraysburg, Western Cape	Project Leader	Windlab
2013-2015	EIA for the Saldanha marine outfall **pipeline**	Project Leader	Frontier Saldanha Utilities
2012-2015	SEA for identification of **renewable energy zones** for wind and solar PV projects in South Africa	Project leader	DEA
2012-2013	**Environmental Screening Study for a desalination plant** for the City of Cape Town	Project leader	City of Cape Town & WorleyParsons
2012-2013	EIA for **LNG Import** to the Mossel Bay Gas-to-Liquid refinery (stopped end of Scoping)	Project leader	PetroSA
2012-2013	EIA for the **desalination plant** for the Saldanha area	Project leader	West Coast District Municipality & WorleyParsons
2012-2013	EIA for the **manganese export terminal** at the Port of Ngqura and Coega IDZ	Project leader	Transnet
2011 - 2012	EIA for the **100 MW solar photovoltaic** project proposed by Mainstream Renewable Power at Blocuso, near Keimoes in the Northern Cape	Project leader	Mainstream Renewable Power
2011 – 2012	EIA for the **100 MW solar photovoltaic** project proposed by Mainstream Renewable Power at Roode Kop Farm, near Douglas, in the Northern Cape	Project leader	Mainstream Renewable Power
2011 – 2012	EIA for the 75 MW **solar photovoltaic project** proposed by Solaire Direct at **GlenThorne**, near Bloemfontein in the Free	Project leader	Solaire Direct

Completion Date	Project description	Role	Client
	State		
2011 – 2012	EIA for the 75 MW **solar photovoltaic project** proposed by SolaireDirect at **Valleydora**, near Springfontein in the Free State	Project leader	Solaire Direct
2010-2011	More than 10 Basic Assessments (BAs) for **solar photovoltaic projects** in the western cape, Northern Cape, Eastern Cape and Free State	Project leader	Various clients including Dutch, German, French and South African companies
2010/2011	**EIA for the Langerfontein** wind project near Darling, Western Cape.	Project leader	Mr Herman Oelsner, Khwe Khoa
2010/2011	**EIA for a 100 MW wind project at Zuurbron and a 50 MW wind project Broadlands** in the Eastern Cape	Project leader	WindCurrent SA (German-based company)
2010/2011	**EIA for the proposed 143 MW Biotherm wind energy project near Swellendam**, Western Cape, South Africa	Project leader	Biotherm South Africa (Pty) Ltd
2010/2011	**EIA for the proposed InnoWind wind energy projects near Swellendam, Heidelberg, Albertinia and Mossel Bay (totalling approx 210 MW),** Western Cape, South Africa	Project leader	InnoWind South Africa (Pty) Ltd
2009/2010	**EIA for the proposed Electrawinds wind energy facility** of 45-75 MW capacity in the Coega IDZ, Eastern Cape	Project leader	Electrawinds N.V. (Belgium)
2009/2010	**EIA for proposed 180 MW Jeffreys Bay wind energy project,** Eastern Cape	Project Leader and co-author	Mainstream Renewable Power South Africa
2009/2010	**Basic Assessment for the national wind Atlas for South Africa**	Project leader	SANERI and SA Wind Energy Programme, Dept of Energy
2009/2010	**EIA for the proposed Gecko soda plant,** Otjivalunda and Arandis, Namibia (cancelled)	Project leader	Gecko, Namibia
2009-2010	**EIA for the proposed desalination plant** at Swakopmund, Namibia	Project leader	NamWater, Namibia
2009	**EMP for the Operational Phase of the Berg River Dam**, Franschoek, South Africa	Project leader and report co-author	TCTA, South Africa
2009/2010 *(on hold)*	**EIA for the proposed crude oil refinery** at Coega, South Africa	Project leader and lead author	PetroSA, South Africa
2008	**Environmental Risk Review** for proposed LNG/CNG import to Mossel Bay, South Africa	Project leader and lead author	PetroSA, South Africa

Completion Date	Project description	Role	Client
2008	**Review of the Business Plan** for catchment management for the Berg Water Dam Project, Franschhoek, South Africa	Project reviewer and co-author	TCTA, South Africa
2007 – 2010	**EIA for proposed Jacobsbaai Tortoise Reserve eco-development**, Saldanha, Western Cape	Project Leader and co-author	Jacobsbaai Tortoise Reserve (Pty) Ltd
2007 – 2010	**Independent reviewer** for the EIA proposed Amanzi lifestyle development, Port Elizabeth	Independent reviewer appointed to advise EAP	Public Process Consultants and Pam Golding
2007 – 2008	**EIA for proposed 18 MW Kouga wind energy project,** Eastern Cape	Project Leader and co-author	Genesis Eco-Energy (Approved by DEDEA in March 2009)
2007	**Review of EIA for the proposed Hanglip Eco-Development**, Plettenberg Bay, Western Cape	Co-author of review of EIA, undertaken on behalf of DEADP	Dept of Environmental Affairs & Development Planning, Western Cape
2006-2007	**Scoping phase for the EIA for the proposed Coega LNG-to-Power Project** at the Port of Ngqura, Coega IDZ	Project Leader and co-author	Eskom and iGas
2006-2007	**Guideline** for Scoping, Environmental Impact Assessment and Environmental Management Plans for mining in South Africa	Project leader and co-author	Dept of Minerals and Energy (DME), South Africa
2006	**Environmental Impact Assessment (EIA)** for the extension of the Port of Ngqura, Eastern Cape	Project Leader and co-author	Transnet
2006	**Integrating Sustainability Into Strategy: Handbook** (Version 1)	Project Leader and co-author	CSIR (STEP research report)
2005	**Technology Review** for the proposed aluminium smelter at Coega, South Africa	Project Leader and lead author	Alcan, Canada
2005	**Environmental and Social Impact Assessment (ESIA) report** for the proposed alumina refinery near Sosnogorsk, Komi Republic, Russia	Project manager and co-author	Komi Aluminium, Russia, IFC, EBRD
2005	**Guideline for Environmental Management Plans (EMPs)** for the Western Cape province, including conducting a training course for provincial government	Author	Dept of Environmental Affairs & Development Planning, Western Cape
2005	**Guideline for the review of specialist studies** undertaken as part of environmental assessments	Member of Steering Committee and project facilitator	Dept of Environmental Affairs & Development Planning, Western Cape

Completion Date	Project description	Role	Client
2004	**Review of Strategic Management Plan** for Table Mountain National Park (2001-2004)	Reviewer and co-author	South African National Parks
2004	**Strategic Needs Assessment Process** for mainstreaming sustainable development into business operations	Researcher and co-author	CSIR (internal research)
2004	**Environmental Monitoring Committees** booklet in the IEM Information Series for DEAT	Contributing author	Department of Environmental Affairs and Tourism (DEAT)
2004	**Overview of Integrated Environmental Management** (IEM) booklet in the IEM Information Series	Lead author and researcher	DEAT
2003	**Environmental Screening Study** for gas power station, South Africa	Project Manager and lead author	Eskom, iGas and Shell
2003	**Environmental Management Programme** (EMP) Framework for the proposed Coega Aluminium Smelter; and assistance with preparing permit and licence applications	Project Manager and lead author	Pechiney, France
2003	**Environmental Management Plan** for the Operational Phase of the wetlands and canals at Century City, Cape Town	Project leader and lead author	Century City Property Owners' Association
2002	**Environmental Impact Assessment** for the proposed Pechiney aluminium smelter at Coega, South Africa	Project Manager and lead author	Pechiney, France
2002 - 2003	**Research project:** Ecological impact of large-scale groundwater abstraction on the Table Mountain Group aquifer	Project Manager	Water Research Commission
2002	**Environmental Management Plan** for the Eskom Wind Energy Demonstration Facility in the Western Cape	Co-author	Eskom
2001-2002	**Environmental Impact Assessment** for the Eskom Wind Energy Demonstration Facility in the Western Cape	Quality control & co-author	Eskom
2001	**Environmental Due Diligence** study of four strategic oil storage facilities in South Africa	Project manager and co-author	SFF Association
2000	**Cape Action Plan for the Environment**: a biodiversity Strategy and Action Plan for the Cape Floral Kingdom - legal, institutional, policy, financial and socio-economic component	Project manager and contributing writer	World Wide Fund for Nature (WWF): South Africa
1999	**Environmental Management Plan** for the establishment phase of the wetlands and canals at Century City, Cape Town	Project manager and lead author	Monex Development Company
1999	**Environmental Management Programme** for the Thesen Islands development,	Process design and Co-author	Chris Mulder Associates Inc; Thesen

Completion Date	Project description	Role	Client
	Knysna		and Co.
1999	**Management Plan** for the coastal zone between the Eerste and Lourens River, False Bay, South Africa	Project manager and lead author	Heartland Properties and Somchem (a Division of Denel)
1998	**Environmental Assessment** of the Mozal Matola Terminal Development proposed for the Port of Matola, Maputo, Mozambique	Project manager and author.	*SNC-Lavalin-EMS*
1998	**Strategic Environmental Assessment (SEA)** for the Somchem industrial complex at Krantzkop, South Africa	Project manager and co-author	Somchem, a Division of Denel
1997	**Strategic Environmental Assessment (SEA)** for the proposed Industrial Development Zone and Harbour at Coega, Port Elizabeth, South Africa	SEA project manager and report writer	Coega IDZ Initiative Section 21 Company
1996	**Environmental Impact Assessment** of Development Scenarios for Thesen Island, Knysna, South Africa	Project manager and report writer	Thesen and Co.
1996	**Environmental Impact Assessment** of the Management Options for the Blouvlei wetlands, Cape Town	Project manager and report writer	Ilco Homes Ltd (now Monex Ltd)
1995	**Environmental Impact Assessment** for the Saldanha Steel Project, South Africa	Report writing and management of specialist studies	Saldanha Steel Project
1994	**Environmental Impact Assessment** for the upgrading of resort facilities on Frégate Island, Seychelles	Member of the project management team, co-author, process facilitator	Schneid Israelite and Partners
1994	**Environmental Impact Assessment** for exploration drilling in offshore Area 2815, Namibia	Project manager and co-author	Chevron Overseas (Namibia) Limited
1994	**Management Plan** for the Rietvlei Wetland Reserve, Cape Town	Project manager and lead author	Southern African Nature Foundation (now WWF-SA)
1993	**Beach management plan** for Stilbaai beachfront and dunes, South Africa	Project manager and lead author	Stilbaai Municipality
1993	**Beach and dune management plan for Sedgefield** for the beach east of the mouth of the Swartvlei estuary	Project manager and lead author	Nel and De Kock Planners, George
1993	**Coastal Stability analysis and beach management plan** for the Table View coastline north of Blaauwberg Road, Cape Town	Project manager and lead author	Milnerton Municipality

EMPLOYMENT RECORD

- **1992 to present** Involved in coastal engineering studies; and various forms of environmental assessment and management studies. Council for Scientific and Industrial Research – Environmental Management Services (EMS) - Stellenbosch

QUALIFICATIONS/EDUCATION

- M. Phil. Environmental Science (University of Cape Town)
- B.Sc. Civil Engineering (awarded with Honours) (University of Cape Town)

LANGUAGE CAPABILITY

LANGUAGES	***Speaking***	***Reading***	***Writing***
English	Excellent	Excellent	Excellent
Afrikaans	Moderate	Moderate	Moderate

2 Curriculum Vitae of Kelly Stroebel – Project Manager

CSIR
Jan Cilliers Street
PO Box 320
Stellenbosch
7600 South Africa

Phone: +27 21 888 2400
Fax: +27 21 888 2693
Email:
kstroebel@csir.co.za

Name of firm	CSIR
Name of staff	Kelly Stroebel
Profession	Environmental Assessment Practitioner
Position in firm	Environmental Assessment Practitioner
Years' experience	4 years
Nationality	South African

Biographical Sketch

Kelly holds a Bachelor of Science with Honours in Environmental Science from Rhodes University in Grahamstown and is currently pursuing a Masters at the University of Stellenbosch. Her undergraduate degree was a Bachelor of Science with majors in Environmental Science and Zoology. She is currently working as an environmental assessment practitioner at the Council for Scientific and Industrial Research (CSIR). Kelly has been the Project Manager of several EIA's in South Africa and several Basic Assessments for the Special Needs and Skills Development Programme. She has assisted in the SIP projects including the National Wind & Solar Strategic Environmental Assessment (SEA) and Electricity Grid Infrastructure SEA as SEA which were commissioned by the national Department of Environmental Affairs. On a personal level, Kelly enjoys the outdoors, traveling and SCUBA diving and is passionate about the field of environmental science and management.

EMPLOYMENT TRACK RECORD

The following table presents a sample of the projects that Kelly Stroebel has been involved in to this date:

Completion Date	Project description	Role	Client
2017	**EIA for gas-to-power in the Atlantis SEZ**	Project Manager/EAP	CoCT/GreenCape
In progress	**EIA's in the South African energy sector**	Project Manager/EAP	Private energy companies and organs of state
In progress	**Special Needs and Skills Development Programme (DEA-CSIR)**	Project Manager conducting Environmental services such as basic Assessments and Environmental Screening Studies.	Various SMME's and Community Trusts
2015	**Strategic Environmental Assessment (SEA)** for Electricity Grid Infrastructure	Project member-stakeholder engagement and project support.	National Department of Environmental Affairs
2015	**EIA for two proposed**	Project member- Public	Umgeni Water

Completion Date	Project description	Role	Client
	Desalination plants on the KZN coast.	Participation Process, stakeholder engagement and project support.	
August 2014	**National Strategy for Sustainable Development Review (NSSD1)**	Project member- research and report development.	National Department of Environmental Affairs
2013-2014	**Strategic Environmental Assessment (SEA)** for roll out of photovoltaic solar and wind energy in South Africa.	Project member- Stakeholder engagement and project support	National Department of Environmental Affairs

EMPLOYMENT RECORD

- **2015 to present** Environmental Scientist and Assessment Practitioner. Council for Scientific and Industrial Research – Consulting and Analytical Services (CAS) - Stellenbosch
- **2014** Environmental Scientist and Assessment Practitioner (Intern). Council for Scientific and Industrial Research – Consulting and Analytical Services (CAS) - Stellenbosch
- **2013** Environmental Education Counselor - Fernwood Cove Summer Camp, USA.
- **2012** Graduate Assistant: Rhodes University Department of Environmental Science.
- **2011** Vacation Internship: Environmental Management Department of Mittal Steel, Newcastle.
- **2011** Vacation Internship: Northern Kwa-Zulu Natal branch of WWF.

QUALIFICATIONS/EDUCATION

- BSc Hons. Environmental Science (Rhodes University, Grahamstown, South Africa)
    - Honours modules including Environmental Impact Assessment, Statistics, Climate Change Adaptation, Urban Ecology and Environmental Water Quality.
    - Honours thesis: "Water use and conservation by households of different economic status in King Willliam's Town"
- Bachelor of Science with Distinction (Rhodes University, Grahamstown, South Africa)
    - Undergraduate courses including Environmental Science, Zoology, Ichthyology, Chemistry, Earth Science, Botany and Computer Science.
- IEB Matric Certificate, 5 Distinctions (St Dominic's Academy, Newcastle)

TRAINING, CONFERENCES AND PROFFESIONAL REGISTRATIONS

- Member of the Conference Organizing Committee (COC) for the IAIAsa Annual Conference 2017
- Project Management Practices and Principles with MS projects with the University of Pretoria: Distinction obtained (2016)
- Introduction to Earth Observation using ENVI with the University of Stellenbosch (2016)
- Public Participation Course with IAP2 (2016)
- Conflict Management Accredited through Conflict Dynamics (2015)
- Media and Science Training Accreditation through Jive Media Africa (2015)
- IAIA WC Workshop for Integrating Climate Change into EIA practice (2015)
- Presented on the DEA-CSIR "Special Needs and Skills Development Programme" at the 2014 & 2015 Annual IAIA (International Association for Impact Assessment) South Africa Conference.
- Environmental Impact Assessment Training Course accreditation through Coastal and Environmental Services, Grahamstown (2012)

- DEA&DP Training on the EIA Regulations (2014)
- Registered as a Candidate Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP) (Reg #: 100151/14)
- Member of the South African Affiliate of the International Association for Impact Assessment (Membership no: 3588)

LANGUAGE CAPABILITY

LANGUAGES	***Speaking***	***Reading***	***Writing***
English	Excellent	Excellent	Excellent
Afrikaans	Moderate	Moderate	Moderate

3 Curriculum Vitae of Rirhandzu Marivate – Project Member

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Stellenbosch
7599
South Africa

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Cell : +27 76 183 0642
Fax : +27 21 888 2473
Email : rmarivate@csir.co.za

Position in Firm: Junior Environmental Assessment Practitioner (305759)
Full Name: Marivate, Rirhandzu Anna
Specialisation: Environmental & Ecological Science
Professional Registration: Cand. Sci. Nat. Environmental Sciences – Reg Number: 100147/14
Date of Birth: 23 February 1989
Nationality: South African

BIOSKETCH

Rirhandzu holds a Bachelor degree in Zoology & Geology, Honours in Ecology, Environment and Conservation from the University of the Witwatersrand; and has environmental research experience with the Climate Systems Analysis Group at the University of Cape Town. The research focus has been within the domain of socioecology, looking at investigating local ecological knowledge of stakeholders on the provisioning of freshwater resources and its impacts on the management for of the Berg river in the Western Cape, South Africa. The research looked at how perception on resource utilisation affects management priorities, and creating a matrix of perceptions would be used a tool for better decision making within the Berg River Catchment Management Areas. Rirhandzu is currently studying towards her Master in Philosophy in Sustainable Development at the University of Stellenbosch. Here current research interest is looking at environmental planning and management within municipalities and how to optimise green spaces by including ecosystem goods and services to build resilience within those municipalities.

Since 2014, Rirhandzu has worked at the Council for Scientific and Industrial Research (CSIR) as an Environmental Assessment Practitioner (EAP) Intern within the Environmental Management Services (EMS) group, and from 2015 as a Junior Environmental Practitioner for the same group. Her duties include Assistance to other EAPs within EMS in their projects; Research in environmental assessment topics (e.g. indications, best practice, legislation); Report writing and project management; Participating in various forms of environmental assessments (BAs, EIAs, SEAs); consultation with stakeholders and public meetings; and Project administration (e.g. contracting and invoicing). She is particularly involved with the Special Needs and Skills Development (SNSD) Programme, which looks at assisting Community Trusts, Small, Micro to Medium Enterprises, with environmental services. She has also been involved with the Monitoring and Evaluation of the National Strategy for Sustainable Development by the Department of Environmental Affairs (DEA). Rirhandzu has established good client relationships and partnerships with the Land Bank, Department of Agriculture, Forestry and Fisheries (DAFF), and Department of Mineral Resources (DMR) through the SNSD Programme. She is involved as a stakeholder in the continuous consultations for the Development of Environmental Indices in response to the National Development Plan (NDP), led by the DEA.

EMPLOYMENT TRACK RECORD

Completion Date	Project description	Role	Client
2014 (in progress)	**Special Needs and Skills Development Programme:** Programme management and conducting of Basic Assessments for disadvantaged communities/businesses/enterprises	**Project Manager;** Stakeholder Co-ordination; Project Support; Mentorship; Ecological Input	National Department of Environmental Affairs (DEA), South Africa
2013- 2014	**Monitoring and Evaluation** for the National Strategy for Sustainable Development and Action Plan.	**Project Member;** Stakeholder engagement, Researcher, Report Writing	National Department of Environmental Affairs (DEA), South Africa
2013-2015	**Strategic Environmental Assessment (SEA)** for wind and solar PV energy in South Africa.	Data Management	National Department of Environmental Affairs (DEA), South Africa
2014-2016	**Strategic Environmental Assessment (SEA)** for Electricity Grid Infrastructure (EGI).	Stakeholder Engagement	National Department of Environmental Affairs (DEA), South Africa
2014	**Screening Study (SS)** for the Development of Biochar and Composting Facilities to support land restoration near the proposed Ntambelanga Dam, Umzimvubu Catchment, Eastern Cape**.**	**Project Manager,** Project Research & Report Writing	National Department of Environmental Affairs (DEA), South Africa
2015	**Environmental Screening Study (ESS)** for projects undertaken in the Amatikulu Aquaculture Development Zone, KwaZulu-Natal.	**Project Manager,** Project Research & Report Writing	National Department of Agriculture, Forestry & Fisheries (DAFF), S Africa
2015-2016	**Development of Sustainability Indicators** for the National Integrated State of the Environment Report for Namibia.	**Project Manager**, Project Research & Report Writing	Ministry of Environment and Tourism (MET), Namibia
2016	**Basic Assessment** for the development of a 5.5ha pig production facility and a 2.5 ha chicken broiler facility on Farm Rietvalei, Portion 1 & 6, near Delmas, Mpumalanga.	**Project Manager**	Mokate Estates (Pty) Ltd
2016	**Basic Assessment** for the development of a 0.6 hectare Chicken Layer Facility on a 7.8 hectare farm in Mashau-Bodwe Village, Makhado District, Limpopo.	**Project Manager**	Wanga Poultry (Pty) Ltd
2016	**Sustainable Development Appraisal for Gold Standard** on a microprogramme of the NOVA Brickstar Wood Stove in the Mahlaba Area, Limpopo.	**Project Member**, Project Researcher, Translator	Gold Standard Foundation
2017 (In Progress)	**Sustainable Development Goal Lab** on "Mainstreaming resilience into climate change adaptation and disaster risk planning."	**Project Member**	Future Earth; Stockholm Resilience Centre;

Completion Date	Project description	Role	Client
			University of Tokyo
2017 (In progress)	**Basic Assessment** for the proposed development of a leisure and cultural village on Farm Moiloa 412-JO, Dinokana Village, North West.	**Project Manager**	Makadima Leisure & Cultural Village 101 (Pty) Ltd
2017 (In progress)	**Basic Assessment** for the expansion of a Chicken Layer Facility on a 4.4 hectare farm on plot 226 Withok Estate, Brakpan, Ekurhuleni District, Gauteng	**Project Manager**	Lewin AgriBusiness (Pty) Ltd
2017 (In progress)	**Basic Assessment** for the expansion of a Chicken Broiler Facility on a 2.57 hectare farm on plot 62, Mapleton, Ekurhuleni District, Gauteng.	**Project Manager**	Mthunzi Chicken Supplier (Pty) Ltd

EMPLOYMENT RECORD

- **2015 to present** Environmental Scientist and Assessment Practitioner. Council for Scientific and Industrial Research – Consulting and Analytical Services (CAS) - Stellenbosch
- **2014-2015** CSIR Environmental Management Services (EMS) Environmental Scientist and Assessment Practitioner (Intern).
- **2011-2013** UCT Environmental & Geographical Science Department (N Methner; K Vickery) Researcher & Teaching Assistant
- **2010** WITS School of Animal Plant & Environmental Sciences (Prof K Balkwill) Teaching Assistant.
- **2009** ESKOM Generation Environmental Management (D Herbst) Environmental Officer (Intern).
- **2009** WITS School of Geosciences (Dr G Drennan; Dr M Evans) Teaching & Field Assistant.
- **2008** WITS School of Animal Plant & Environmental Sciences (T Gardiner; Dr W Twine) Environmental Control & Field Assistant.
- **2008** Jane Goodall Institute (Dr L Duncan) Field Assistant.

QUALIFICATIONS

- **2010 University of the Witwatersrand (Wits) BSc Honours (Ecology, Environment and Conservation)**

Coursework: Approaches to Science, Experimental Design and Biostatistics, Introduction to Statistics Computer programme R, Introduction to Geographic Information Systems, Global Change: Impact on Soils, Plants and the Environment, Ecological Engineering and Phytoremediation, Ethnoecology.
Thesis: Species Composition and Population Structure of Trees Protected in Cultivated Fields of Rural Villages in the Bushbuckridge Region, Mpumalanga Province (Supervisors: Dr Wayne Twine, Prof Ed Witkowski)

- **2006 – 2009 University of the Witwatersrand (Wits) BSc (Zoology & Ecology)**

Senior Courses: Research Report Writing; Exploration and Environmental Geochemistry; Introduction to Palaeoclimatology; Environmental Geomorphology; Diversity, Ecology and Economic Importance of Algae; Functional Ecology in Changing Environments; Ecological Communities and Biodiversity Conservation; Structural Geology; Igneous Petrology; Physics of the Earth and Plate Tectonics; Ore Petrology and Mineralisation Processes

SHORT-COURSES, CONFERENCES AND WORKSHOPS

- 2017 Ecosystem-Based Adaptation: Developing Capacity for Implementation, SANBI, Pretoria National Botanical Gardens, June 2017.
- 2015 Practical Adaptation for vulnerable communities by Adaptation Network, Kirstenbosch Botanical Gardens, Cape Town, August 2015.

- 2015 International Association for Impact Assessors South Africa (IAIAsa) National Annual Conference, August 2016, KZN.
- 2015 Sharpening the Tool: New Techniques & Methods in Environmental Impact Assessments, SE Solutions, Stellenbosch, Western Cape
- 2014 CiLLA Project Management I Course on July 2014 at CSIR Stellenbosch
- 2014 International Association for Impact Assessors South Africa (IAIAsa) Air Quality Management (AQM) Workshop on June 2014 in Western Cape
- 2014 South African Environmental Observation Network (SAEON) Graduate Student Network (GSN) Annual Conference September 2014, Eastern Cape.
- 2014 IAIAsa National Conference from August 2014 at Midrand, Gauteng
- 2014 African Student Energy (ASE) Annual Summit Cape Peninsula University of Technology June 2014, Western Cape
- 2014 International Association for Impact Association South Africa (IAIAsa) New National Environmental Management Act (NEMA) regulations March 2014 Western Cape
- 2014 Applied Centre for Climate and Earth Systems Sciences (ACCESS) facilitation for teacher training January 2014,WC.
- 2012 International Conference for Freshwater Governance for Sustainable Development November 2012, KwaZulu-Natal
- 2012 Society of South African Geographers (SSAG) Annual Conference at University of Cape Town June 2012, Western Cape
- 2011 Applied Centre for Climate and Earth System Sciences (ACCESS) teacher training, Western Cape
- 2011 BlueBuck Environmental Network Annual Summit at Rhodes University, Eastern Cape
- 2010 Biodiversity and People Mini-Symposium, University of the Witwatersrand, October 2010, Mpumalanga

LANGUAGE CAPABILITY

	Speaking	**Reading**	**Writing**
Setswana	Excellent	Excellent	Excellent
Xitsonga	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

4 EAP DECLARATION

I, Kelly Stroebel, declare that:

- I act as the independent environmental practitioner in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the Regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- I will provide the competent authority any information that is provided by the EAP to interested and affected parties and any responses; by the EAP to comments or inputs made by interested or affected parties;
- the information provided in this scoping report has been sourced from relevant literature, legislation, previous studies and specialist input and is therefore believed to be correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Environmental Assessment Practitioner
Signed at Stellenbosch on the 24 of October 2018

GreenCape
Supporting the business of green

Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

APPENDIX B

Database of Interested and Affected Parties

Database of Interested and Affected parties

Institution / Farm (Position)	Names	Postal Address	Email	Post
NATIONAL				
National Energy Regulator of South Africa (NERSA)	Mr. Thembani Bukula	P.O. Box 40343 Arcadia 0007	✓	✓
National Department of Environmental Affairs Branch: Environmental Quality and Protection	Hilda Bezuidenhout	Private Bag X447 Pretoria 0001		✓
National Department of Environmental Affairs	Salome Mambane	Private Bag X447 Pretoria 0001	✓	✓
National Department of Environmental Affairs	Lydia Kutu	Private Bag X447 Pretoria 0001	✓	✓
National Department of Environmental Affairs	Milicent Solomons	Private Bag X447 Pretoria 0001	✓	✓
National Department of Environmental Affairs	Mohammed Essop	Private Bag X 447, Pretoria, 0001	✓	✓
National Department of Environmental Affairs	Mmamohale Kabasa	Private Bag X 447, Pretoria, 0001	✓	✓
National Department of Environmental Affairs (Biodiversity)	Mrs. Wilma Lutsch	Private Bag X 447, Pretoria, 0001	✓	✓
National Department of Environmental Affairs (Air Quality)	Mrs. Deborah Ramalope	Private Bag X 447, Pretoria, 0001	✓	✓
National Department of Environmental Affairs (Climate Change)	Dr. Thulie Khumalo	Private Bag X 447, Pretoria, 0001	✓	✓
Department of Energy	Mr. Andre Otto	Private Bag X19 Arcadia 0007		✓
Department of Energy	Ms. Nnana Direro	Private Bag X19 Arcadia 0007		✓
Department of Energy	Wolsey Otto Barnard	Private Bag X96, Pretoria, 0001		✓
Department of Rural Development and Land Reform Spatial Planning	Leona Bruiners	Private Bag X9073 Cape Town 8000		✓

Institution / Farm (Position)	Names	Postal Address	Email	Post
Department of Agriculture, Forestry & Fisheries	H.J. Buys	Private Bag x120, Gezina Pretoria, 0031		✓
Department of Water Affairs	Tocky Ngobeni	Private Bag X313, Pretoria, 0000		✓
Client: GreenCape & CoCT				
City of Cape Town	Sally Chambers	P.O. Box 2815, Cape Town, 8000	✓	✓
City of Cape Town	Susan Moodell	P.O. Box 2815, Cape Town, 8000	✓	
City of Cape Town	Tania Lewis	P.O. Box 2815, Cape Town, 8000	✓	
City of Cape Town	Morne Theron	Milnerton Civic Building 87 Pienaar Street, Milnerton, 7435		
City of Cape Town	Ian Gildenhuys	Po Box 2815 Cape Town 8000		
GreenCape	Thabo Thulare		✓	
GreenCape- Project Manager	Mike Mulcahy		✓	
PROVINCIAL				
Department of Water Affairs Western Cape	Tandi Mmachaka		✓	
Dept of Rural Development and Land Reform – W/Cape Spatial Planning	Leona Bruiners		✓	
Western Cape Department of Agriculture – LandCare	Cor van der Walt	Muldersvlei Road; Head Office; Elsenburg; 7607		✓
Western Cape Roads Authority	Steve Ferreir		✓	
Western Cape Department of Environmental Affairs & Development Planning	Constance Musemburi	7th Floor, 1 Dorp Street, Cape Town 8001		✓
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Institution / Farm (Position)	Names	Postal Address	Email	Post
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Department of Agriculture: Western Cape	Mr. Andre Roux	Private Bag X1 Elsenburg 7607	✓	
Municipality & Ward Counsellors				
City of Cape Town: Municipal Manager	Achmat Ebrahim	Private Bag X9181, Cape Town, 8000	✓	✓
City of Cape Town: Environmental Resources Management Department (ERMD)	Pat Titmuss	P.O. Box 35, Milnerton, 7435		✓
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City of Cape Town: Energy, Environmental and Spatial Planning	Japie Hugo	Private Bag X9181, Cape Town, 8000	✓	✓
Ward Councillor – Atlantis Industrial 32	Barbara Rass	Private Bag X9181, Cape Town, 8000	✓	✓
Ward Councillor 55	Bernadette Le Roux	Private Bag X9181, Cape Town, 8000	✓	
Ward Councillor 105	Justin Basson	Private Bag X9181, Cape Town, 8000	✓	
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Institution / Farm (Position)	Names	Postal Address	Email	Post
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Atlantis Civic Association	Nagan Roy	P O Box 963 7352 Reygersdal		✓
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Eskom	Riaan Smit	P.O. Box 222 Brackenfell 7561	✓	✓
Eskom	John Geeringh	PO Box 1019, Johannesburg 2000	✓	
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Institution / Farm (Position)	Names	Postal Address	Email	Post
		2122		
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Globesight (Pty) Ltd	Ferdi Pieterse		✓	
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Atlantic Renewable Energy Partners (Pty) Ltd	Des Brasington	101, Block A, West Quay Building 7 West Quay Road, Waterfront Cape Town, 8000	✓	
Atlantic Renewable Energy Partners (Pty) Ltd	David Peinke	101, Block A, West Quay Building 7 West Quay Road, Waterfront Cape Town, 8000	✓	
Abengoa E&C (Abeinsa) South Africa	Dominic Goncalves	101, Block A, West Quay Building	✓	
Wartsila	Wayne Glossop		✓	
Mulilo	Jannie Mueller		✓	
iKapa Energy (Pty) Ltd	Craig Morkel		✓	
SANRAL	Ms Marilyn Kleinhans	Private Bag X19 Bellville 7535	✓	✓
Transnet Ports Authority: Cape Town	Bongani Dilima		✓	
Mulilo	Bertus van Niekerk	PO Box 50 Cape Town International Airport South Africa 7525	✓	
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Sasol	Esca Coetzee	33 Baker Street, Rosebank		

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DRAFT SCOPING REPORT

APPENDIX C

Biodiversity offset Information: Integrated Reserve Management Plan

INTEGRATED RESERVE MANAGEMENT PLAN

KLEIN DASSENBERG NATURE RESERVE

City of Cape Town

October 2014

CONTENTS

List of Maps v
List of Figures v
List of Tables vi
List of Appendices vi
List of Abbreviations used vi

PART A 1

PART 1 - DESCRIPTION 1

1 INTRODUCTION 1

1.1 Aim of the Integrated Reserve Management Plan 1
1.2 Location and Extent 4

2 DESCRIPTION OF LANDHOLDINGS AND OWNERSHIP 6

2.1 Property Details and Title Deed Information 6
2.2 Landscape Perspective 8
2.3 Physical Environment 12
2.3.1 Climate 12
2.3.2 Geology, geomorphology, soils and land types 12
2.4 Biological Environment 12
2.4.1 Vegetation 13
2.4.2 Mammals 15
2.4.3 Birds 15
2.4.4 Reptiles 16
2.4.5 Amphibians 17
2.4.6 Invertebrates 17
2.5 Socio-Political Context 18
2.5.1 History 18
2.5.2 Socio-economic Context 18
2.6 Protected Area Expansion 19

3 PURPOSE, VISION / MISSION, SIGNIFICANCE / VALUE 19

3.1 Purpose of the Protected Area 19
3.2 Vision and Mission 20
3.2.1 Vision 20
3.2.2 Mission 20

3.3 Significance of Property (Biodiversity, Heritage and Social) 20

PART 2 - MANAGEMENT POLICY FRAMEWORK 22

4 ADMINISTRATIVE AND LEGAL FRAMEWORK FOR THE MANAGEMENT AUTHORITY 22

4.1 Legal Framework 22

4.2 Administrative Framework 33

5 PROTECTED AREA POLICY FRAMEWORK & GUIDING MANAGEMENT PRINCIPLES 35

5.1 Management Objectives 35

5.1.1 Biodiversity and Heritage Objectives 35

5.1.2 Socio-economic objectives: 39

5.2 SWOT analysis 42

5.3 Protected Area Management Policy Framework and Guiding Principles 44

5.3.1 Community Participation 44

5.3.2 Security and safety 45

5.3.3 Tourism development and management 45

5.3.4 Infrastructure management 45

5.3.5 Biodiversity Conservation Management 46

5.4 Sensitivity Analysis of the Klein Dassenberg Nature Reserve 51

5.5 Zonation Plan of the Klein Dassenberg Nature Reserve 52

5.5.1 Zoning Informants 52

5.5.2 Zoning Definitions and Descriptions 53

6 DEVELOPMENT PLAN 53

7 COSTING PLAN 55

PART 3 – MONITORING AND AUDITING 56

8 MONITORING & AUDITING 56

8.1 ANNUAL AUDIT PROCEDURE [Set format taken from previous CCT Management Plan] 56

8.1.1 Management Effectiveness Tracking Tool –METT 56

8.1.2 Protected Area Review 57

8.2 Management Plan review 57

8.3 Biodiversity Monitoring 58

PART 4 - REFERENCES 60

9 REFERENCES 60

PART 5 - APPENDICES 63

10 APPENDICES 63

PART B 81

PART 6 - MANAGEMENT SCHEDULE 81

10.1 PROGRAMME OF IMPLEMENTATION 81

10.2 Management Programmes: Details of Annual Plan of Operations (APOs) 81

10.3 Annual Plan of Operation 91

List of Maps

Map 1:	Reserve Location in the City of Cape Town	5
Map 2:	Subsections of Klein Dassenberg Nature Reserve	6
Map 3:	Klein Dassenberg Nature Reserve Boundary	6
Map 4:	Klein Dassenberg Nature Reserve Erven Map	8
Map 5:	Klein Dassenberg Nature Reserve and Biodiversity Network	10
Map 6:	Klein Dassenberg Nature Reserve in relation to surrounding Reserves	11
Map 7:	Vegetation Types within and around Klein Dassenberg Nature Reserve	14
Map 8:	Zonation Map of Klein Dassenberg Nature Reserve	31
Map 9:	Nature Reserve Firebreaks and Footpaths	47
Map 10	Veld Age Map of Klein Dassenberg Nature Reserve	58
Map 11:	Alien Clearing Blocks of Klein Dassenberg Nature Reserve	60
Map 12:	Footpaths in Klein Dassenberg Nature Reserve	60

List of Figures

Figure 1: The elements of the Integrated Reserve Management Plan 2

Figure 2: Legal and planning framework for the Integrated Management Plan 3

Figure 3: Klein Dassenberg Nature Reserve Staff Organogram 33

Figure 4: North Region Organogram 34

Figure 5: The greater Dassenberg Coastal Catchment Partnership 64

List of Tables

Table 1: Erf numbers of Papekuil Nature Reserve 7
Table 2: Potential threatened species of birds which could occur within the immediate area. 16
Table 3: Legal Framework 22
Table 4: Biodiversity and Heritage Objectives for Klein Dassenberg Nature Reserve 35
Table 5: Socio-economic objectives for Klein Dassenberg Nature Reserve 39
Table 6: Broad costing management breakdown for Klein Dassenberg Nature Reserve: 55
Table 7: The Reserve's monitoring requirements: 58
Table 8: Invasive Species, Densities and Age (to be updated annually, or as information changes) 88

List of Appendices

Appendix 1: The S.G. Diagrams 63
Appendix 2: The Dassenberg Coastal Catchment Partnership (DCCP) 63
Appendix 3: The most recent plant species list for Klein Dassenberg Nature Reserve (updated 25/09/2014) 66
Appendix 4: Existing Firebreaks on Papekuil Nature Reserve 72
Appendix 5: Annual Review Procedure (Example of an audit proforma) 73
Appendix 6: Fixed Point Photography Data Sheet 80

List of Abbreviations used

APO	Annual Plan of Operations
BIONET	Biodiversity Network
CAPEX	Capital Budget
CARA	Conservation of Agricultural Resources Act, 1983
CBD	Central Business District
CBNRM	Community Based Natural Resource Management
CCT	City of Cape Town
CDF	Conservation Development Framework
CFR	Cape Floral Region
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EN	Endangered
ESKOM	Electricity Supply Commission (of South Africa)

ERMD	Environmental Resource Management Department
GN	Government Notice
GIS	Geographic Information System
IUCN	International Union for Conservation of Nature and Natural Resources
IDP	Integrated Development Plan
IMEP	Integrated Metropolitan Environmental Policy
IRMP	Integrated Reserve Management Plan
LBSAP	Local Biodiversity Strategic Action Plan
MEC	Member of Executive Council
METT-SA	Management Effectiveness Tracking Tool
MOU	Memorandum of Understanding
MPA	Marine Protected Area
NEMA	National Environmental Management Act, 107 of 1998
NEM:BA	National Environmental Management: Biodiversity Act, 10 of 2004
NGOs	Non-Governmental Organisations
SAAQIS	South African Air Quality Information System
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SLA	Service Level Agreement
ToR	Terms of Reference
WfW	Working for Water
WfWet	Working for Wetlands
WWF	World Wildlife Fund for Nature

PART A

PART 1 - DESCRIPTION

1 INTRODUCTION

The Klein Dassenberg Nature Reserve will be proclaimed a nature reserve in terms of Protected Areas Act No. 57 of 2003 section 23(1).

The strategic management planning process (which results in the development of an Integrated Reserve Management Plan), for the Klein Dassenberg Nature Reserve begins with the definition of the Vision which is followed by the Purpose for the reserve. This Purpose is then supported by Desired States for the Reserve. The Reserve objectives contribute to realising the Purpose and Desired States. For each Desired State a number of Management objectives are identified. These Management objectives are then made operational through the identification of outputs. Objectives for each Desired State are prioritised for the five-year time horizon of the plan. Time frames, deliverables, performance indicators and targets are then allocated for each objective, or a group of linked outputs contributing to the Desired State.

In context, this management plan is a dynamic document that should be updated every five years or as soon as new information comes to light that may better inform decisions on responsible land management.

1.1 Aim of the Integrated Reserve Management Plan

The aim of the Integrated Reserve Management Plan (IRMP) is to ensure that the Klein Dassenberg Nature Reserve has clearly defined objectives and activities to direct the protection and sustainable use of its natural, scenic and heritage resources over a five year time period. The IRMP thus provides the medium-term operational framework for the prioritised allocation of resources and capacity in the management, use and development of the reserve. The IRMP intends to add value and continuity by clearly stating management objectives, scheduling action and providing guidelines on the management approach.

The context of the Reserve planning process for the Klein Dassenberg Nature Reserve are: (i) City's Integrated Development Plan (IDP) (Anon 2010); (ii) City's Integrated Metropolitan Environmental Policy (IMEP) (Anon 2003[1]); (iii) Biodiversity Strategy (Anon 2003[2]) and Local

Biodiversity Strategic Action Plan (LBSAP) (Anon 2009[1]); and (iv) Bioregional context (Cape Action for People and the Environment (C.A.P.E.). The major elements of the IRMP are: this document (overall strategy, vision and context); the detailed subsidiary plans (as required) and an annual plan of operations (APO). The IRMP for the Klein Dassenberg Nature Reserve is supported by a State of Biodiversity Report (2012), Operational Guidelines, and Monitoring and Evaluation framework to ensure on-going implementation and review of protected area management activities (Figure 1).

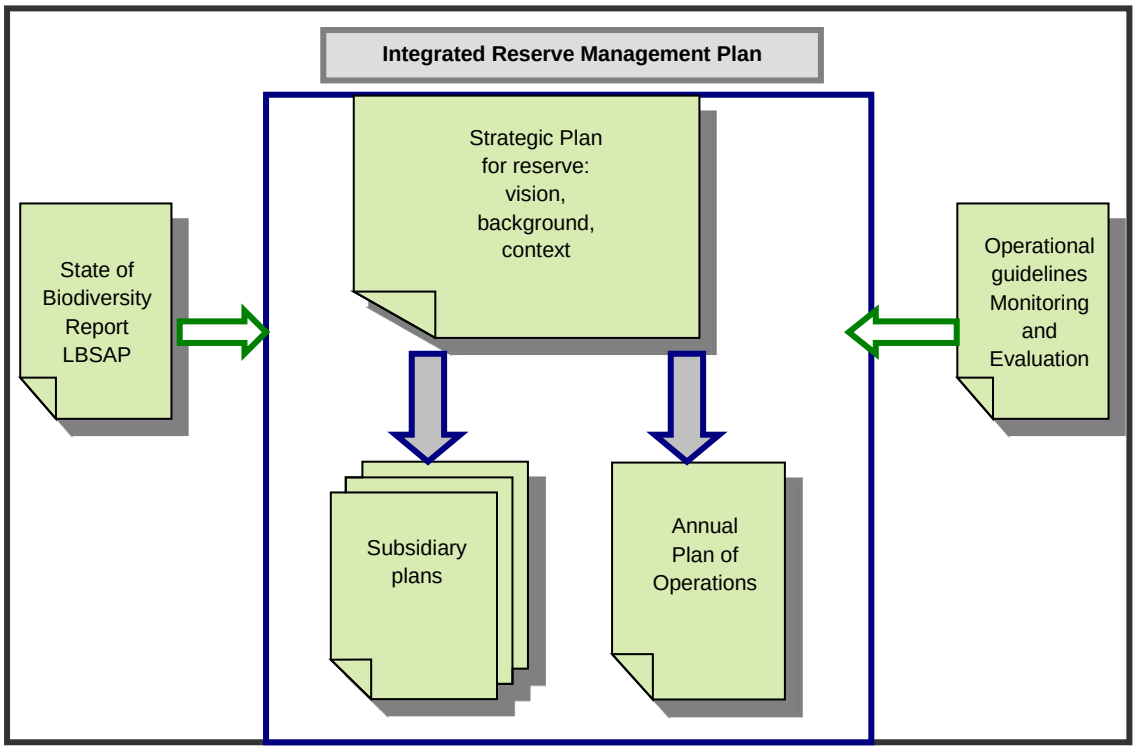


Figure 1: The elements of the Integrated Reserve Management Plan

The IRMP for the Klein Dassenberg Nature Reserve forms part of a tiered series of policies, legislation and related planning documents at the sectorial, institutional, agency and local levels (Figure 2).

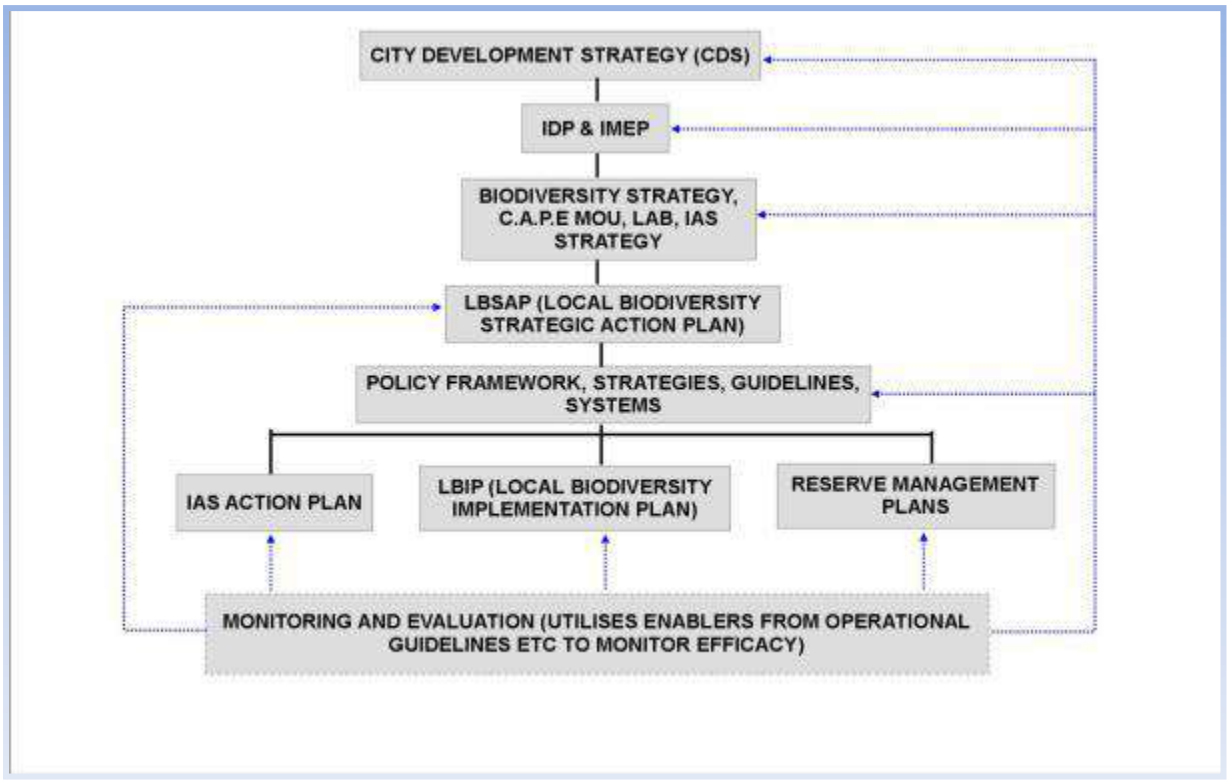


Figure 2: Legal and planning framework for the Integrated Management Plan

Where possible, emphasis has been placed on the following:

- Assigning responsibility for management interventions;
- Scheduling, said management interventions; and
- Quantifying management costs.

This approach has the specific intention of creating a mechanism whereby management intervention can be monitored and audited on an annual basis. In context, this IRMP is a dynamic document and the detailed subsidiary plans should be updated on an annual basis or as soon as new information comes to light that may better inform decisions on responsible land management. The IRMP should be updated every five years.

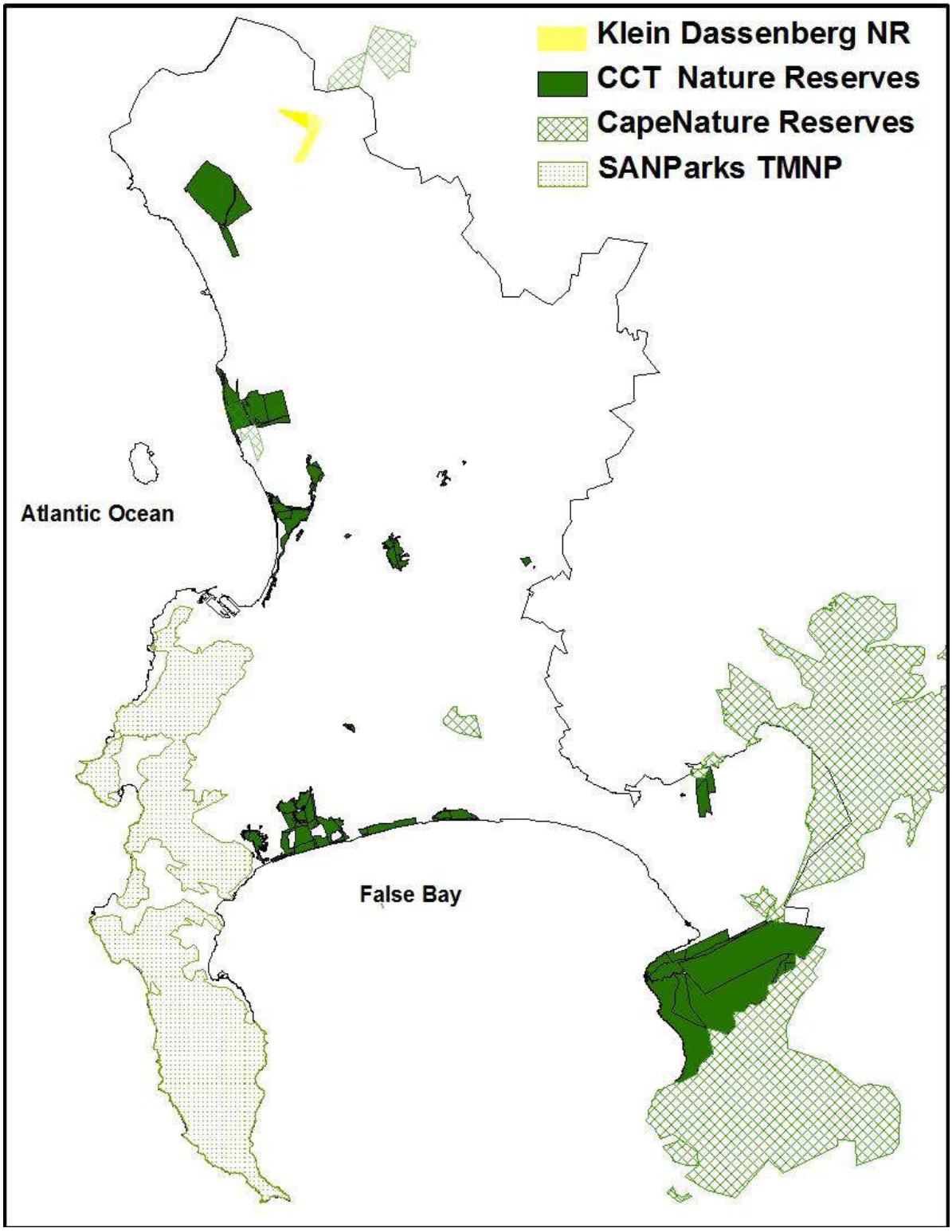
1.2 Location and Extent

The Klein Dassenberg Nature Reserve is situated about 45 km from Cape Town's Central Business District (CBD), immediately east of Atlantis and directly adjacent to Pella on the northern boundary, Western Cape, South Africa (Map 1). The approximate coordinates are (Google Earth, 2013):

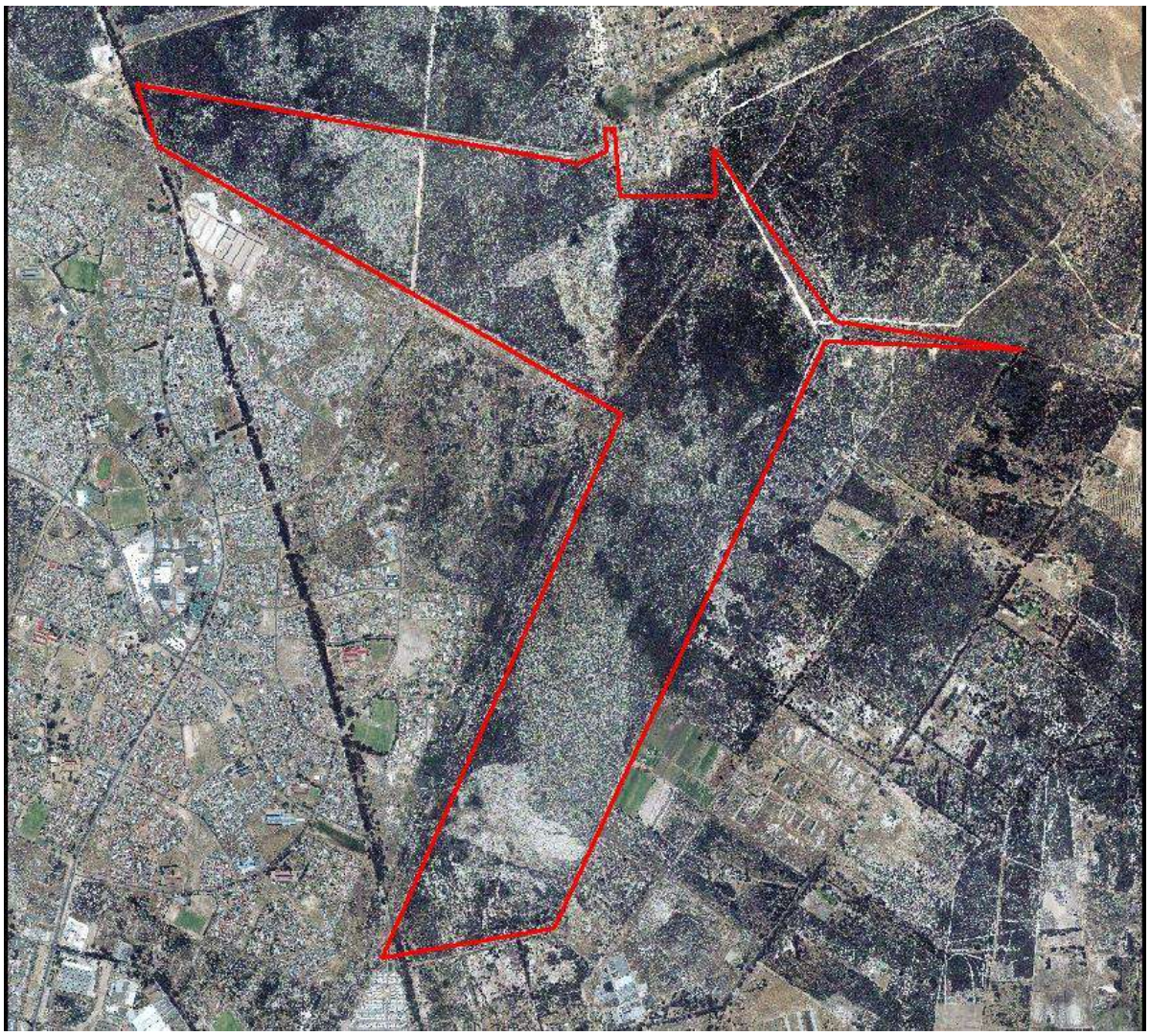
18°30'29.888"E

33°32'26.044"S

The Reserve is currently 371.9699ha in extent (see Map 2) consisting of the farm Klein Dassenberg No 20/9 and farms No 7, 8, 10 and an unregistered portion of 1502 Cape road and Cape Farm No 17/1. Portion 3 of the farm Papekuil Outspan No 6 is currently unregistered state land and is being managed as part of the current reserve network. This portion is 183.5218ha in extent.



Map 1: Reserve location in the City of Cape Town



2 DESCRIPTION OF LANDHOLDINGS AND OWNERSHIP

2.1 Property Details and Title Deed Information

The extent of the Klein Dassenberg Nature Reserve is comprised of various Erven under the City of Cape Town. These Erven include:

Table 1: Erf numbers of Papekuil Nature Reserve

NO	ERVEN	LANDOWNER	EXTENT
1	Erf CA20-9	City of Cape Town	256,326 ha
2	Erf CA7-0	City of Cape Town	5,930 ha
3	Erf CA8-0	City of Cape Town	47,752 ha
4	Erf CA10-0	City of Cape Town	14,608 ha
5	Erf CA1502-0	City of Cape Town	31,876 ha

The Farm No CA20-9, situated in the City of Cape Town Municipality, Division Cape, Western Cape Province;
In extent: 535,939 (Five Hundred and Thirty Five comma Nine Three Nine) Hectares;
Held by Deed of Transfer No. T61440/88

And

The Farm No CA7-0, situated in the City of Cape Town Municipality, Division Cape, Western Cape Province;
In extent: 5,930 (Five comma Nine Three Zero) Hectares;
Held by Deed of Transfer No. T9989/1936

And

The Farm No CA8-0, situated in the City of Cape Town Municipality, Division Cape, Western Cape Province;
In extent: 47,752 (Forty Seven comma Seven Five Two) Hectares;
Held by Deed of Transfer No. T9989/1936

And

The Farm No CA10-0, situated in the City of Cape Town Municipality, Division Cape, Western Cape Province;
In extent: 14,608 (Fourteen comma Six Zero Eight) Hectares;
Held by Deed of Transfer No. G65/1939

And

The Farm No CA1502-0, situated in the City of Cape Town Municipality, Division Cape, Western Cape Province;
In extent: 31,876 (Thirty One comma Eight Seven Six) Hectares;
Held by Deed of Transfer No. T62457/2005

2.2 Landscape Perspective

South Africa is globally known as a biodiversity-rich country, owing to the three hotspots that occur in the country. The Cape Floristic Region (CFR), one of the three hotspots, which is concentrated within the Western Cape is famous for its high species diversity and endemism, such that it is recognised as an entirely separate Floral Kingdom, one of only six globally (Cowling *et al.,* 2003*;* van Wilgen, 2009; Parnell *et al.,* 2010). Within the Western Cape, the Cape Town Metropole is not only recognised as a centre of plant endemism but also contains more than 120 threatened plant species (Rouget *et al.* 2003).

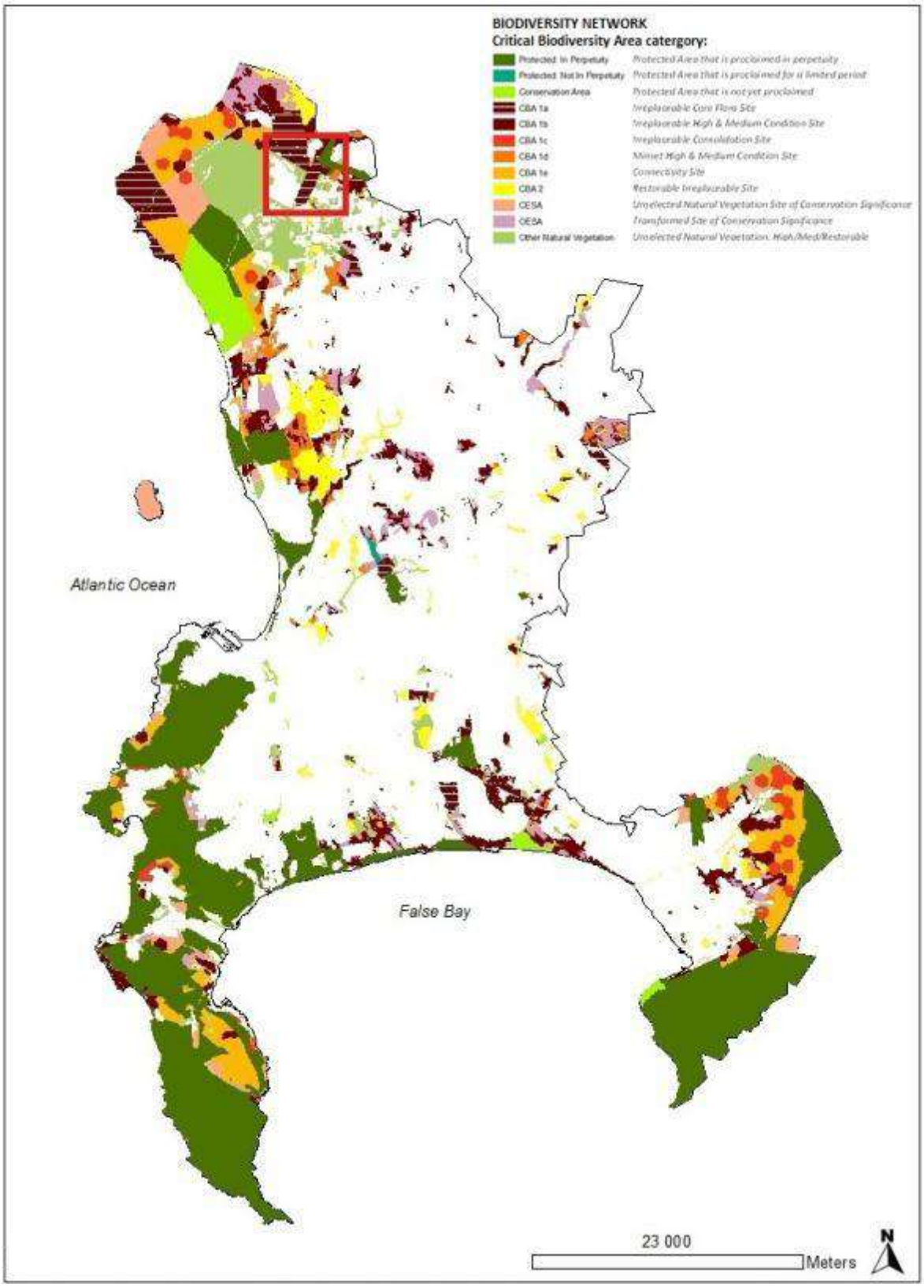
To date more than 30% of the CFR has been lost. The extensive loss of biodiversity is as a result of the large-scale transformations that have taken place in the lowlands (Cape Flats) for urban development, commercial agriculture, extensive alien species invasion, changes in fire regimes and unsustainable natural resource use (Hall, 1987; Rebelo and Siegfried, 1990; Rouget *et al.,* 2003). In addition to anthropogenic disturbances, climate change and global warming has been predicted to further threaten the natural ecosystems of the Western Cape, especially in terms of rainfall and temperature.

The Klein Dassenberg Nature Reserve contains high quality Critically Endangered Atlantis Sand Fynbos which supports numerous threatened fauna and flora. It has been identified since the 1980's as a key conservation priority and a Core Botanical site critical for conservation if a representative of the Cape Flat's natural heritage is to be conserved (Jarman, 1986; Kilian, 1995). Klein Dassenberg was specifically identified in 1999 to be an important fynbos corridor between the fynbos habitats in the Dassenberg/Pella region with the remnants to the south of Atlantis (Jeffery, 1999).

The Klein Dassenberg Nature Reserve forms part of the City's Biodiversity Network (BioNet), a systematic, fine-scale conservation plan that is used to identify important areas for protected area expansion. This initiative highlighted Klein Dassenberg as an "Irreplaceable Core Flora Site" (CCT, 2012) (Refer to Map 5). Additionally, the greater Atlantis and Dassenberg area, was highlighted as a Critical Biodiversity Area by Cape Nature's 2010 Protected Area Expansion Strategy (Purnell *et al*., 2010) as well as by the 2010 WWF-Table Mountain Fund Climate Change Corridor (Huyser and Pence, 2010). Following these reports, the landscape initiative known as the Dassenberg Coastal Catchment Partnership (DCCP) was initiated. This initiative aims to protect and link important Fynbos remnants while maximising associated social and economic opportunities. Therefore, without Klein Dassenberg Nature Reserve, the DCCP would not exist. The stakeholders involved in this

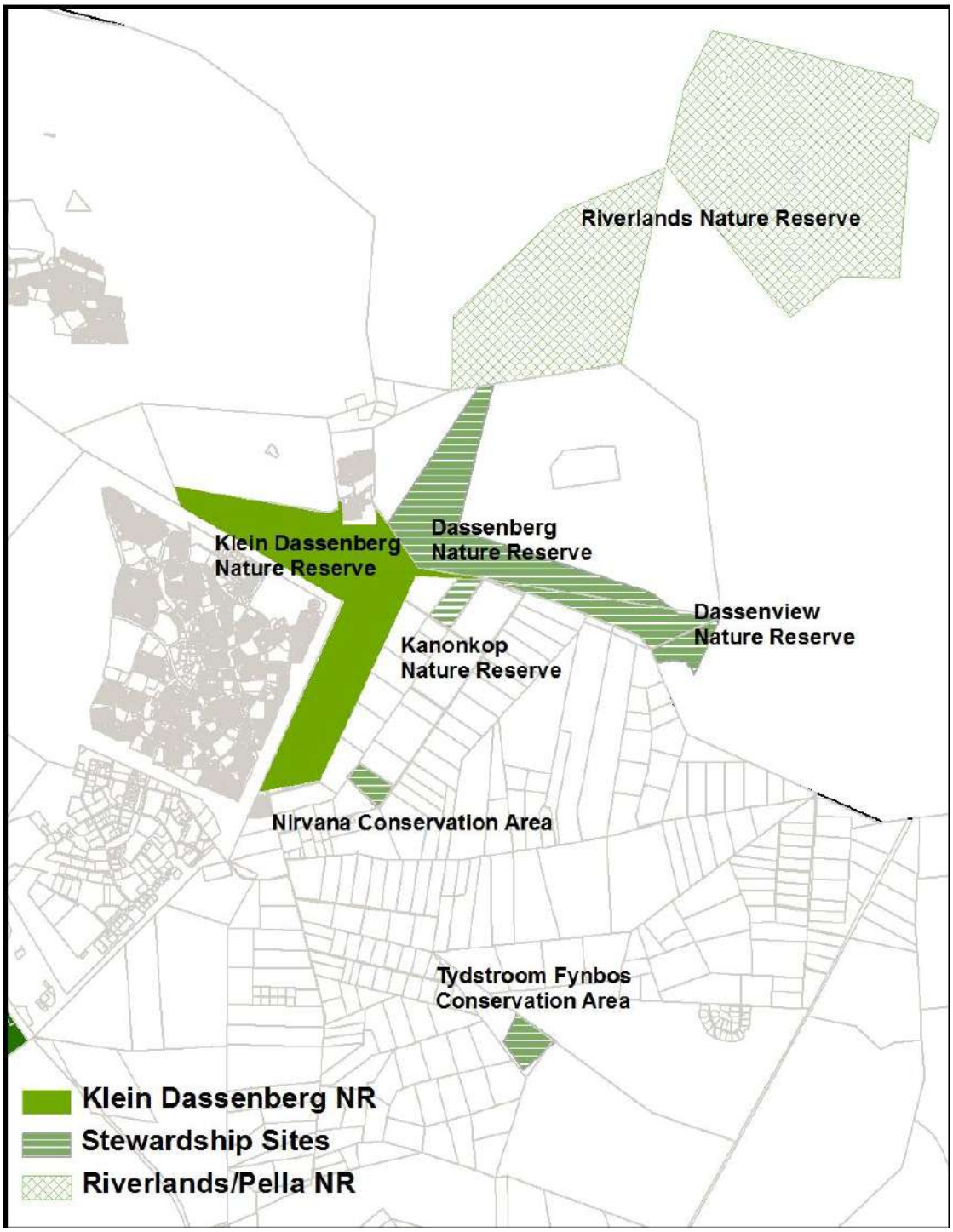
initiative include the Environmental Resource Management Department of the City of Cape Town, CapeNature, WWF, Table Mountain Fund, Wilderness Foundation, Cape West Coast Biosphere, SANParks and SANBI.

In conjunction with the DCCP, Klein Dassenberg Nature Reserve falls within the buffer of the southern core of the greater Cape West Coast Biosphere Reserve (CWCBR).



Map 5: Klein Dassenberg Nature Reserve encircled in the red block

The Klein Dassenberg Nature Reserve neighbours Dassenberg farm which links Klein Dassenberg to Riverlands Nature Reserve. Future expansion potential exists with Nirvana Conservation Area, a 15ha Stewardship site that is situated SE of the Nature Reserve and isolated by only one property. See Map 6.



2.3 Physical Environment

2.3.1 Climate

The area is associated with a Mediterranean climate with winter rainfall, hot dry summers and cold, wet winters. Rainfall is mainly produced by the passage of westerly wave cold frontal systems. Summers are relatively dry due to the effects of the South Atlantic Anticyclone system (Mugabe, 2008). The mean maximum temperature in summer (November, December, January) is 26^0 C. The mean minimum temperature in winter (June, July, August) is 7^0 C. The warmest month on average is February and the coldest month on average is July. Mist occurs frequently in winter, supplying additional precipitation. The Winter-rainfall regime includes precipitation peaking from May to August. The Mean Annual Rainfall is 290–660 mm (mean: 440 mm) (Mucina and Rutherford, 2006). The mean annual evaporation rate is 1445 mm (Mabihi, 2009).

Management needs to look into obtaining reliable rainfall stats for the area by means of setting up a rain gauge in the Nature Reserve which must be systematically monitored and recorded after each rainfall to obtain updated reliable local rainfall data.

2.3.2 Geology, geomorphology, soils and land types

The soil type of Atlantis Sand Fynbos is acidic tertiary grey regic sand originally derived from Cambrian Cape Granite with an Aeolian origin (Stabbert *et al.,* 2010). Granite intrusions of the Cape Granite Suite are to be found in the Mamre area. Shale outcrops occur along the coast and inland to the north and south of Atlantis. The Centre for Scientific and Industrial Research (CSIR, 2002) report further states that the granite outcrops of Dassenberg, Kanonkop and Mamre-Darling near Mamre, constitutes the highest points in the area at heights of 210 and 410m above sea level.

2.4 Biological Environment

The most recent botanical species lists for the Nature Reserve forms part of the appendices (Appendix 3) and was drawn up by volunteers of the Custodians of Rare and Endangered Wildflowers (CREW). The species list will be updated on a regular basis, as new information becomes available. The species list can also be accessed through the South African Biodiversity Database (www.biodiversity.co.za), which contains all listed species and statistics for all City managed conservation areas as well as other areas as part of the BIoNet (see Map 5 above).

2.4.1 Vegetation

The natural vegetation in the Klein Dassenberg Nature Reserve consists of Atlantis Sand Fynbos with a very small portion of Swartland Granite Renosterveld on the slopes of Kanonkop. See Map 7.

To date a total of 152 plant species, of which two are classified/listed as Near Threatened (NT), 12 Vulnerable (V), 10 Endangered (E), two Critically Endangered (CR) and one Declining have been recorded at the Klein Dassenberg Nature Reserve (Appendix 3).

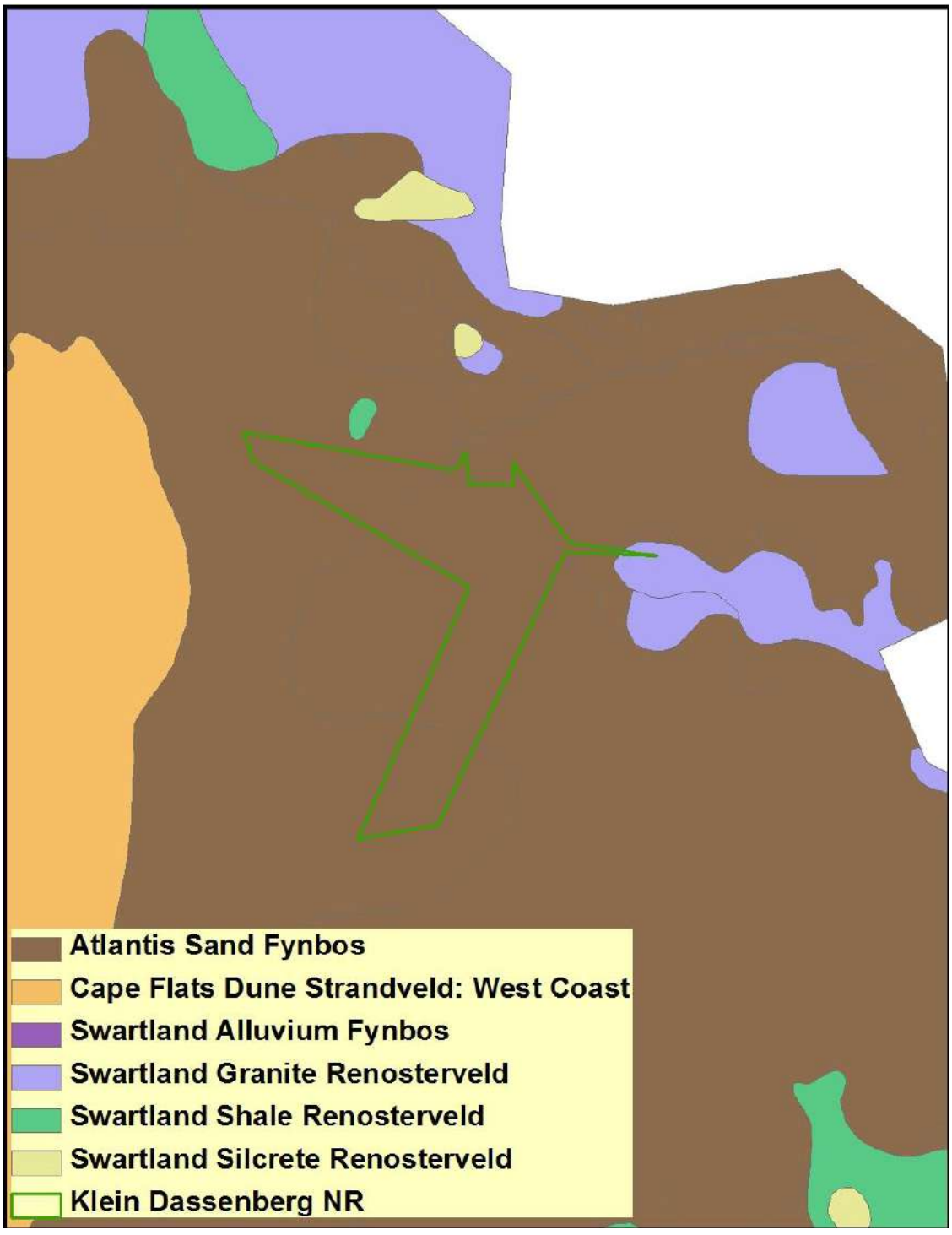
According to the latest national ecosystem conservation status (2011), Atlantis Sand Fynbos is Critically Endangered (CR). The reason for this status is largely due to transformation, by urban and agricultural development and the intense invasive of alien vegetation (Mucina and Rutherford, 2006). To date 45% has already been transformed with only 15% of Atlantis Sand Fynbos remaining within the City, of which 6% is currently conserved in Riverlands, Paardenberg and at the Pella Research Site. The National conservation target for Atlantis Sand Fynbos is 30%. With the proclamation of Klein Dassenberg Nature Reserve, a further 1.26% will be conserved, increasing the total protected area to 7.26%.

2.4.1.1 Atlantis Sand Fynbos

Sand Fynbos occurs on deep sands of marine or aeolian origin (Jacobs and Jangle, 2008). Structural dominance is dependent on the depth of the water table. When the water table is deep and moisture is only derived from precipitation, restioid fynbos will be dominant. Where the water table is shallow and non-fluctuating, proteoid fynbos dominates. Asteraceous fynbos dominates where it is deeper but still accessible and ericaceous fynbos dominates where the surface is seasonally moist. Sand Fynbos is characterised by the presence of the *Erica mammosa* (Ninepin Heath), *Phylica cephalantha* (Starface), *Trichocephalus* stipularis (Baboon Face), and the restioids including *Thamnochortus obtusus* and *T. punctatus* (Sandveld Thatching Reed) (Rebelo *et al*., 2011).

According to Mucina and Rutherford (2006), Atlantis Sand Fynbos, which is found at altitudes of 40-250m, is distributed in the Western Cape from Rondeberg to Blouberg on the West Coast coastal flats; along the Groen River on the eastern side of the Dassenberg-Darling Hills through Riverlands and between Atlantis and Kalbaskraal. It is also found between Klipheuwel and the Paardeberg with outliers west of the Berg River east and north of Riebeek-Kasteel between Hermon and Heuningberg.

Vegetation features include moderating undulating to flat sand plains with dense, moderately tall, ericoid shrubland intermixed with emergent, tall sclerophyllous shrubs and an open, short restioid stratum. The dominant vegetation type is restioid and proteoid fynbos interlaced with patches of asteraceous and ericaceous fynbos.



Map 7: Vegetation types within Klein Dassenberg Nature Reserve and surrounding areas

2.4.2 Mammals

To date, no dedicated baseline fauna collection has been conducted for the greater Dassenberg Area. Historically, numerous large mammal species would have occurred within the area. This assemblage of large fauna would have included Eland (*Taurotragus oryx*), Red Hartebeest (*Alcelaphus buselaphus*) and Brown Hyena (*Hyaena brunnea*). These species were quickly eradicated once formal agricultural practices became established in the Cape.

However, the majority of smaller and medium sized mammal species still occur within the area. These include three small antelope, namely Steenbok (*Raphicerus campestris*), Cape Grysbok (*Raphicerus melanotis*) and Common Duiker (*Sylvicaptra grimmia*). Other animals confirmed to occur in the area are Small Spotted Genet *(Genetta genetta)*, Caracal (*Felis caracal*), Porcupine *(Hystrix africaeaustrali*) and Small Grey Mongoose *(Galerella pulverulenta).*

Numerous rodent and shrew species can be expected to occur but only Forest Shrew (*Myosorex varius)*, Grey Climbing Mouse (*Dendromus melanotis*), Striped Field Mice (*Rhabdomys pumilio*) and Cape Gerbil (*Tatera afra*) have been confirmed to date. Rock Hyrax (*Procavia capensis*) is also present near the summit of Kanonkop. Recent records of species with extremely large home ranges such as Honey Badger *(Mellivorus capensis*) and Aardvark (*Orycteropus afer*) in the general vicinity can be seen as a positive sign. Their continued occurrence is evidence that the area of natural veld is relatively extensive and that there is at least some ecological connectivity to the north and west.

Many of the indigenous mammal species are inconspicuous, secretive and nocturnal. As such, they are not easily observed. Their presence is often most easily noted by observing signs of their presence, namely are middens, scat and spoor.

2.4.3 Birds

A collated bird list has not been compiled for the conservation area as yet. However, the common bush bird's characteristic of Fynbos and Renosterveld vegetation have been confirmed from the site. These include: Grey-backed Cisticola (*Cisticola subruficapillus*), Karoo Prinia (*Prinia maculosa*), Southern Double-collared Sunbird (*Cinnyris chalybea*), Long-billed Crombec (*Sylvietta rufescens*), Malachite Sunbird (*Nectarinia famosa*), Cape

Francolin (*Pternistis capensis), Stone Chat (Saxicola torquata)* and Cape Robin-Chat (*Cossypha caffra*).

In the dense thicket and areas dominated by invasive alien Acacias, Cape Batis (*Batis capensis*), Bar-throated Apalis (*Apalis thoracica*), Cape White-eye (*Zosterops pallidus*), Fiscal Flycatcher (*Sigelus silens*), and Acacia Pied Barbet (*Tricholaema leucomelas*) have all been recorded.

Additional common birds include Cape Sparrow (*Passer melanurus*), Common Fiscal (*Lanius collaris*), Cape Bulbul (*Pycnonotus capensis*), Cape Wagtail (*Motacilla capensis*), White-throated Canary (*Serinus albogularis*) and Bokmakierie (*Telophorus zeylonus*). Annually, the bird diversity is augmented with the arrival of the summer migrants. These include Eurasian Bee-eater (*Merops apiaster*), Pearl-breasted Swallow (*Hirundo dimidiata*), Yellow-billed Kite (Milvus parasitus), Barn Swallow (*Hirundo rustica*), and White-rumped Swift (*Apus caffer*).

No species of conservation concern have been identified on the reserve to date but it is expected that a few red listed species may occur in the vicinity. These are listed in Table 1.

Table 2: Potential threatened species of birds which could occur within the immediate area.

#	Common Name	Scientific Name	IUCN Status
1	Black Harrier	*Circus maurus*	Near-threatened
2	White Pelican	*Pelecanus onocrotalus*	Near-threatened
3	Secretarybird	*Sagittarius serpentarius*	Near-threatened
4	Martial Eagle	*Polemaetus bellicosus*	Near-threatened
5	Blue Crane	*Anthropoides paradiseus*	Vulnerable

2.4.4 Reptiles

As the nature reserve falls within a large, relatively intact, landscape the reptile diversity can be assumed to be high. It is also unlikely that any species have become locally extinct on the site due to anthropogenic influences. Baseline data collection recorded on neighbouring Papekuil included the following reptile species: Delalandes Beaked Blind Snake (*Rhinotyphlops lalandei)*, Mole Snake (*Pseudaspis cana)*, Cape Skink (*Trachylepis*

capensis), Silvery Dwarf Burrowing Skink (*Scelotes bipes)* and Red Sided Skink (*Trachylepis homalocephala)*. Other reptile sightings in the surrounding areas but not on Klein Dassenberg include Cape Girdled Lizard (*Cordylus cordylus*) in the exposed granite areas and both Angulate (*Chersina angulata*) and Parrot-beaked Tortoise (*Homopus aeriolatus*). Snake species that have been confirmed as occurring are Cape Cobra (*Naja nivea*), Boomslang (*Dispholidus typus*), Rhombic Skaapsteker (*Psammophylax rhombeatus*), Spotted Harlequin Snake (*Homoroselaps lacteus*) and Mole Snake (*Pseudaspis cana*).

The discovery of a dead Southern Adder (*Bitis armarta*) on Papekuil was of immense conservation significance. It has long been assumed that this endangered reptile was extinct within the City boundaries. There is a strong probability that there are more dwarf adders within the area. The confirmation of the species status in the area is a priority and any possible records must be reported to the Conservation Authorities. It is also probable that the near-threatened Cape Sand Snake (*Psammophis leightonii*) occurs in the area.
Numerous additional reptiles are expected to occur on the site and dedicated baseline data collection needs to be conducted for the area.

2.4.5 Amphibians

Minimal baseline data conducted within the Reserve recorded the common and widespread Clicking Stream Frog (*Strongylopus grayii.* It can be expected that there will be limited amphibian diversity on the Nature Reserve area. It is highly likely that the specialist rain frogs, Sand Rain Frog (*Breviceps rosei*) and Namaqua Rain Frog (*B. namaquensis*) do occur on site.

It is unlikely that any threatened amphibian species occur in the Reserve.

2.4.6 Invertebrates

To date, only arachnids were collected during invertebrate surveys on Papekuil, neighbouring the reserve. These include Funnel-web spider (*Benoitia ocellata*), Termite feeders (*Ammoxenus kalaharicus*), Orange Lung-less Spider (*Caponia capensis*), Ground Velvet Spider (Dresserus collinus), Flat-bellied Ground Spider (*Asemesthes montanus* and *Camillina biplagia*), Wolf Spider (*Lycosoid* spp.), Tube-trapdoor (*Pionotheie* spp.), Palp-footed Spider (Diaphorocellus spp.), Hackled-meshweb Weavers (*Vidole capensis*), Huntsman Spider (*Parapalstes* spp.), Baboon Spider (*Harpactira atra* and *Harpactirella helenae*), Crab Spider (*Xysticus subjugalis*), Burrowing Spider (*Psammoduon arenicola*,

Psammoduon canosum, *Psammorygma* spp., *Cydrela* spp., *Chariobas cylindraceus* and *Australutica* spp.).

The immense importance of the Dassenberg area for threatened and localised invertebrates was highlighted by lepidopterist, Jonathan Ball. Although, the last known sighting of the Critically Endangered Dickson's Copper (*Chrysoritis dicksoni)* in the area was in 1994, it is likely that the species still occurs in high quality Atlantis Sand Fynbos remnants.

Also of significance was the discovery of the paddle winged lacewing (*Halterina pulchellum)*, in the Nature Reserve in 2011 by Andrew Morton. The species was only known from the type specimen described in 1910 and was presumed extinct.

2.5 Socio-Political Context

2.5.1 History

Papekuil, also known as Papekuil/ Papenkuil Outspan, which was owned by the then Cape Metropolitan Council (which was formally known as the Western Cape Regional Services Council), was historically used as grazing land and the occasional flower picking (Kilian, 1995). The area originated when it was proclaimed part of the Mamre Rural Coloured Area in 1970. Mamre, which is situated North West of the Nature Reserve originated in 1791 as a military post (CapeBiosphere, 2012).

Klein Dassenberg was owned by Klein Dassenberg Trust who purchased the property in 1988. In 1996, ownership of the land was changed with the intent to subdivide and develop the area. These developments were prevented due to botanical assessment and the City of Cape Town offered to purchase the land in writing. However, this transaction only occurred recently (See Appendix 1).

The Blaauwberg Municipality, along with all of the other municipalities in the Cape Town area, were grouped together to form the City of Cape Town in 2000. The reserve is now managed by the City of Cape Town, specifically the Biodiversity Management Branch under the Environmental Resource Management Department.

2.5.2 Socio-economic Context

Currently, a site coordinator, a field ranger and an intern are employed to manage the Klein Dassenberg Nature Reserve. The goal is to eventually appoint another field ranger/ general worker and a community conservation officer.

The Atlantis, Mamre and Pella communities are the closest residential communities to the site, with Pella and Atlantis bordering the Reserve.

Atlantis was established as an industrial growth point in the mid-1970s with the aim of decreasing concentrated housing and development away from the Cape Metropolitan Area (CMA). However, with removal of several large employing industries, the scheme was unsuccessful, resulting in very high levels of unemployment in the area (CapeBiosphere, 2012).

2.6 Protected Area Expansion

Future expansion of the Reserve exists with Nirvana, a 15ha Stewardship Site found to the South East of the Reserve (See Map 6). Furthermore negotiations into signing privately owned land situated in Mamre into Stewardship Agreements are currently underway, as well as approaching viable farms east of Klein Dassenberg for future Stewardship Agreements. Expansion of the Reserve is important in terms of reaching the National Conservation Targets of conserving 30% of Atlantis Sand Fynbos as well as reaching the DCCP's goal.

3 PURPOSE, VISION / MISSION, SIGNIFICANCE / VALUE

3.1 Purpose of the Protected Area

The Klein Dassenberg Nature Reserve is located in the Cape Floristic Region, an area of global biodiversity significance. The Nature Reserve conserves a unique combination of habitats, ecosystems and species, many of which are either rare or endemic to the area. With 80% of the CFR falling within the Western Cape, the primary purpose of the Nature Reserve is the conservation of this unique biodiversity and associated ecosystem features and functions.

The natural systems of the CFR and Western Cape are under serious threat from a range of factors such as unsustainable natural resource use, extensive alien species invasion and recent rapid infrastructural development. Many areas, particularly the lowlands, have been reduced to a fraction of their original range of which little is protected. With 21 Critically Endangered (CR), 13 Endangered (EN) and 22 Vulnerable (VU) ecosystems listed from the Western Cape alone, this Nature Reserve is of immense importance. In addition to anthropogenic disturbances, climate change and global warming has been predicted to further threaten the natural ecosystems of the Western Cape, especially in terms of rainfall and temperature. Not only do these ecosystems support exceptionally threatened

biodiversity, they also provide an irreplaceable source of environmental goods and services for the people and economy of South Africa. A fine scale conservation plan, namely the City of Cape Town's Biodiversity Network, was used to identify the areas where the protection of important remnant vegetation was needed.

As per Chapter 3, section 17 of the **National Environmental Management: Protected Areas Act (NEM:PAA)** the purpose of declaring Klein Dassenberg Nature Reserve are:

(a) that Critically Endangered Atlantis Sand Fynbos is found on the property;
(b) good representation of endemic, rare and threatened species;
(c) that the property supports high biodiversity;
(d) the presence of an edaphic interface and altitudinal gradient;
(e) that the property contributes to the Dassenberg Coastal Catchment Partnership (DCCP);
(f) that the property was identified as a Critical Biodiversity Area on the BIONET;
(g) that the property is in need of long-term protection for the maintenance of its biodiversity and for the provision of environmental goods and services.

3.2 Vision and Mission

3.2.1 Vision

To conserve and protect the critically endangered biodiversity that occurs in the Klein Dassenberg Nature Reserve as to contribute to the DCCP.

3.2.2 Mission

To manage and restore the natural environment and its associated ecological processes and services through the implementation of the management objectives of Klein Dassenberg Nature Reserve.

3.3 Significance of Property (Biodiversity, Heritage and Social)

The Klein Dassenberg Nature Reserve contains one National vegetation type, Atlantis Sand Fynbos, which is classified as Critically Endangered. The site was identified by The City of Cape Town's Biodiversity Network as an "Irreplaceable Core Flora Site". Additionally the greater Atlantis and Dassenberg region was highlighted as a priority in CapeNature's Provincial Protected Area Expansion Strategy as well as one of two most important Climate Change adaption corridors in the Western Cape by the TMP-WWF study. The area has been identified since the 1980s as an important conservation area (Jarman, 1986).

Therefore this area forms an integral part of the Biodiversity Network, as well as an essential part of the DCCP (See section 2.2 above). The Nature Reserve has a confirmed plant species list of 152 of which 28 are threatened.

Summary of qualifying site assessment criteria:

- Core botanical site
- Critically Endangered Atlantis Sand Fynbos
- Klein Dassenberg is a critical component of the Dassenberg Coastal Catchment Partnership (DCCP) a priority landscape conservation initiative.
- The area has the potential to incorporate some of the high quality state land in the vicinity into the Nature Reserve through stewardship or other opportunities
- Identified as important site for conservation in 1986 by Jarman
- Preliminary assessment has revealed at least 24 threatened plant species on site
    - *Amphithalea ericifolia* ssp *erecta* (CR)
    - *Macrostylis villosa* (EN)
    - *Ruschia tecta* (EN)
    - *Lampranthus explanatus* (EN)
    - *Leucospermum parile* (EN)

- •The Nature Reserve is well connected through natural open space to extensive natural areas to the north, west and east and there is also potential to incorporate some of the high quality private and state land in the vicinity into the Nature Reserve through stewardship or various other opportunities in order to further maximise conservation for the broader Cape Metropolitan Area and further opportunities for integrating viable linkages (corridors) between the Nature Reserve and neighbouring areas; and
- Extension potential exists with Nirvana, a Private Conservation Area of 15 ha situated to the North West of the Nature Reserve.

PART 2 - MANAGEMENT POLICY FRAMEWORK

4 ADMINISTRATIVE AND LEGAL FRAMEWORK FOR THE MANAGEMENT AUTHORITY

4.1 Legal Framework

Table 3: Legal Framework

The following is a list of Legislation applicable to the management of the CCT's Biodiversity Management Branch, and specifically applicable to the Klein Dassenberg Nature Reserve:

Legislation: **Act, Ordinance, By-law**	**Relevance:** **Description**	**Amendment:** **Latest Amendment Date**	**Comment:** **Other Notes**
Constitution of the Republic of South Africa Act, No 108 of 1996	Lists South African citizen's environmental rights.	• Constitution of the Republic of South Africa Amendment Act, No. 2 of 2003 • Constitution of the Republic of South Africa Second Amendment Act, No. 3 of 2003 • Constitution Seventeenth Amendment Act of 2012	Chapter 2: Bill of rights assigns citizens with particular rights.
ENVIRONMENTAL LEGISLATION			
National Legislation			
National Environmental Management Act, No 107 of 1998	One of the most important environmental laws relating to most aspects of the environment including EIA's the roles of DWE, environmental information and legal standing etc.	• National Environment Laws A mendment Act 14 of 2009	Provides for cooperative environmental governance
National Environmental Management:	The objectives of the Act are to provide for:	• National Environmental Laws	

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
Biodiversity Act, No 10 of 2004	• the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998 • the protection of species and ecosystems that warrant national protection • the sustainable use of indigenous biological resources • the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources • the establishment and functions of a South African National Biodiversity Institute In essence, the Act was put in place to safeguard the important biodiversity attributes in the country, whilst allowing people to benefit equally from the natural resources. In order to achieve these goals, the Act made provision for the South African National Biodiversity Institute (SANBI), which has been designated certain functions and has been afforded powers and duties in respect of this Act.	Amendment Act 14 of 2013	
National Environmental Management: Protected Areas Act, No 57 of 2003	• To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; • For the establishment of a national register of all national, provincial and local protected areas; • For the management of those areas in accordance with national norms and standards; • For inter-governmental cooperation and public consultation in matters concerning protected areas; • And for matters in connection therewith.	• National Environmental Management: Protected Areas Amendment Act, No 15 of 2009	Regulations Notice 1029 of 2009 list specific regulations for nature reserves proclaimed by the MEC (draft August 2009)
Conservation of Agricultural Resource Act, No 43 of 1983	CARA Regulations contain a list of alien invasive vegetation categorized according to their legal status. Act regulates sale position and use of listed species	• Abolition of Racially Based Land Measures Act 108 of 1991	Alien invasive plant legislation to be included under NEM:BA in future

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
		• Abolition of Restrictions on the Jurisdiction of Courts Act 88 of 1996	
National Veld and Forest Fire Act; No 101 of 1998	Relates to veld fire prevention, fire protection associations, fire danger indexing, enforcement of fire legislation and the fighting of fires	• National Forest and Fire Laws Amendment Act No, 12 of 2001 • Forestry Laws Amendment Act No. 35 of 2005	
Environment Conservation Act, No 73 of 1989	The Environment Conservation Act is the other law that relates specifically to the environment. Although most of this Act has been replaced by NEMA there are still some important sections that remain in operation. These sections relate to: • protected natural environments • littering • special nature reserves • waste management • limited development areas • regulations on noise, vibration and shock • environmental impact assessment (EIA)	• National Environmental Laws Amendment Act No. 14 of 2009	
National Water Act, No 36 of 1998	Relates to all use of water and the management of all water resources within South Africa.	• National Water Amendment Act, No. 45 of 1999	
National Environmental Management: Air Quality Act, No 39 of 2004	To provide for enhancing the quality of ambient air for the sake of securing an environment which is not harmful to the health and well-being of the people	• National Environment Laws Amendment Act No. 14 of 2013	Promulgated to give effect to section 24(b) of the Constitution.

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
			South African Air Quality Information System (SAAQIS) is a web-based system which provides information on the quality of ambient air across the country
Animal Protection Act, No 71 of 1962	To consolidate and amend the laws relating to the prevention of cruelty to animals	• Animal Matters Amendment Act, No. 42 of 1993	
Animal Diseases Act, No 35 of 1984	Provides for control measures relating to animal diseases	• General Law Amendment Act 102 of 1972 • Animals Protection Amendment Act 7 of 1972 • Animals Protection Amendment Act 54 of 1983 • Animals Protection Amendment Act 20 of 1985 • Animals Protection Second Amendment Act 84 of 1985 • Protection of Animals Amendment Act 7 of 1991 • Animal Matters Amendment Act 42 of 1993 • Abolition of Corporal Punishment Act 33 of 1997	

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
Animal Health Act, No 7 of 2002	Regulates animal health	To be proclaimed	
Game Theft Act, No 105 of 1991	Regulates the ownership and protection of game	• Justice Laws Rationalisation Act No. 18 of 1996 • Judicial Matters Amendment Act No. 62 of 2000	
Mountain Catchment Areas Act, No 63 of 1970	Provides for catchment conservation	• Expropriation Act 63 of 1975 • Mountain Catchment Areas Amendment Act 41 of 1976 • Mountain Catchment Areas Amendment Act 76 of 1981 • Abolition of Racially Based Land Measures Act 108 of 1991 • Constitution of the Republic of South Africa 200 of 1993 • General Law Amendment Act 49 of 1996	Administered under the Western Cape Nature Conservation Board Act 15 of 1998
National Heritage Resources Act, No 25 of 1999	Provides for the protection of heritage resources		
World Heritage Conservation Act, No 49 of 1999	Incorporates the World Heritage Convention into South African law		
Problem Animal Control Ordinance, No 26 of 1957	Regulates problem animals		Administered under the Western Cape Nature Conservation Board Act 15 of 1998

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
Mineral and Petroleum Resources Development Act, No 28 of 2002	Provides for equitable access to and sustainable development of mineral and petroleum resources	• Mineral and Petroleum Resources Development Amendment Act No. 49 of 2008	
Atmospheric Pollution Prevention Act, No 45 of 196		• Whole repealed 01 April 2010 in favour of the National Environmental Management: Air Quality Act 39 of 2004 – National Environmental Laws Amendment Act No. 14 of 2013	
Provincial Legislation			
Land Use Planning Ordinance, No 15 of 1985	The purpose of the ordinance is to regulate land use and to provide for incidental matters related to land use.	• Assented to 22 November 1985 • Western Cape Land Use Planning Ordinance, 1985, Amendment Act, 2004	
Cape Nature and Environmental Conservation Ordinance, No 19 of 1974	The purpose of this ordinance is to regulate wild animals and plants and the establishment of nature reserves.	• Publication date 1 September 1975 • Western Cape Nature and Environmental Conservation Ordinance Amendment Act No. 8 of 1999 • Western Cape Nature Conservation Laws Amendment Act No. 3 of 2000	Administered under the Western Cape Nature Conservation Board Act 15 of 1998

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
		• Proclamation No. 25 of 2003	
Western Cape Nature Conservation Board Act, No 15 of 1998		•	Biodiversity Agreements are signed under this act
Municipal Legislation			
City of Cape Town: Integrated Waste Management By-Law, 2009	To regulate the avoidance, minimization, generation, collection, cleaning and disposal of waste; and for matters related thereto.	• Approved by council on the: 30 March 2009	
City Of Cape Town By-Law Relating To Stormwater Management , LA 31420	To provide for the regulation of stormwater management in the area of the City of Cape Town, and to regulate activities which may have a detrimental effect on the development, operation or maintenance of the stormwater system	• Publication date 23 September 2005	
City of Cape Town: Air Pollution Control By-Law, LA 12649	The purpose of this by-law is: to give effect to the right contained in section 24 of the Constitution of the Republic of South Africa Act, 1996 (Act 108 of 1996) by controlling air pollution within the area of the Council's jurisdiction; to ensure that air pollution is avoided, or where it cannot be altogether avoided, is minimized and remedied.	• Publication date 4 February 2003	
By-Law Relating to Community Fire Safety; Province of the Western Cape, LA 11257	The purpose and scope of the By-law is: to promote the achievement of a fire-safe environment for the benefit of all persons within the area of jurisdiction of the Municipality; to provide for procedures, methods and practices to regulate fire safety within the area of jurisdiction of the Municipality.	• Publication date 28 February 2002	
City of Cape Town Draft Animal By-Law, 2009	The purpose of this By-law is: To formulate a new single by-law including 10 different municipal dog by-laws and the Animal Protection Act of 1962. This includes chapters on dogs, cats, poultry and working equines.	• Draft, 2009	

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
HUMAN RESOURCES/ADMINISTRATION LEGISLATION			
National Legislation			
Occupational Health and Safety Act, No 1993	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.	• Occupational Health and Safety Amendment Act , No 181 of 1993	
Basic Conditions of Employment Act, No 3 of 1997	Provides for control measures pertaining to employment	• Amendment Act 11 of 2002	
Labour Relations Amendment Act, No 66 of 1995	The labour relations act aims to promote economic development, social justice, labour peace and democracy in the work place.	• Amendment Labour Relations Act , 42 of 1996 • Amendment Afrikaans Labour Relations Act 1998 • Amendment Labour Relations Act , 127 of 1998 • Amendment Labour Relations Act 2000 • Amendment Act 12 of 2002	
Local Government Municipal Systems Act, No 32 of 2000	Establishes core principles, process and mechanisms relating to local government	• Local Government: Municipal Systems Amendment Act No. 7 of 2011	
Promotion of Equality/Prevention of Unfair Discrimination Act, No 4 of 2000	Provides for the prevention of discrimination and other related matters	• Promotion of Equality and Prevention of Unfair Discrimination Amendment	

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
		Act No. 52 of 2002 • Judicial Matters Second Amendment Act No. 55 of 2003 • Judicial Matters Amendment Act No. 22 of 2005 • Judicial Matters Amendment Act No, 66 of 2008	
Criminals Procedures Act	Regulates all matters relating to Criminal Procedures	• Criminal Procedure Amendment • Act No. 9 of 2012	
Firearms Control Act, No 60 of 2000	Regulates all matters relating to Firearms	• Fireams Control Amendment Act No. 28 of 2006	
Civil Aviation Act, No 13 of 2009	Regulates all matters relating to Civil Aviation		
Fencing Act, No 31 of 1963	Regulates all matters relating to fencing	• Fencing Amendment Act No. 4 of 1978 • Agricultural Laws Amendment Proclamation R116 of 1994	
Hazardous Substances Act 15 of 1973	Controls substances which may cause injury or ill health to, or death of, human beings by reason of their toxic nature	• Hazardous Substances Amendment Act No. 53 of 1992	
Land Survey Act, No 8 of 1997	Regulates land surveying, beacons and other related matters		
Promotion of Access to Information Act, No 2 of 2000	Promotes access to information		

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
Promotion of Administrative Justice Act, No 3 of 2000	Provides for the promotion of administrative justice	• Promotion of Administrative Justice Amendment Act No.53 of 2002 • Judicial Matters Amendment Act No. 66 of 2008	
Regional Services Council Act, No 109 of 1985	Regulates and controls land, land usage and other related matters	• Regional Services Council Amendment Act No. 75 of 1991	
Skills Development Act, No 97 of 1998	Promotes the development of skills		
State Land Disposal Act, No 48 of 1961	Regulates the disposal of state owned land		
Subdivision of Agricultural Land Act, No 70 of 1970	Regulates the subdivision of agricultural land	• Subdivision of Agricultural Land Amendment Act No. 33 of 1984 • General Law Amendment Act No. 49 of 1996	
Tourism Act, No 72 of 1993	Provides for the promotion of tourism and regulates the tourism industry	• Tourism Second Amendment Act No. 70 of 2000	
Municipal Ordinance 20 of 1974	Regulates pollution and waste management		
South African National Road Agency Limited (SANRAL) and National Road Act, No 7 of 1998			
Aviation Act, No 74 of 1962	Provides for the control, regulation and encouragement of aviation activities in the Republic of South Africa	• Repealed in favour of the Civil Aviation Act 13 of 2009	

Legislation: Act, Ordinance, By-law	Relevance: Description	Amendment: Latest Amendment Date	Comment: Other Notes
Provincial Legislation			
Western Cape Constitution Act, No 1 of 1998	Introduces a constitutional framework for the province		
Western Cape Land Administration Act, No 6 of 1998	Regulates land and land usage		
Western cape Planning and Development Act, No 7 of 1999	Regulates planning and development within the province		
Municipal Legislation			
City of Cape Town By-Law relating to Filming	The Purpose of the By-law is to regulate and facilitate filming in the City of Cape Town	• Provincial Gazette 6277, 24 June 2005	
By-law relating to Streets, Public Places and the prevention of noise nuisances 2007	The purpose of the by-law is to regulate activities in streets and public places and prevent excessive noise nuisance	• Promulgated 28 September 2007, PG 6469; LA 44559	
Signage	The purpose of the by-law is to regulate the use of land and buildings for outdoor advertising and signage	• Provincial Gazette 5801, 5 December 2001	

4.2 Administrative Framework

The Klein Dassenberg Nature Reserve will be managed under the direction of the Biodiversity Management Branch, Environmental Resource Management Department, Strategy and Planning Directorate of the CCT.

The Klein Dassenberg Nature Reserve is located within the North Region (District B, which is one of the CCT's Eight Districts) and falls under the oversight of the Regional Manager who reports to the Branch Manager. The Klein Dassenberg Nature Reserve is under the management responsibility of a Site Coordinator who is assisted by a field ranger and an intern (Refer to Figure 3). The Site Manager reports to the Area Manager, who in turn reports to the Regional Manager.

In the North Region, the Area Manager's area of jurisdiction covers the entire Greater Atlantis Area (Appendix 6). The operational management of Klein Dassenberg Nature Reserve is supported by various other City of Cape Town departments including but not limited to Law Enforcement, Human Resources and Finance. The Bulk Water Branch, Water and Sanitation, City Parks and Roads and Stormwater.

The Regional Manager and regionally based Administrative Officer operate from the Biodiversity Management Branch Head Office, located in Maitland, 52 kilometres south from the Nature Reserve.

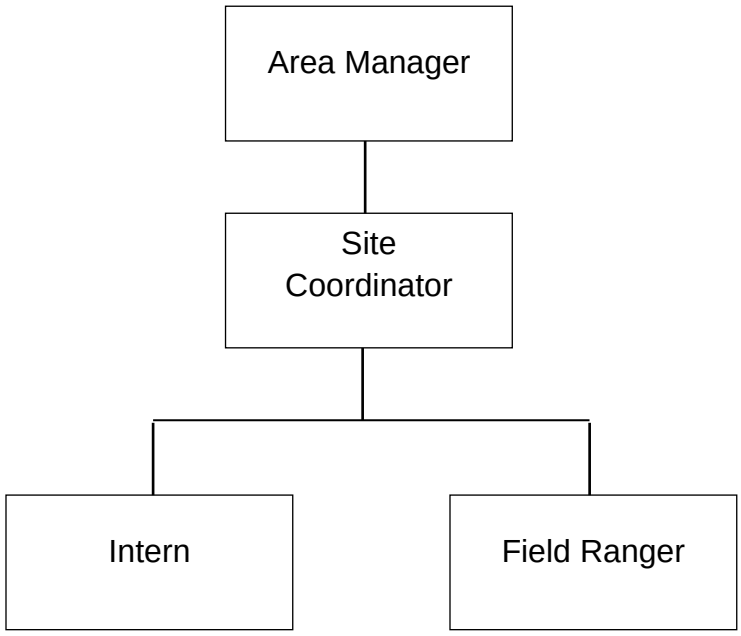


Figure 3: Klein Dassenberg Nature Reserve Staff Organogram

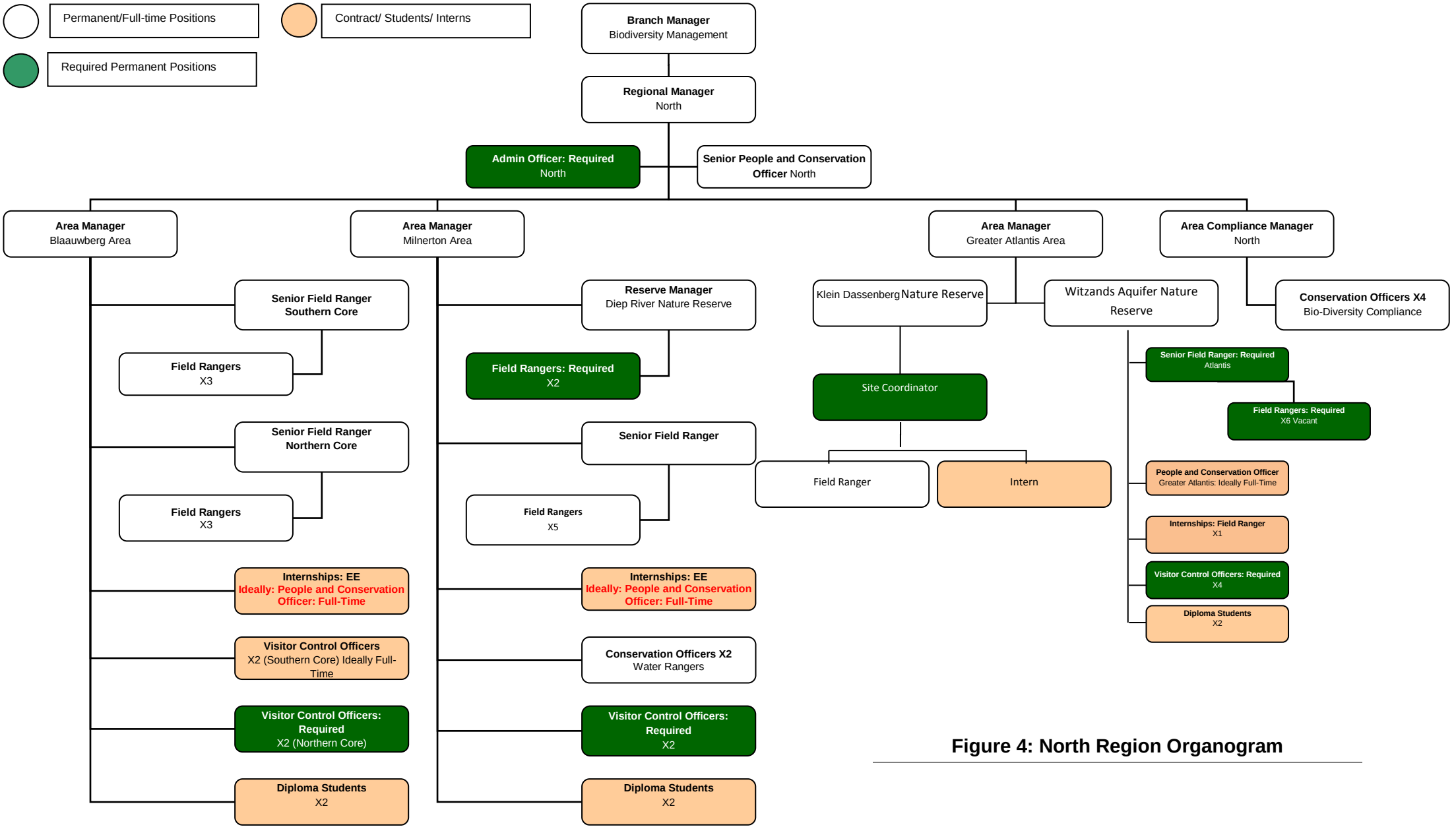


Figure 4: North Region Organogram

5 PROTECTED AREA POLICY FRAMEWORK & GUIDING MANAGEMENT PRINCIPLES

5.1 Management Objectives

5.1.1 Biodiversity and Heritage Objectives

Table 4: Biodiversity and Heritage Objectives for Klein Dassenberg Nature Reserve

High level objective	*Objective*	*Sub-objective*	*Initiative*	*Low level plan*
CONSERVATION OF REPRESENTATIVE, FUNCTIONAL ECOSYSTEMS: To conserve a representative sample of the Western Cape's ecosystem through a linked landscape, and maintaining or restoring ecological processes to allow natural spatial and temporal variation of the structural, function and compositional biodiversity components.	**Representative ecosystems:** To incorporate a representative range of viable terrestrial ecosystems, unique to Klein Dassenberg Nature Reserve, and to re-introduce missing elements where necessary.	**Consolidation and expansion of land areas:** Linking protected areas with the main focus on under representative ecosystems, functional linkages and processes.	(1) Identification of underrepresented (2) Link Reserve boundaries. (3) Include untransformed fynbos. (4) Establish corridors linking Klein Dassenberg Nature Reserve with Nirvana Private Conservation Area.	Reserve expansion plan (to be developed within the next five years)
		Reintroduction of biota: Re-establishment of locally extinct or depleted biodiversity components and populations where possible and in accordance with IUCN principles and guidelines.	(1) Re-establish indigenous herbivore fauna as to suit Reserve size and urban setting.	Faunal Management Plan (to be developed within the next five years)
		Fire management: Apply appropriate fire regime in fynbos areas (frequency, season, intensity, size).	(1) Implement an ecological fire management plan that complements the objectives of conserving the biodiversity and threatened biota within the Reserve. (2) Continuous monitoring of impact of fire management regime on natural vegetation.	Fire management plan (in process of being developed)
		Threatened biota: Maintain viable populations of threatened species in order to meet obligations in terms of international agreements and conventions.	(1) Maintain viable populations of rare/threatened plant and animal species where applicable (identify, locate & monitor populations of priority species)	Incorporated into a Branch wide monitoring Strategy

High level objective	*Objective*	*Sub-objective*	*Initiative*	*Low level plan*
		Monitoring Plan: Implement and maintain an approved and suitable Monitoring Plan for the Reserve	(1) Implement and maintain a biological monitoring programme for the Reserve.	Monitoring Plan to be aligned with Branch wide plan
	Rehabilitation: Rehabilitate degraded fynbos areas, including the re-establishment of natural biodiversity patterns and processes which are responsible for fynbos persistence.	**Vegetation:** Re-establishment of physical, chemical and biological processes in degraded vegetation areas.	(1) Rehabilitate all old degraded sites where applicable.	Vegetation Rehabilitation plan (in process for Atlantis Sand Fynbos)
		Alien plants and other alien biota: Control and where possible eliminate alien biota to facilitate re-establishment of natural biodiversity pattern and process in invaded and disturbed areas.	(1) Establish invasive species distribution and density. (2) Prioritise areas for alien removal according to biodiversity restoration goals. (3) Implement removal programs for priority species and areas.	Invasive plant management plan ; Invasive animal management plan where applicable (in process of being developed, Branch wide process)
MITIGATE INTERNAL and EXTERNAL PRESSURES: To reduce threats and pressures from resource use and limit environmental impacts from non-biodiversity management aspects and operations in and around Reserve.	**Reconciling biodiversity with other Reserve objectives:** To ensure that non-biodiversity management aspects (revenue generation including visitors, resource use, developments, management activities) are governed by biodiversity	**Internal developments:** Minimise the impacts associated with the Reserves infrastructural development, and ensure that the biodiversity's objectives are not compromised.	(1) Reserve zonation (2) Develop and implement CDF. (3) Developments in accordance with EIA process (NEMA) and corporate policies. (4) Establish visitor carrying capacities if applicable (5) Implement green standards and environmental best practice based on corporate policy	CDF (to be developed within five years)
		Internal activities: Minimise the impacts associated with visitor and Reserve management, and ensure that the biodiversity's objectives are not compromised.		

High level objective	*Objective*	*Sub-objective*	*Initiative*	*Low level plan*
	conservation objectives to minimise impacts of these activities on Reserve's ecosystem.	**Extractive resource use:** Minimise the impacts of extractive resource use and ensure such activities coincide with corporate guidelines; fall within management capacity constraints, and do not compromise biodiversity objectives.	(1) Record current extractive resource use activities. (2) Define opportunities and constraints in line with corporate guidelines. (3) Regulate/ prevent resource use, according to adaptive management process	Sustainable resource use management plan (within the next five years, a feasibility study is required)
	Reconciling biodiversity with external threats: To reduce external threats and pressures, and limit impacts of surrounding land & resource use on biodiversity conservation within the Reserve.	**External developments:** Minimise the impacts associated with inappropriate developments outside the Reserve	(1) Engage with regional land management authorities, incl. IDP's and SDF's at local & regional level. (2) Alignment with bioregional planning, including explicitly identified areas for the maintenance of biodiversity pattern and processes with appropriate land use guidelines. (3) Provide input into planning and decision making process for external development that may compromise Reserve and Biodiversity Network objectives. (4) Negotiate to ensure that external developments are not visually obtrusive or out of character with the Reserve.	Branch wide communication strategy and action plan (to be development Branch wide)
		External activities: Negotiate to ensure that external resource and land use do not undermine the ecological processes within the Reserve.	(1) Negotiate to mitigate or improve the management of external potentially detrimental impacts. (2) Encourage eco-friendly resource use and land management practices on adjacent properties. (3) Mitigate the impacts of oil and other pollution events, through appropriate contingency planning	Oil Spill Contingency Plan (Cooperative governance and communication plan) (ERMD plan)
		Illegal harvesting of resources: Prevent the illegal collection, removal and destruction of physical and	(1) Staff visibility (2) Signage (3) Public liaison	Reserve Protection Plan, Security and Safety Programme (a Security audit to take place within five years)

High level objective	*Objective*	*Sub-objective*	*Initiative*	*Low level plan*
		biological resources.	(4) Law enforcement	
WILDNESS / REMOTENESS: To maintain and restore wilderness/remoteness in Papekuil Nature Reserve such that the spiritual and experiential qualities of wilderness is maintained, enhanced, or where necessary restored	**Range of experiences:** Provide a range of visitor experiences.		(1) Reserve zonation (2) Develop CDF and sensitivity-value analysis.	(1) CDF (to be developed with the Sensitivity and Zonation report within the next five years) (2) Reserve expansion plan (to be developed within the next five years) (3) Invasive alien plant management plan, (in process, Branch wide)
	Sense of place: Maintain or restore appropriate sense of place.		(1) Implement & update CDF (2) Establish and apply appropriate visitor carrying capacity (3) Negotiate to ensure that external developments are not visually obtrusive or out of character with the Reserve.	

5.1.2 Socio-economic objectives:

Table 5: Socio-economic objectives for Klein Dassenberg Nature Reserve

High level objective	*Objective*	*Sub-objective (where required)*	*Initiative*	*Low level plan*
Nurture productive and mutually beneficial partnerships that result in gains in economic and/ or biodiversity equity.	Enhance socio- economic benefits to local communities		(1) Contribute to local community development by supporting the Expanded Public Works / Poverty Relief Programmes (2) Contribute to local skills development by supporting the Skills Programmes and Learnership programmes (3) Identification and facilitating the creation of business opportunities in association with the Reserve. (4) Support community based Social Development Initiatives.	Local socio economic development plan (to be developed, as part of the Community Conservation Management plan for the North within the next 3 years)
	Increase environmental awareness and encourage participation in conservation initiatives	Inspire visitors and communities towards considering the natural environment as an interrelated and interdependent system of which they are an integral part.	(1) Develop and implement an Interpretation Plan that feeds into both the Education and zonation plans. (2) Implement, if applicable, environmental education and youth development programmes suited to the needs of specific focus groups.	Education development plan (as part of the North Environmental Education Strategy Plan and in process of being developed)
		Educate various groups to be able to apply environmental action where necessary.		
		Support educators and community leaders with resource and information materials	(1) If applicable, establish and market an environmental resource centre with a range of interpretive and informative resources.	
Support co-operative governance that will	Maintain good Reserve/community/stakehol	N/A	(1) Identify and involve all relevant stakeholders for participation in the Reserve Advisory forum.	

High level objective	*Objective*	*Sub-objective (where required)*	*Initiative*	*Low level plan*
build in custodianship	der relations		(2) Develop effective communication tools and divide responsibilities for representatives accordingly.	Stakeholder relationship plan (as part of the North Community Conservation plan)
	Effective co-operative governance	Minimise negative impact and consequences of inappropriate development in and around the Reserve	(1) Establish and maintain good working relationship with relevant government departments as well as internal City departments.	
		Ensure support / buy-in for management decisions through participatory decision making processes	(1) Define roles and responsibilities with stakeholder groups, partnerships, City Departments and government through written agreements/ ToR's and MOU's and SLA's	
Become the Nature Based Visitor destination of choice in the region	To develop, manage and enhance a range of sustainable visitor products		(1) Design customer satisfaction survey (2) Analysis of current product usage and identification of opportunity	Visitor plan (to be developed with reference to the Zonation and Sensitivity report)
			(1) Plan for Visitor infrastructure and facilities as identified by the CDF (2) Develop and implement the infrastructure management plan (in compliance with state of infrastructure report) (3) Compile a state of infrastructure report	Infrastructure program (to be developed with reference to the Zonation and Sensitivity report)
Transform the domestic Visitor Profile, through growth, to be representative of South African	Ensure that the domestic Visitor Profile of the Reserve is representative of regional demographics	N/A	(1) Promote and manage access to the Reserve (2) Develop and support dedicated access programmes. (3) Actively market Reserve resources	Marketing plan (to be developed, Branch wide process within the next five years)

High level objective	*Objective*	*Sub-objective (where required)*	*Initiative*	*Low level plan*
society			and services	
Enhance the City's Reputation	Enhance the Reserve's reputation	N/A	(1)Develop and implement a Communication Plan to promote Reserve activities	Communication program (to be developed within the parameters of the CCT policies for the Branch)
Advance Strategic Human Resource Management	To ensure good human resource management	N/A	(1)Implement and support Learnerships and Volunteer Programmes (2) Ensure all staff have access to training initiatives as per the WPSP (3) Ensure all Corporate HR Policies are adhered to	Staff Capacity Building Program/ Institutional Development and staff capacity building programme (to be developed, CCT wide process)
Financial Management	To ensure sound financial management practices are applied to Reserve	N/A	(1) Manage cost spending appropriately (2) Ensure that adequate budgets are allocated to the Reserve in light of the developments required to ensure it is a destination of choice	Financial sustainability program (to be developed Branch wide process.)
Achieve Good Corporate Governance Management	Effective management of risk profile	N/A	Do legal review	Risk management program (to be developed)

5.2 SWOT analysis

The following identifies the Strengths, Weaknesses, Opportunities and Threats for the Klein Dassenberg Nature Reserve.

Strengths:

- The Nature Reserve forms part of the DCCP and was identified as a key area for protected area expansion by Cape Nature's 2010 Protected Area Expansion Strategy as well as the 2010 WWF-Table Mountain Fund Climate Change Corridor
- Local knowledge and expertise of areas under jurisdiction
- Community involvement and participation
- Management commitment to compiling and implementing management plans and Biodiversity Action plans
- Legislative support- Municipal By-laws, Nature Conservation Ordinance, NEMA and various other relevant or related legislations.
- Constitutional support
- Management has experience and knowledge in managing Protected areas
- Corporate Support Services exist
- Staff determination and will to succeed
- Fully functional ecosystems exist
- Access to Specialist services and databases
- Borders Dassenberg Nature Reserve, expanding the DCCP initiative
- Potential expansion with Nirvana
- Protects Critically Endangered Atlantis Sand Fynbos vegetation

Weaknesses:

- The Nature Reserve is not enclosed so management of illegal activities will be difficult
- Managements lack of knowledge of area and history
- Limited knowledge of security threats within the Nature Reserve
- Operational Budget needs review
- Law enforcement tends to be reactive instead of proactive
- Lack of operationally mandated staff to adequately utilise environmental legislation
- Ignorance by public of applicable environmental legislation
- Lack of adequate operational and administrative office space and equipment
- Geographically far from City Administrative hubs
- Lack of co-ordination and co-operation between Nature Reserve and National/Provincial government departments
- Invasive alien plants (invasion of/by alien invasive plant species)
- Community liaison

Opportunities:

- Aesthetic beauty of the Nature Reserve which could potentially attract tourists
- Potential expansion which would form part of the DCCP
- Community development
- The implementation of biological monitoring systems
- Increased environmental awareness/ education opportunities
- Increased community ownership
- Creation of job opportunities and career succession and planning
- To proactively engage communities closest to the Nature Reserve and recognising their needs.
- Continuous liaison with Community Based Organisations (CBOs) and other Non-Governmental Organisations (NGOs)
- To link up with surrounding land owners, share knowledge, resources in order to effectively manage the Biodiversity Network
- Promote the Nature Reserve as a destination of choice for outdoor environmentally sound activities
- To build and establish a viable volunteer group to actively participate in Nature Reserve management activities
- To entrench and maintain strong political support from local Ward Councillors

Threats:

- Conflict between surrounding communities
- Conflict between CCT and surrounding communities on land ownership
- Illegal activities (illegal harvesting of fauna and flora, illegal sand mining, illegal dumping, off–road vehicles, inappropriate fir regimes).
- Poor reserve management (plus lack of staff)
- Lack of funding for necessary infrastructure to increase tourist attraction
- Unemployment leads to rising crime levels
- Threats and intimidation towards conservation staff when applying legislation
- Lack of commitment from stakeholders
- Lack of appropriate training
- Personal safety of staff
- Growing external communities with increasing needs
- Lack of sustainable funding for students and Interns
- Lack of adequate funding to hire appropriate numbers of full-time staff
- Lack of adequate operational funding
- Loss of biodiversity due to inappropriate fires, invasive species, illegal activities and inappropriate land-use practices
- Change in local government political structures
- Illegal entry points not controlled i.e. off-road vehicles and the network of footpaths and tracks
- Inappropriate development – edge effect impacts could reduce the viability of the Nature Reserve through fragmentation of the habitat
- Climate change

5.3 Protected Area Management Policy Framework and Guiding Principles

5.3.1 Community Participation

The Klein Dassenberg Nature Reserve is to become the future focus of community- and tourist-centred programmes directed at the sustainable long-term conservation and use of its ecological and historical landscape.

For the Reserve to succeed in the absence of substantial public funding, mutually beneficial partnerships which will result in economic and/or biodiversity equity will be pursued.

In the development of a Regional Community Conservation Management Plan, the objectives should closely coincide with the DCCP's.

A contribution towards the development of local skills can be achieved through the participation in Skills Development and Learnership Programmes in working partnerships with CBOs and NGOs. Through the support of community based Social Development initiatives the Nature Reserve can also enhance socio-economic benefits to local communities.

5.3.2 Security and safety

The aim of a safety and security audit is to investigate the current security situation, security services, infrastructure, staffing and social context of Klein Dassenberg Nature Reserve.

This audit is a priority for the Nature Reserve as known security problems currently occurring is partly due to inadequate fencing and dense Acacia stands. The current illegal activities include illegal access and trespassing; illegal harvesting; illegal dumping and livestock grazing.

5.3.3 Tourism development and management

Tourism potential for the Nature Reserve as part of the Greater Atlantis/Mamre tourism route concept exists. Currently, no tourism development is considered as the priority of the Nature Reserve is to allow the vegetation to recover after too frequent fires and the extensive alien infestation and consequent clearing. Any future tourism ventures should be assessed when this management plan is reviewed in five years. The Nature Reserve has been zoned so that tourism development can only occur on the most degraded area of the Reserve which is situated next to the R304 on the Klein Dassenberg Section.

5.3.4 Infrastructure management

Minimum infrastructure exists within the Klein Dassenberg Nature Reserve, with only a few dilapidated houses on the outskirts of Klein Dassenberg, next to R304. Currently these houses are occupied, but negotiations with the residents are in process to find alternative housing. Since these buildings conditions prevent cost-effective restoration, it is recommended to knock them down once planning has been put in place for tourism development. It is essential that any future infrastructure be managed in such a way that there are no negative impacts on the already Critically Endangered vegetation. The infrastructure should also add to visitors overall experience.

The road network infrastructure as well as footpaths also needs to be accessed and prioritised in order to avoid continuous damage to the already sensitive vegetation types in

the Nature Reserve. Illegal entrance will never fully be stopped therefore this situation should be monitored and managed in terms of preventing damage to natural vegetation and illegal activities.

5.3.5 Biodiversity Conservation Management

5.3.5.1 Community-based natural resource management (CBNRM)

The illegal harvesting that is occurring in the Nature Reserve should be stopped or at least limited until a harvesting feasibility study is done. Little is known about the long-term effects of harvesting on the viability of wild flower populations (Lamont *et al*., 2001). However it is known non-sprouting species are more vulnerable to loss of flowers, fruits or seeds and that the removal of flowering stems or fruits directly affects seed availability for future generations and reduces the vigour of the plant. Nevertheless, more seeds are usually produced than what is required for self-replacement which leads to strong intraspecific competition and seedling mortality. Therefore in theory it should be possible to remove the "excess" without threatening population viability. A study done by Lamont *et al.* (2001), picking should be banned for the first 10 years post-fire, with picking commencing at 20% in year 11. However these results are site specific therefore a harvesting feasibility plan is imperative for Papekuil Nature Reserve. The feasibility plan should be produced in conjunction with veld age and fire management.

A species harvesting plan where necessary should be developed in order to ensure the sustainability of the relevant species and community livelihoods.

5.3.5.2 Fire Management

Fire plays a fundamental ecological role in the life-cycle of fynbos as it is both fire-prone and fire-dependent. Fire is crucial to the long term conservation of the vegetation within the Papekuil Nature Reserve as it shapes the structure and composition of fynbos, it is therefore considered an important factor of nature reserve management (Rutherford *et al*., 2011). Fire management involves controlling the season, frequency, size and intensity of fires to meet all ecological requirements of the vegetation.

Invasive alien flora has been found to increase fuel load by 50-100%. Thus, it is essential that any fire management plan should be carefully integrated with a plan to control invasive alien plants. Currently, the fire management for Papekuil Nature Reserve is to strongly prevent any fires from occurring, especially in the young veld and areas containing invasive alien flora. This plan must be assessed during the revision of the management plan.

Too frequent fires, or fires which don't occur during the natural burning regime, could force slower-growing species into extinction. It also results in veld degradation, allowing alien species, especially grasses to invade. Grasses maintain a shorter fire cycle and permanently change the vegetation structure and biodiversity value. On the other hand, if fire is excluded, encroachment by other indigenous species can occur which would result in decreased species richness and species coexistence.

Atlantis Sand Fynbos

Historically, unnatural fires have occurred too frequently in the Nature Reserve, resulting in a mosaic of veld ages. Records of these fires as well as post fire monitoring records have been used to determine veld ages which will influence fire management (Refer to Figure 11). As depicted, fire exclusion in the young veld is a major priority as most of the Reserve is younger than 10 years. The natural fire season is between November-April with a peak between November and February (Brown *et al*., 1991). However, natural fires are limited in spread within the constraints of ecological, project and public safety requirements. Firebreaks and other fire control measures required by law will be implemented where necessary and feasible.

The Reserve's terrain and property boundaries increase the chances of fire spreading both into- and out of the Reserve. Therefore pre-fire protection measures and a plan of action are necessary in the event of a fire. The interaction by various CCT departments, independent stakeholders and continuous public and private landowner involvement is essential. Prescribed burning is used as a management tool when fynbos becomes senescent which poses a risk of species loss. It is suggested that controlled burning be done at intervals which would allow at least 50% of individuals in a population of the slowest-growing, obligate reseeding plant species that have flowered and set seed for at least three consecutive seasons (van Wilgen *et al*., 2010). This practice will assist in maintaining a vegetation mosaic which would promote plant and animal diversity.

The Regional Conservation Policy statements of regular burning (12-20 years) in late summer/autumn is largely based on the response of serotinous and other Proteaceae to fire. There is no optimum regime for conserving diversity as a fixed regime will favour certain species while others are suppressed, therefore a variation in the fire regime is important for ensuring species coexistence (van Wilgen *et al*., 1994).

Veld age maps should be used to determine prescribed burning patches (See Map 11). The decision to administer prescribed burns is considered on an annual basis, and if required planned and implemented accordingly. Fire may be used to keep fuel loads low so as to reduce the risk of uncontrolled fires, particularly on the urban edge and in areas which become a potential risk to infrastructure and public safety.

Implementation with regards to fire management in the Nature Reserve involves:

- Application of guidelines on season, burning intervals and species requirements acquired from relevant documentation and Biophysical Specialists;
- Accurate record keeping of all fires, including details and maps;
- Use of fire data and GIS for recording and mapping;
- Application of post-fire monitoring programmes;
- Application of fire data to determine prescribed burning needs; and
- Development and Implementation of a Fire Protection and Reaction plan which includes affected stakeholders, City of Cape Town department and private landowners neighbouring the Nature Reserve.

5.3.5.3 Soil erosion and control

Within the Klein Dassenberg Nature Reserve, natural erosion processes are allowed to operate without any interference, except where needed. In the case of human-induced aggravated erosion, appropriate management action should take place. The source of problem erosion sites and the management thereof will also be considered.

Currently there is no serious erosion occurring in the Nature Reserve, but frequent monitoring is suggested especially during veld recovery after invasive alien removal.

Implementation with regards to soil management in the Nature Reserve includes:

- Identification and recording of erosion sites, including restoration plans when required
- The use of GIS for recoding and mapping of erosion sites
- Application of fixed-point monitoring programmes at identified sites; and
- Accurate documentation of applied management actions to restoration sites including subsequent results

5.3.5.4 Invasive species management

Invasive alien organisms are a major global environmental problem and considered the second most significant threat to biodiversity following direct habitat destruction (Holmes *et al*., 2000). Not only do invasive alien trees and shrubs post a threat to fynbos vegetation, but it also reduces our already scare water resources. Once alien trees have established, they outcompete indigenous species, forming close stands which reduce light penetration and alter nutrient recycling patterns, litter fall and fuel properties.

It is for this reason that alien clearing and follow-up is a priority within the Reserve. This is done in order to facilitate the re-establishment of the Critically Endangered Atlantis Sand Fynbos. The most dense invasive alien trees in the Nature Reserve is Port Jackson-Willow (*Acacia saligna*), followed by Eucalyptus (*Eucalyptus sp.*) and Pine (*Pinus sp.*). Herbaceous weeds should also be monitored in order to prevent invasive establishment.

Invasive species management within the Nature Reserve is applied in accordance with the CCT Invasive Alien Species Strategy and in co-ordination with various government funded initiatives, including Working for Water (WfW) and Working for Wetlands (WfWet). Management should aim to implement a carefully planned and co-ordinated programme in order to prevent reestablishment or spread of invasive alien fauna.

The cleared vegetation should be stacked into small brush piles and burnt during the cool winter months. It is recommended to burn the piles during winter to reduce the adverse ecological effects on the soil and allow greater indigenous seed recruitment. Although this techniques requires a more intensive follow-up control of *Acacia* species, it is less destructive to indigenous seed banks and results in higher recruitment than stand burns (Jasson, 2005).

After the removal of invasive alien plant species, the gerbil (*Tetra afra)* and Cape dune mole-rat (*Bathyergus suillus)*) populations need to be monitored in case management strategies need to be implemented to control their activities which prevent veld recovery through added disturbances. This could be achieved by putting up owl boxes in the Reserve and through the recovery of native snake species.

There is currently no alien faunal species within the Nature Reserve. However, this should be monitored and formal plans outlining the removal and management of an alien faunal species is required.

In order to achieve these objectives the following is required:

- Mapping the extent of invasion in terms of density and species;
- Determining the costs of removal and a plan of operations listing Initial control, Follow-up control and Maintenance;
- Prioritisation of lightly infested areas for alien removal in accordance with the management blocks focussing on biodiversity restoration(Refer to Map 12/ Table 8);
- The implementation of removal programmes for priority species and areas;
- Keeping a detailed record of clearing operations

5.3.5.5 Species introductions

The potential to reintroduce faunal species which historically occurred in the Nature Reserve and for which suitable habitats and eco-niches occur, does exist. However, it is not recommended until the vegetation has fully recovered from alien clearing and anthropogenic disturbances.

The potential for game reintroduction should be considered in five years time during the revision of the management plan.

A full proposal prior to the re-introduction of any species must be submitted to the Fauna and Flora Management Committee for consideration and endorsement. This ensures a full investigation into the availability of suitable habitat for the species, the historical occurrence and status of the species and the effect of re-introduction on the area. Public participation would be required if the species is potentially dangerous or has the potential to become problematic.

Only once the proposal is approved by the committee and Provincial authorities may implementation take place. The implementation programme must also be specified in the plan of action and documented accurately.

5.3.5.6 Water management

Water management within the Nature Reserve must comply with the National Water Act No. 36 of 1998, this includes the use of boreholes.

5.3.5.7 Strategic research

The collection of baseline data is essential for determining the presence of species and to illustrate any changes in some features of the ecosystem. This data can also be used to predict future vegetation patterns. It is also essential in determining whether management practices are successful and where improvements are needed.

Fixed point photography is a very useful tool for monitoring and documenting change. It is definitely essential in adapting the management plan in terms of burning regimes and rehabilitation.

5.4 Sensitivity Analysis of the Klein Dassenberg Nature Reserve

The Nature Reserve is important as it forms part of the DCCP and makes a significant contribution to the national vegetation targets of threatened vegetation types as listed in the National Spatial Biodiversity Assessment (Driver *et al.* 2005)

The development of a Sensitivity and Zonation plan is one of the steps required in compiling a Conservation Development Framework (CDF) for the Nature Reserve. A CDF is a tool to reconcile the various land-use needs and to demarcate visitor user zones and the positioning and nature of new infrastructure; access points, roads and facilities. Currently, there is no Sensitivity and Zonation report for the Nature Reserve but it is a priority that should take place during the revision of this management plan in five years time. It is recommended that infrastructural development occur only in Block 1 (See Map 8) of Klein Dassenberg and none in Papekuil.

The CDF process has grown in response to the requirements of the National Environmental Management: Biodiversity Act, Act 10 of 2004, hereby referred to as the NEM:BA (2004) and is a strategy to comply with the spatial planning requirements of these Acts. The CDF will ensure that best practice and sustainable development principles are integrated into spatial planning within protected areas.

The Sensitivity-Value analysis is the landscape analysis portion of the broader Conservation Development Framework. It is a multi-criteria decision-support tool for spatial planning that is designed to integrate the best available information into a format that allows for defensible and transparent decisions to be made. The Sensitivity-Value process is based on the principle that the acceptability of a development (or placement of a structure) at a site is based on the site's value (either from biodiversity, heritage, aesthetic or a combination of values) and its sensitivity or vulnerability to a variety of types of disturbance (Holness *et al.* 2005).

- The Sensitivity-Value analysis, the CDF and the associated zonation plan should form part of an adaptive management system. They will grow and change over time as the understanding of the landscapes and ecosystems improve; and
- It does not replace the need for detailed site and zone planning and Environmental Impact Assessment (EIA) compliance at site level.

5.5 Zonation Plan of the Klein Dassenberg Nature Reserve

5.5.1 Zoning Informants

This section briefly outlines the values underlying the identification of broad tourism use zones. It is important to remember that the landscape/biodiversity analysis is just one of the informants in the zonation process. Although the biodiversity analysis of the zoning process is relatively objective, there are other informants that are not.

Although every attempt is made to place high sensitivity-value sites into more protected zones where possible, the zoning process is in its essence a compromise between environment and development. In particular, often the identified high value sites are the key biodiversity assets that need to be made available in an appropriate manner to the ecotourism market. Direct links between the biodiversity layers and the spatial management of the Nature Reserve are made during the identification of special management areas (where applicable). Even within high tourist use zones, there are likely to be areas subject to very tight conservation controls (potentially including complete exclusion of human impacts from an area).

<u>Underlying decision making rules used in the zonation process:</u>

- The zonation process is aimed a striking a balance between environmental protection and the development required to meet the broader economic and social objectives of the Nature Reserve;
- The zoning process takes into account existing development footprints and tourism access routes;
- This is based on the underlying principle that all else being equal, an existing transformed site is preferable to a greenfields site from a biodiversity perspective;
- Infrastructure costs are dramatically increased when developments take place away from existing infrastructure;

- Existing tourism nodes and access routes are a reality of the economic landscape, and it is would not be possible to shut down existing tourism sites compromising the development objectives of the Nature Reserve;
- Where existing development nodes, tourist sites and access routes occur in areas with high sensitivity-value, then the broad use zoning aims to keep the development footprint as small as is realistically possible, preferably within the existing transformed site;
- Where possible, sites with high biodiversity sensitivity-value are put into stronger protection zones;
- Peripheral development is favoured and where possible should be located outside of the conservation area;
- Two key points need to be emphasized:
- The designation of a broad use zone does not imply that all sites within that zone would be suitable for all the development types anticipated within that use zone. Detailed site level planning is still required, and many sites may prove to be unsuitable at a site/precinct/EIA level of planning; and
- Special Management Areas/Overlays need to be formalised and the links made to the management plans. (Adapted from Holness 2008)

5.5.2 Zoning Definitions and Descriptions

The zonation definitions and descriptions were work shopped with Regional and Area managers. Four categories were decided on, namely; Primary Conservation zone, Conservation zone, Low Intensity leisure zone and High Intensity leisure zone.

6 DEVELOPMENT PLAN

No development will occur within the Nature Reserve until the IRMP is reviewed in five years time. The Reserve has however been zoned so that development of conservation related infrastructure can only occur on the most degraded sites of the Reserve which is situated next to the R304 of the Klein Dassenberg Section (Map 8). This zone has been allocated according to veld degradation and tourism potential.

Map 8 :Zonation Map of Papekuil Nature Reserve

7 COSTING PLAN

Table 6: Broad costing management breakdown for Klein Dassenberg Nature Reserve:

Management Action	Funding Source	Approximate Costs 2013-2014	Approximate Costs 2014-2015	Approximate Costs 2015-2016	Approximate Costs 2016-2017	Approximate Costs 2017-2018
1. Invasive Alien Plant Program	Grant Funding	R1,075257	R1,139773	R1,208159	R1,268566.95	R1,1331995.30
2. Fire Management • Maintenance of Fire breaks	Operating	R20 000	R21 000	R22 050	R23 152.50	R24 310.13
3. Road and Trail Maintenance • Road Repairs • Footpath Maintenance	Grant Funding Operating Operating	R90 000 R2 000 R2 500	- R2 100 R2 625	- R2 205 R2 757.25	- R2 315.25 R2 894.06	- R2 431.01 R3 038.77
4. Fencing • New fence Reserve • Repairs and Maintenance	Operating CAPEX	R474 750	R478 487.50 R7 500	- -	- -	- R8 682.19
5. Infrastructure Development	CAPEX	R700,000.00	R10,000,000	R10,000,000		
6. Human Resources • Direct HR costs	Operating	R500 000	R540 000	R583 200	R612 360	R661 348.80
7. General Expenses • General Operating Costs	Operating	R15 000	R15 750	R17 325	R18 191	R19 100
8. Special Projects	Grant/ CAPEX					
Note: HR costs are escalated at 8% per annum Operating Expenditure is escalated at 5% per annum						

PART 3 – MONITORING AND AUDITING

8 MONITORING & AUDITING

8.1 ANNUAL AUDIT PROCEDURE [Set format taken from previous CCT Management Plan]

8.1.1 Management Effectiveness Tracking Tool –METT

The METT-SA is a rapid, site-level assessment tool adapted from the World Bank & WWF's system (2007). The system is based on the concept that appropriate protected area management encompasses six distinct stages:

1. Understanding the **context** (where are we now?) of existing values and threats,
2. Progress through **planning** (where do we want to be?)
3. Allocation of resources (**inputs**) (what do we need?)
4. Implementing management actions (**processes**) (how do we go about it?)
5. Producing products and services from the management actions (**outputs**) (what were the results?),
6. The management **outcomes** (what did we achieve?).

This version has been compiled so that it can be applied to the full range of protected areas managed by all C.A.P.E. Partners. It is also applicable to protected areas in other regions and with minor adaptations could be applied outside of South Africa. It may also be applied to MPA's and islands, but in the long run it may be necessary to amend the system to be more specific to these areas. It may be necessary to develop a system for "off reserve" conservation areas such as conservancies or stewardships.

When applying METT-SA it is important that the following be kept in mind:

- The METT-SA is intended to report on progress of the reserve. Thus the score is the baseline against which future assessments are made to see if there has been an improvement;
- It is site specific and must thus not be used to compare scores between different protected areas;
- It is a useful tool to give indications of trends in management. In this version the six groups of elements of the management process as defined in the original version are

scored as subsets of the total. This gives an indication of where improvement in management needs to focus;

- It is not intended to replace more detailed assessments as part of adaptive management systems;
- The METT has limitations in the quantitative measurement of Outcomes and these should be measured by more objective and quantitative systems;
- This version adjusts the total score where questions are not relevant; and
- Often low scores in some questions can be a reflection on the organization and are out of the control of the protected area manager. **Thus under no circumstances should the performance of managers be measured against the results of the METT-SA.**

Frequency of application: Tracking the trends of management effectiveness is a long term process and instant improvements are unlikely to be obtained. Generally the METT is applied at three year intervals, but an annual application is acceptable if it is understood that changes may only be slight.

8.1.2 Protected Area Review

The PA Review is an internal review conducted annually to assist managers in reviewing their sites and to allow for adaptive management actions to take place where required (and within the managers control).

8.2 Management Plan review

On a five-yearly basis, this Management Plan should be reviewed and adjusted accordingly. To achieve this, the following questions (and others as needed) should be addressed:

- Did this Integrated Reserve Management Plan make a significant contribution to management of the Papekuil Nature Reserve?
- Were individual management “prescriptions” realistic and achievable? Were they written unambiguously which led to misunderstanding?
- Were allocated budgets for each management activity realistic? If not, were they too much or too little?
- Were sufficiently qualified staff members allocated to each management activity?

There will be some overlap between the review and the audit and they should therefore be done on the same day, by the same team.

8.3 Biodiversity Monitoring

Table 7: The Reserve's monitoring requirements:

All baseline data is captured into the South African Biodiversity Database

Action	Responsible Party	Means of Verification	Frequency
Vegetation Monitoring a. Invasive Alien Vegetation Monitor effectiveness of the clearing operation; the follow-up and the methods used. Monitor compliance with the alien clearing schedule and subsequent environmental damage. Use data to continuously update Reserve's Invasive Species Management Programme	Site Coordinator, Reserve staff and Intern	Weekly Inspections, Final Inspections, Field Verification Sheet.	Weekly Once off – completion of contract Annually - to determine Management Unit Clearing Plan
b. Atlantis Sand Fynbos Monitor recovery of fynbos after alien clearing and exclusion of other disturbances.	Intern	Species identification, abundance	Depends on veld recovery but it should be monitored seasonally for at least 3 years
Vegetation Abundance, Density & Structure	Site Coordinator, Reserve staff and Intern	Fixed point photography, Presence, abundance, density	Annually Every 3 years-permanent vegetation plots
Fine scale vegetation community mapping	Site Coordinator, Reserve Staff, Biophysical Specialist and Intern	Surveying of land use of area and neighbouring properties, in field density assessments of plant communities	Once off
Rainfall collection	Intern	Rain gauge placed in open area with no disturbances	Daily
Fire mapping The accurate mapping and recording of all veld fires must be done to build up a useful record that will assist with veld interpretation. All the fire data should be recorded on GIS.	Site Coordinator, Reserve staff and Intern	Veld age map, fire map	Post fire

Action	Responsible Party	Means of Verification	Frequency
Minimum recording requirement is a simple map indicating the date of the fire and extent of the burn.			
Post Fire Recruitment	Site Coordinator, Reserve staff and Intern	Stratified Sampling plots	Post fire 6 months 12 months Annually for 3 years
Faunal Monitoring Small antelope sample survey	Site Coordinator, Reserve staff and Intern	Game Drive Count	As required
Small mammal	Intern	Trap cages, Sherman traps	Annually
Bird Distribution	Site Coordinator, Reserve staff and Intern	Field Observations	Monthly
Reptile survey	Site Coordinator, Reserve staff and Intern	Traps used to capture, identify and release	Once every five years
Amphibian Survey	Site Coordinator, Reserve staff and Intern	Audio and visual observation	Once every five years

PART 4 - REFERENCES

9 REFERENCES

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PART 5 - APPENDICES

10 APPENDICES

Appendix 1: The S.G. Diagrams

Appendix 2: The Dassenberg Coastal Catchment Partnership (DCCP)

The Dassenberg Coastal Catchment Partnership (DCCP) is a landscape initiative between the Environmental Resource Management Department of the City of Cape Town, CapeNature, WWF, Table Mountain Fund, Wilderness Foundation, Cape West Coast Biosphere, SANParks and SANBI. This region is highlighted as a priority in CapeNature's Provincial Protected Area Expansion Strategy. The area has also been identified as one of the two most important Climate Change adaptation corridors in the Western Cape by the TMF-WWF study and is arguably one of the highest priority conservation areas in the country.

This conservation initiative aims to look at the protection and consolidation of the incredible natural heritage in the region while maximising associated social and economic opportunities. The concept strives for a balanced approach as the success of the initiative is dependent on unlocking social and economic opportunities while focussing on a more inclusive, people and community orientated approach. The envisaged area boarders on the communities of Atlantis, Mamre, Pella, Riverlands and Chatsworth and will focus on the high quality natural remnants that are outside of the urban edge. In addition, the area contains immense cultural and historical significance and there are numerous tourism opportunities contained within the area.

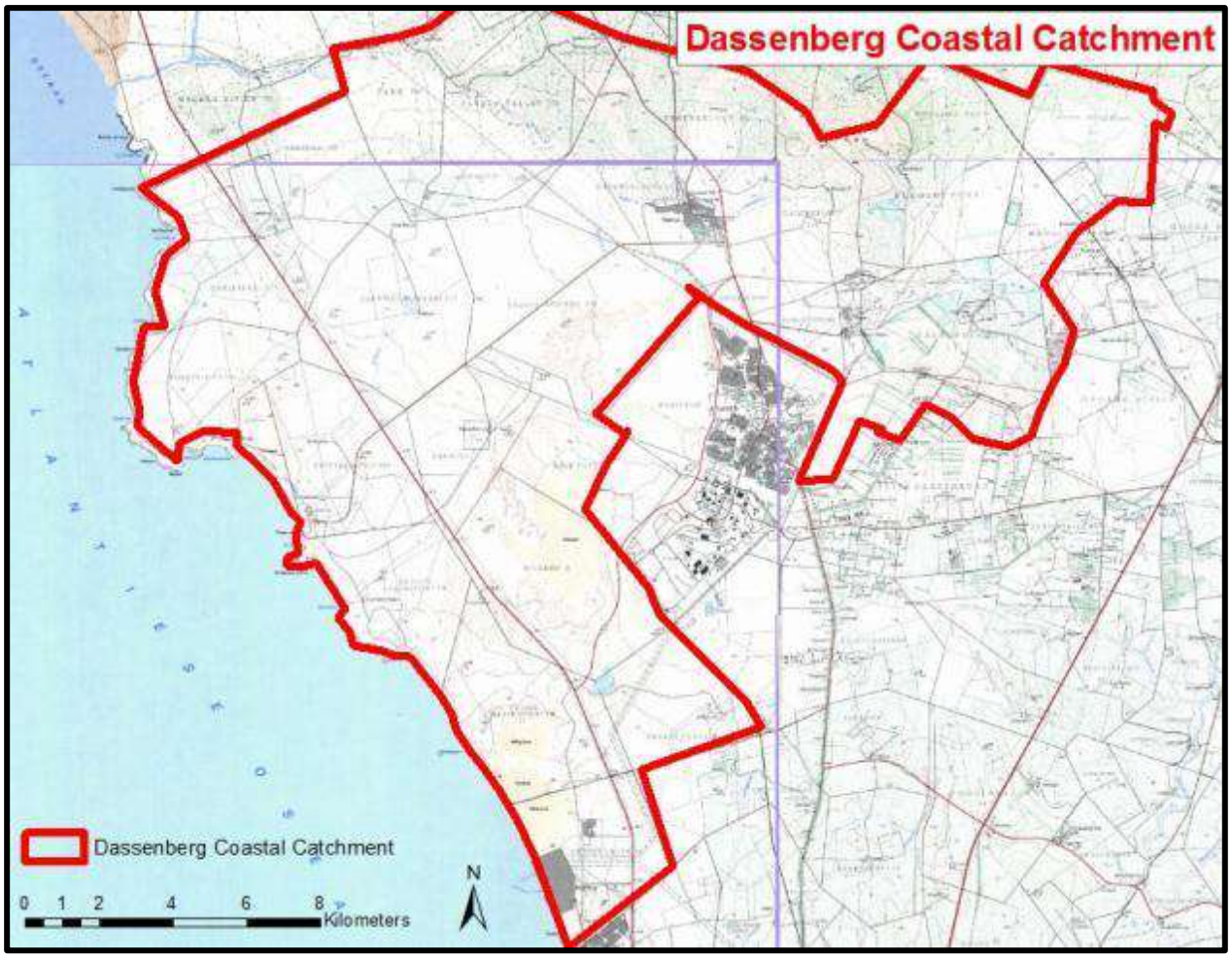

Figure 5: The greater Dassenberg Coastal Catchment Partnership

The main objectives of DCCP are to:

- **Protect critical ecological infrastructure**

  The Witzands Aquifer currently supplies 40 % of Atlantis's water and its continued functioning is critical to Cape Town's water security. The capital costs of replacing this water should the aquifer become degraded is estimated to be R300 million to build new pipe lines and pump stations or R800 million to build a desalination plant.

- **Deliver Socio Economic opportunities to the surrounding communities**
  - Already R1.8 million Working for Water funding has been secured for alien vegetation clearing within the area. This project will start in August 2012 and employ three teams from the surrounding communities for a three year period.
  - Currently, the Mayor's Kader Asmal Memorial Project is employing four teams of 44 people from the surrounding communities. These EPWP teams are being trained and are conducting alien vegetation clearing.

- The area is an excellent locality for skills development projects and economic opportunities
- For alien clearing alone, at least 450 000 person days are required for the initial three years
- Several current recreation and tourism activities occur; the focus should be to build on these existing initiatives. (e.g. Mamre Heritage and Wild Flower show)
- The area contains numerous potential recreation and tourism activities – the areas close proximity to Cape Town is highly advantageous.
- The sound management of fire and alien vegetation in the area will reduce cover for illegal activities and reduce fire risk. There is potential to create a 22 strong Working on Fire Team to be based in the region.

➢ **Ensure the protection of the identified critical climate change adaptation and mitigation corridor**

The area has been identified as one of the two priority climate change adaptation and mitigation corridors in the Western Cape. This is due to the large areas of natural vegetation which still occurs in the area, the coastal to inland link and the incredibly high levels of biodiversity and endemism.

➢ **Protect and promote the incredible natural and cultural heritage of the area**

- There are many highly significant cultural heritage features in the area.
- The potential is to create a large and ecologically viable area.
- There is good potential to reintroduce game such as Eland and Red Hartebeest.
- The area contains extensive high quality remnants of three Critically Endangered and one Endangered Vegetation types.
- It is estimated that more than 200 threatened plant species occur in the Dassenberg Coastal Catchment corridor (30% endemic to the corridor & 60% endemic within 50km of the corridor).

Appendix 3: The most recent plant species list for Klein Dassenberg Nature Reserve (updated 25/09/2014)

#	FAMILY	TAXA	Status
1	AIZOACEAE	*Aizoon sarmentosum*	LC
2	AIZOACEAE	Carpobrotus edulis	LC
3	AIZOACEAE	Conicosia pugioniformis	LC
4	AIZOACEAE	*Lampranthus cf aurantium*	LC
5	AIZOACEAE	Mesembryanthemum canaliculatum (=Phyllobolus)	LC
6	AIZOACEAE	*Ruschia sp - pink flowers*	LC
7	AIZOACEAE	*Tetragonia nigrescens*	LC
8	AIZOACEAE	*Lampranthus explanatus*	EN
9	AIZOACEAE	*Ruschia indecora*	EN
10	AIZOACEAE	*Ruschia tecta*	EN
11	AIZOACEAE	*Lampranthus aurantiacus*	LC
12	AMARYLLIDACEAE	*Haemanthus pubescens*	LC
13	ANACARDIACEAE	*Searsia laevigata laevigata*	LC
14	ANACARDIACEAE	*Searsia rosmarinifolia*	LC
15	ANARCARDIACEAE	*Rhus rosmarinifolia*	LC
16	APOCYNACEAE	*Asclepias crispa*	LC
17	APOCYNACEAE	*Cynanchum africanum*	LC
18	ASPHODELACEAE	*Trachyandra hirsutiflora*	LC
19	ASPARAGACEAE	*Asparagus lignosus*	LC
20	ASPARAGACEAE	*Asparagus capensis*	LC
21	ASPARAGACEAE	*Asparagus rubicundus*	LC
22	ASTERACEAE	Arctotheca calendula	LC
23	ASTERACEAE	*Arctotis acaulis*	LC
24	ASTERACEAE	*Arctotis hirsuta*	LC
25	ASTERACEAE	*Cotula duckittiae*	VU
26	ASTERACEAE	*Cotula turbinata*	LC
27	ASTERACEAE	*Dimorphotheca nudicaulis*	LC
28	ASTERACEAE	*Dimorphotheca pluvialis*	LC
29	ASTERACEAE	Eriocephalus racemosus	LC
30	ASTERACEAE	*Elytropappus glandulosus*	LC
31	ASTERACEAE	Felicia cf tenella	LC
32	ASTERACEAE	*Gazania sp*	LC
33	ASTERACEAE	*Gymnodiscus capillaris*	LC
34	ASTERACEAE	Helichrysum cochleariforme	NT
35	ASTERACEAE	Helichrysum cf moeserianum	LC
36	ASTERACEAE	*Metalasia adunca*	NT
37	ASTERACEAE	Metalasia brevifolia	LC
38	ASTERACEAE	*Metalasia capitata*	VU
39	ASTERACEAE	*Metalasia muricata*	LC
40	ASTERACEAE	*Oedera imbricata*	LC
41	ASTERACEAE	*Osteospermum clandestinum*	LC

#	FAMILY	TAXA	Status
42	ASTERACEAE	*Othonna filicaulis*	LC
43	ASTERACEAE	*Othonna gymnodiscus*	LC
44	ASTERACEAE	*Othonna linearifolia*	EN
45	ASTERACEAE	Pteronia camphorata	LC
46	ASTERACEAE	*Petalacte coronata*	LC
47	ASTERACEAE	Senecio foeniculoides	CR
48	ASTERACEAE	*Senecio pubigerus*	LC
49	ASTERACEAE	*Stoebe plumosa*	LC
50	ASTERACEAE	*Trichogyne ambigua*	LC
51	ASTERACEAE	*Ursinia chrysanthemoides*	LC
52	BORAGINACEAE	*Lobostemon glaucophyllus*	LC
53	BORAGINACEAE	*Lobostemon fruticosus*	LC
54	BRUNIACEAE	*Berzelia abrotanoides*	LC
55	BRUNIACEAE	*Staavia radiata*	LC
56	CAMPANULACEAE	*Prismatocarpus sp*	LC
57	CAMPANULACEAE	*Roella cf arenaria*	VU
58	CAMPANULACEAE	Wahlenbergia androsacea	LC
59	CAMPANULACEAE	Wahlenbergia capensis	LC
60	CRASSULACEAE	Crassula dichotoma	LC
61	CRASSULACEAE	Crassula cf multiflora	LC
62	CYPERACEAE	*Ficinia deusta*	LC
63	CYPERACEAE	*Ficinia cf secunda*	LC
64	CYPERACEAE	Ficinia cf paradoxa	LC
65	CYPERACEAE	*Ficinia sp compact head*	LC
66	CYPERACEAE	*Ficinia sp single spikelet cf F. indica*	LC
67	DROSERACEAE	*Drosera trinervia*	LC
68	EBENACEAE	*Diospyros glabra*	LC
69	**FAMILY**	**TAXA**	**Status**
70	ERICACEAE	*Erica axillaris*	LC
71	ERICACEAE	*Erica corrifolia*	LC
72	ERICACEAE	*Erica ferrea*	EN
73	ERICACEAE	*Erica lasciva*	LC
74	ERICACEAE	*Erica mammosa*	LC
75	ERICACEAE	*Erica plukenetii*	LC
76	ERICACEAE	*Erica plumosa*	LC
77	ERIOSPERMACEAE	*Eriospermum capensis*	LC
78	ERIOSPERMACEAE	*Eriospermum nanum*	LC
79	EUPHORBIACEAE	*Euphorbia tuberosa*	LC
80	FABACEAE	*Acacia saligna*	LC
81	FABACEAE	*Argyrolobium cf velutinum*	EN
82	FABACEAE	*Aspalathus albens*	VU
83	FABACEAE	*Aspalathus retroflexa cf bicolor*	CR
84	FABACEAE	*Amphithalea ericifolia ssp erecta*	CR
85	FABACEAE	Rafnia angulata angulata	LC
86	FABACEAE	*Cyclopia genistoides*	LC
87	GERANIACEAE	*Pelargonium capitatum*	LC
88	GERANIACEAE	*Pelargonium oenothera*	LC

#	FAMILY	TAXA	Status
89	GERANIACEAE	*Pelargonium sp*	LC
90	GERANIACEAE	Pelargonium myrrhifolium fruticosum	
91	GERANIACEAE	Pelargonium psammophilum (m.s.Marais)	
92	GERANIACEAE	*Pelargonium triste*	LC
93	HAEMODORACEAE	*Wachendorfia sp*	LC
94	HEMEROCALLIDACEAE	Caesia sabulosa	VU
95	HYACINTHACEAE	Albuca cooperi	LC
96	HYACINTHACEAE	*Lachenalia sp*	LC
97	HYACINTHACEAE	*Lachenalia rubida*	LC
98	IRIDACEAE	*Aristea sp cf A.africana*	LC
99	IRIDACEAE	*Babiana ambigua*	LC
100	IRIDACEAE	*Babiana ringens*	LC
101	IRIDACEAE	*Bobartia cf indica*	LC
102	IRIDACEAE	*Gladiolus brevifolius*	LC
103	IRIDACEAE	*Gladiolus carinatus*	LC
104	IRIDACEAE	*Moraea flaccida*	LC
105	IRIDACEAE	*Moraea galaxia*	LC
106	IRIDACEAE	*Moraea neglecta*	LC
107	IRIDACEAE	*Moraea tripelata*	LC
108	IRIDACEAE	*Romulea cf flava - white form*	LC
109	IRIDACEAE	*Romulea flava - yellow form*	LC
110	IRIDACEAE	*Romulea rosea*	LC
111	IRIDACEAE	*Romulea schlechteri*	LC
112	IRIDACEAE	*Watsonia marginata*	LC
113	LAMIACEAE	*Salvia lanceolata*	LC
114	LAURACEAE	*Cassytha ciliolata*	LC
115	LOBELIACEAE	*Lobelia coronopifolia*	LC
116	MOLLUGINACEAE	*Pharnaceum cf lanatum*	LC
117	ORCHIDACEAE	*Disa bifida (= Schizodium)*	LC
118	ORCHIDACEAE	*Pterygodium sp*	LC
119	ORCHIDACEAE	*Satyrium sp*	LC
120	OROBANCHACEAE	*Orobanche sanguinea*	LC
121	OXALIDACEAE	*Oxalis luteola*	LC
122	OXALIDACEAE	*Oxalis obtusa*	LC
123	OXALIDACEAE	*Oxalis pes-caprae*	LC
124	PENAEACEAE	*Stylapterus fruticulosus*	EN
125	POACEAE	*Avena sativa*	LC
126	POACEAE	*Briza maxima*	LC
127	POACEAE	*Ehrhatha villosa*	LC
128	**FAMILY**	**TAXA**	**Status**
129	POACEAE	*Tribolium uniolae*	LC
130	POLYGALACEAE	*Muraltia cf ericoides*	LC
131	POLYGALACEAE	Polygala garcinii	
132	POLYGALACEAE	*Polygala recognita*	LC
133	POLYGONACEAE	*Rumex sp*	LC
134	PROTEACEA	*Leucadendron salignum*	LC
135	PROTEACEAE	*Leucodendron lanigerum*	VU

#	FAMILY	TAXA	Status
136	PROTEACEAE	*Leucospermum hypophyllocarpodendron hybrid X L. parile*	VU
137	PROTEACEAE	*Leucospermum hypophyllocarpodendron subsp canaliculata*	VU
138	PROTEACEAE	*Leucospermum parile*	EN
139	PROTEACEAE	*Protea scolymocephala*	VU
140	PROTEACEAE	*Serruria decipiens*	VU
141	PROTEACEAE	Protea repens	LC
142	PROTEACEAE	*Serruria fasciflora*	VU
143	RESTIONACEAE	*Calopsis impolita*	VU
144	RESTIONACEAE	*Cannomois cf arenicola*	LC
145	RESTIONACEAE	*Chondropetalum nudum*	LC
146	RESTIONACEAE	*Staberoha cernua*	LC
147	RESTIONACEAE	*Staberoha distachyos*	LC
148	RESTIONACEAE	*Thamnochortus punctatus*	Declining
149	RESTIONACEAE	*Thamnochortus sp*	LC
150	RESTIONACEAE	*Willdenowia arescens*	LC
151	RHAMNACEAE	*Phylica cephalantha*	LC
152	RHAMNACEAE	*Phylica imberbis*	LC
153	RHAMNACEAE	*Trichocephalus stipularis*	LC
154	ROSACEAE	*Cliffortia falcata*	LC
155	ROSACEAE	*Cliffortia polygonifolia*	LC
156	RUBIACEAE	*Anthospermum spathulatum*	LC
157	RUBIACEAE	*Carpacoce vaginellata*	LC
158	RUTACEAE	*Adenandra cf villosa*	LC
159	RUTACEAE	*Agathosma imbricata*	LC
160	RUTACEAE	*Diosma oppositifolia*	LC
161	RUTACEAE	*Macrostylis villosa*	EN
162	RUTACEAE	*Macrostylis villosa villosa*	EN
163	SANTALACEAE	*Thesium aggregatum*	LC
164	SANTALACEAE	*Thesium cf pubescens*	LC
165	SANTALACEAE	Thesium capitatum	LC
166	SANTALACEAE	Thesium cf diversifolium	LC
167	SANTALACEAE	*Thesium sp, gracile*	LC
168	SCROPHULARIACEAE	*Diascia capensis*	LC
169	SCROPHULARIACEAE	*Hebenstretia repens*	LC
170	SCROPHULARIACEAE	*Lyperia tristis*	LC
171	SCROPHULARIACEAE	Microdon capitatus	LC
172	SCROPHULARIACEAE	Microdon dubius	LC
173	SCROPHULARIACEAE	*Manulea rubra*	LC
174	SCROPHULARIACEAE	*Nemesia strumosa*	NT
175	SCROPHULARIACEAE	*Nemesia versicolor*	LC
176	TECOPHILAEACEAE	Cyanella hyacinthoides	LC
177	THYMELAEACEAE	*Gnidia pinifolia*	LC
178	THYMELAEACEAE	*Lachnaea capitata*	VU
179	THYMELAEACEAE	*Lachnaea grandiflora*	VU
180	THYMELAEACEAE	Passerina corymbosa	LC
181	THYMELAEACEAE	*Struthiola ciliata*	LC

#	FAMILY	TAXA	Status
182	THYMELAEACEAE	Struthiola striata	LC
183	THYMELAEACEAE	*Struthiola dodecandra*	LC
184	TRICHOCEPHALUS	*Trichocephalus stipularis*	LC
185	URTICACEAE	Urtica cf urens	LC
186	ZYGOPHYLLACEAE	*Zygophyllum flexuosum*	LC
187	ZYGOPHYLLACEAE	Zygophyllum sessilifolium	LC
188	ZYGOPHYLLACEAE	*Zygophyllum spinosum*	LC

Status	Definition of Status	Amount
Critically Endangered (CR)	Taxa which is facing an extremely high risk of extinction in the wild in the immediate future	3
Endangered (EN)	Taxa which is not CR but is facing a very high risk of extinction in the wild in near future	10
Vulnerable (VU)	Taxa which is not CR or EN but is facing high risk of extinction in the wild in medium-term future	14
Near Threatened (NT)	Taxa which do not qualify for Conservation dependent, but which are close to qualifying for VU	3
Declining	Taxa which do not qualify for Conservation dependent, but which are close to qualifying for NT	1
Least Concern (LC)	Taxa which do not qualify for Conservation dependent or NT	147
Data Deficient (DD)	When there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and / or population status	
Exotic	Taxa which did not originally occur in the area but has been introduced	
	TOTAL	**178**

Appendix 4: Existing Firebreaks on Papekuil Nature Reserve

Map 9: Existing Firebreaks on Papekuil Nature Reserve

Appendix 5: Annual Review Procedure (Example of an audit proforma)

Ecological Auditing for Contractual Reserves & Biodiversity Agreements.

The ecological auditing pro-forma is a guideline document, developed primarily to capture biodiversity management performance for a given vegetation type. It should be adapted to the specific circumstances stipulated in the management plan for the Management Agreement & Contractual Reserve in question.

Name of Property			
Name of Owners		Name of Auditors	
Tel		Tel	
Fax		Fax	
Cell		Cell	
E-mail		E-mail	
Date of Audit:			
Date of next Audit:			

Alien Vegetation: Is there an alien vegetation management plan? YES/NO
Note:

Management Objective Are objectives for the 12 month management period clearly stated?	**Measurable** Have objectives for the 12 month management period been met?	**Responsible Party**	**Yes/ No**	**Quality H/M/L**
	If NOT UNDERTAKEN / UNSUCCESFUL please state reasons and attach as Appendix 1: Alien Vegetation			

Fire Management: Is there a Fire management plan? YES/NO

Management Objective Are objectives for the 12 month management period clearly stated? **No**	**Measurable** Have objectives for the 24 month management period been met?	**Responsible Party**	**Yes/ No**	**Quality H/M/L**
	If NOT UNDERTAKEN/UNSUCCESFUL please state reasons and attach as Appendix 2: Fire Management.			

Note:

Game management: Is there a game management plan? YES/NO

Management Objective	Measurable Have objectives for the 12 month management period been met?	**Responsible Party**	**Yes/ No**	**Quality H/M/L**

	If NOT UNDERTAKEN/UNSUCCESFUL please state reasons and attach as Appendix 3: Game Management.			

Development:

Management Objective Are objectives for the 12 month management of animals clearly stated?	Measurable Have the objectives for the 24 month management period been undertaken?	**Responsible Party**	**Yes/ No**	**Quality H/M/L**
	If NOT UNDERTAKEN/UNSUCCESFUL please state reasons and attach as Appendix 4: Development.			

Business

Management Objectives Are objectives for resource use for the 12 month management period clearly stated?	Measurable Have objectives for the 12 month management period been met?	**Responsible Party**	**Yes /No**	**Quality H/M/L**
	If NOT UNDERTAKEN/UNSUCCESFUL please state reasons and attach as Appendix 5: Business.			

Road Maintenance and Erosion

Management Objective Are the objectives for the 12 month management of fire clearly stated?	Measurable Have the objectives for the 12 month management period been undertaken?	**Responsible Party**	**Yes /No**	**Quality H/M/L**
	If NOT UNDERTAKEN/UNSUCCESFUL please state reasons and attach as Appendix 6: Road Maintenance and Erosion.			

Water management: Is there a water management plan? YES/NO

Management Objective Are objectives for the 12 month management plan clearly stated?	Measurable Have objectives for the 12 month management period been met?	**Responsible Party**	**Yes/ No**	**Quality H/M/L**

	If NOT UNDERTAKEN/UNSUCCESFUL please state reasons and attach as Appendix 7: Water Management.			

Monitoring: Is there a Monitoring management plan? YES/NO

Management Objectives Are objectives for resource use for the 12 month management period clearly stated?	Measurable Have objectives for the 12 month management period been met?	**Responsible Party**	**Yes /No**	**Quality H/M/L**
	If NOT UNDERTAKEN/UNSUCCESFUL please state reasons and attach as Appendix 8: Monitoring.			

Addendum 1 – Alien Vegetation

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New interventions			

Addendum 2 – Fire Management

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New interventions			

Addendum 3 – Game Management

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New interventions			

Addendum 4 – Development

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New interventions			

Addendum 5– Business

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New interventions			

Addendum 6 – Road maintenance & Erosion

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New Interventions			

Addendum 7 – Water Management

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New Interventions			

Addendum 8 – Monitoring

	List	Reason	Actions
Interventions not undertaken			
Interventions unsuccessful			
New interventions			

Appendix 6: Fixed Point Photography Data Sheet

FIXED POINT PHOTOGRAPHY DATA SHEET		
PLOT NO:	**DATE:**	**SURVEYOR:**
GPS CO-ORDINATE:		
GRID REF NO:		
POINT DESCRIPTION: (How to find the points)		
HABITAT DESCRIPTION: (use back of form, if necessary) **VEGETATION TYPE:**		
TREE & SHRUB SPECIES:		
DWARF SCRUB SPECIES:		
HERBACEOUS PLANT SPECIES:		

COVER DESCRIPTION:			
COVER TYPE	**HEIGHT**	**% OF PLOT**	**DOMINANT SPECIES**
CANOPY COVER			
GROUND COVER			

UTILIZATION:			
BROWSING DENSITY:		**PLANTS BROWSED**	**BROWSING HERBIVORES**
HEAVY			
MODERATE			
LIGHT			

GRAZING INTENSITY:		**PLANTS GRAZED**	**GRAZING HERBIVORES**
HEAVY			
MODERATE			
LIGHT			

OTHER NOTES:

PART B

PART 6 - MANAGEMENT SCHEDULE

10.1 PROGRAMME OF IMPLEMENTATION

This section focuses on specific programmes that were identified in Section A, paragraph 5.3 Protected Area Management Policy Framework and Guiding Principles, describing the day-to-day management activities and assigning responsibility for the implementation thereof.

10.2 Management Programmes: Details of Annual Plan of Operations (APOs)

Management Programme 1: Community Participation (see section 5.3.1. above)

Management Action 1 – Community Participation	
Objective	To develop a constructive, mutually beneficial relationship between the Reserve, communities close to or adjacent to the Reserve and the surrounding landowners to establish the long term success of Papekuil Nature Reserve.
Responsible Party	The City of Cape Town
Time Frame	Continuous
Means	Establish community based initiatives and partnerships to promote and support economic and employment opportunities. • Provide related alien clearing training and awareness initiatives.

Management Programme 2: Security and Safety (see section 5.3.2 above)

Management Action 2 – Safety and Security	
Objective	To provide a safe environment for staff members and potential tourists.
Responsible Party	The City of Cape Town
Time Frame	Continuous
Means	Implement a Safety and Security Audit to highlight problem areas. Firebreaks should ensure safety of neighbouring communities from fire risks.

Management Programme 3: Tourism Development and Management (see section 5.3.3 above)

Management Action 3 - Tourism	
Objective	Legal Tourism Ventures that adhere to the zoning rights of the property and which do not impede on any National Environmental Management Act (NEMA) principles are supported. Establish tourism ventures within Nature Reserve which would provide visitors with meaningful experience while preventing damage to the critically endangered vegetation.

Responsible Party	The City of Cape Town
Time Frame	To be reviewed in five years time
Means	Review the Development Plan to determine the extent of tourism adventure development necessary. Monitor tourism related impacts on vegetation and implement corrective management where necessary (See Management Programme 11 - Strategic Research). Determine feasibility of tourism activities. All infrastructure need to be maintained.

Management Programme 4: Infrastructure Management (see section 5.3.4 above)

Management Action 4 - Development	
Objective	With exception of the demarcated development zone (33°34'25.02"S, 18°31'11.63"E, See Map 8), the marked footpaths/ firebreaks and fencing, no further development is to occur within the Nature Reserve. Any proposed development needs to be done in accordance with NEMA principles and follow all stakeholders' applicable legislation and procedures. Additionally, infrastructure should also align to the Zonation Plan of the Nature Reserve. Roads and footpaths within the Reserve should be maintained. All the tracks and firebreaks that are not needed within the Reserve should be closed off and rehabilitated.
Responsible Party	The City of Cape Town
Time Frame	Continuous
Means	To be developed with reference to the Zonation and Sensitivity report.

Management Programme 4: Biodiversity Conservation Management (see section 5.3.5 above)

Management Action 6 – Community-Based Natural Resource Management (CBNRM)	
Objective	Determine impact of flower harvesting on vegetation survival and recruitment.
Responsible Party	The City of Cape Town
Time Frame	Continuously
Means	Implement a Harvesting Feasibility Study within the next five years. See Management Action 11 - Monitoring

Management Action 7 – Fire Management	
Objective	Prevent too frequent fires, create and maintain firebreaks, carry out management/ ecological burns, allow appropriate natural fires, and conform to Fire Reaction Plan. Fire Management should be carried out in accordance with the National Veld and Forest Act No. 101 of 1998.

	Fire Breaks Firebreaks need strategic placement to provide optimal protection to the natural veld, surrounding communities and private areas. Existing roads and firebreaks need to be mapped (See Appendix 4). Once the Reserve is fenced and operational, these networks need to be assessed as to determine whether they are sufficient or whether realignment is required. Any excess firebreaks/ tracks should be closed off and rehabilitated. New firebreaks/ tracks, if applicable, should be carefully planned to prevent excessive damage to the veld. Firebreaks should not be burnt or ploughed, instead it should be mowed annually, during October, before the start of fire season. They should not be wider than 3m. **Veld Age** The veld age varies between 8 months and older than 10 years. While a basic veld age map is available, all efforts should be made to determine the veld age of areas not covered by the map in (Map 10) to ensure proper fire management planning. **Prescribed Burns** Fire should be used as a management tool on Papekuil Nature Reserve by simulating natural the natural burning regime to prevent vegetation from becoming senescent. These burns need to be thoroughly planned and complement the alien clearing operation (See Map 10/ Table 8). Currently, no prescribed burns are needed in the Nature Reserve as the veld is too young.
Responsible Party	**Fire Breaks** The City of Cape Town **Veld Age** The use of prescribed burns should be assessed in combination with the veld age map (Map 10). **Prescribed Burns** The City of Cape Town
Time Frame	Firebreaks should be maintained at least once a year prior to the fire season (October). A self-audit should be carried out prior to the start of the fire season (October). Each block should be evaluated to establish its readiness to be burnt with the aid of the veld age map (See Map 10). It has been recommended to burn Atlantis Sand Fynbos every 8-15 years.
Means	Firebreaks should be prepared according to National Veld and Forest Act, No. 101 of 1998, however it is recommended that firebreaks be mowed annually in October, prior to the start of the fire season. Firebreaks should not be wider than 3m, as this is sufficient to allow vehicle access when required. Prescribed burns should be based on sound ecological principles. Alien clearing and fire management should be integrated as to control some invasive alien species. Conversely, following a wildfire, the alien clearing plan should be reviewed to prioritize the recently burnt area for alien clearing.

Map 10 : Veld Age Map of Papekuil Nature Reserve

Management Action 8 – Soil Erosion and Control	
Objective	Conduct a soil erosion assessment on all fence lines, tracks and firebreaks. Management control measures need to be implemented to stabilize the affected areas should any signs of erosion be visible.
Responsible Party	The City of Cape Town
Time Frame	Regularly monitoring should be done by the staff of the Reserve.
Means	Monitor all tracks, fence lines and firebreaks within the Reserve in order to implement control measures as soon as stages of erosion are detected. As soon as erosion is detected, the site must be repaired and the cause of the erosion minimised or stopped where possible. Monitor the affectivity of the erosion control method. Erosion of Roads Map all roads and tracks to determine inappropriate roads that should be closed off and rehabilitated. The method of erosion repair is dependent on the location and type of erosion therefore each case should be assessed individually. Monitor cost effectiveness of maintenance.

Management Action 9 – Invasive Species Management	
Objective	Alien vegetation clearing should be carried out in accordance with the Conservation of Agricultural Resources Act No.43 of 1983. Manage invasive species in accordance with the Alien Clearing Schedule (See Table 8).
Current Status	The invasive alien trees were not managed before the site became a Nature Reserve thus there are areas of high infestation. Invasive species management was implemented in 2012 and continues.
Responsible Party	The City of Cape Town
Time Frame	Implement according to Alien Clearing Schedule (See Table 8)
Means	Invasive species schedule should include: • A map (Map 11) outlining the perimeter and Management Blocks. • Identify and map all alien and invasive flora and determine densities and age in the various management blocks. • The clearing schedule and method should follow the best practice as defined by the City of Cape Town's Invasive Unit. • Keep record of clearing operations, especially the cost of each cleared block as to determine cost effectiveness of clearing. Actual costs should also be compared with planned costs for a given area/ year to assist in future budgeting. • Only trained personnel should be used for alien clearing. Prevent the introduction of invasive alien species by ensuring surrounding landowners are aware of relevant legislation. **Brush Piles** • Brush piles are only to be burnt in the cool winter months to prevent soil damage. • Brush piles should be stacked at least 5m wide, 5m high and at least 5m apart. • Each stack should be ignited one at a time using drip torches with a diesel/petrol mix. • Light branches should be stacked separately from heavy timber as to prevent intensely hot fires and consequent soil damage. • Stockpiles should not be stacked under trees, power and telephone lines or within 30 metres of a fire belt. **Footpaths** After alien clearing has occurred in the various management blocks, unnecessary footpaths should be rehabilitated. This can be achieved by placing branches over the degraded area to prevent further damage (See Map 12).

Map 11 : Alien Clearing Blocks of Papekuil Nature Reserve

Map 12 : Footpaths in Papekuil Nature Reserve

Table 8: Invasive Species, Densities and Age (to be updated annually, or as information changes)

Block	Hectare	Initial Density	Dominant Species	Initial	F1	F2	F3	F4	F5	Date of Fire
PO 1	112	55	Port Jackson	May 2012	January 2013					
PO 2	20	20.02	Port Jackson	August 2012	March 2013					
PO 3	18	1.2	Port Jackson	August 2012	March 2013					
PO 4	85	55	Port Jackson	June 2013	December 2013					Burnt Dec 2012
PO 5	42	15	Port Jackson	December 2012	July 2013					
PO 6	63	35	Port Jackson	February 2013	August 2013					Burnt Feb 2013
PO 7	78	51	Port Jackson	December 2012	June 2013					Burnt Dec 2012
PO 8	109	10	Port Jackson	November 2012	May 2013					Burnt Nov 2012
PO 9	39	70	Port Jackson	To be decided						
KD 1	49	70	Port Jackson	November 2013	July 2014					
KD 2	54	10	Port Jackson							
KD 3	84	25	Port Jackson	October 2013	April 2014					
KD 4	124	60	Port Jackson	To be decided						

Management Action 10 – Species Introduction	
Objective	No faunal species are to be introduced until the IRMP is reviewed in five years time. At such time no extra-limital or inappropriate game is to be introduced. Before any game in reintroduced into the Reserve the following procedures must be adhered too: • All introductions need to be in accordance with the necessary permits and permissions of CapeNature. This includes the construction and maintenance of suitable fence according to CapeNature policy, after which a Certificate of Adequate Enclosure (CoAE) will be issued. • Before game is introduced, a feasibility study should be done to determine whether the Reserve's vegetation would be able to support the introduced game.
Responsible Party	The City of Cape Town
Time Frame	To be reviewed in five years time
Means	Faunal Management Plan

Management Action 11 – Water Management	
Objective	All water management within the Nature Reserve must comply with the National Water Act No. 36 of 1998. Abstraction of water from any water source originating within the Nature Reserve must not affect the biodiversity.
Responsible Party	The City of Cape Town
Time Frame	Continuous
Means	Monitoring of water use and abstraction.

Management Action 11 – Strategic Research	
Objective	Monitoring is important to determine the impact of management practices on the vegetation as well as the veld recovery after alien clearing. Therefore it is essential to monitor the effect of management practices so that changes can be made accordingly. **Invasive Alien Clearing** Actions to be monitored include: effectiveness of operation, follow-up, methods used; compliance with the alien clearing schedule

	and subsequent environmental damage such as herbicide spillage. **Fire Management** Actions to be monitored include: the placements and maintenance of fire belts. All fires should be mapped and veld age maps updated. The accurate mapping and recording of all veld fires is essential for veld interpretation. The minimum requirement is a simple map indicating the extent of the burn and the date. All data is to be uploaded onto the Biodiversity Database (biodiversity@capetown.gov.za). **Game Management** Game counts should be done to determine densities. Game activities should be monitored. **Vegetation and Threatened Plant Species** Monitor rare and threatened plant species. Monitor flower harvesting and implement a Harvesting Feasibility Study. **Tourism** Monitor tourism related impacts on vegetation recovery and adapt management practices accordingly.
Responsible Party	The City of Cape Town Assistance from Custodians of Rare and Endangered Wild Flowers (CREW)
Time Frame	Yearly
Means	**Fixed-Point Photography** Fixed-point photography should be used to determine plant species and densities in and around the Reserve. A record sheet is completed at each of the photo sites (See Appendix 6). A harvesting feasibility study is required to determine the impact of flower harvesting on vegetation survival. Indicators should be established for monitoring purposes. Analyse gathered data, re-access management practices and implement adaptive management strategies. Currently, no species have been identified for regular monitoring.

10.3 Annual Plan of Operation

Management Intervention	Management Action	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Alien Clearing	Initial clearing												
	1st Follow-up	6 months after Initial clearing											
	Maintenance Sweep												
Fire Management:	Fire Break Maintenance												
	Unplanned fire response												
	Scheduled Blockburn	Assess in 2018 only											
Infrastructure maintenance:	Tracks - maintenance												
	Fences - put up												
	- maintenance												
Monitoring & Evaluation:	Baseline data collection												
	Post fire monitoring	To occur for, 3 months after any fire											
	Threatened Plants												
	Fixed point photography												
Other management interventions:	*Erosion control*												
	Restoration (eg: planting)									If material is available			
	Law enforcement (trespassing / illegal harvesting and hunting)												
	Litter pick up												
Annual review	*CCT to review APO and plan next APO.*												

Colour indicates responsibility

Red: **Managing Authority**

Blue: **CapeNature**

Green: **Both**

GreenCape
Supporting the business of green

Scoping and Environmental Impact Assessment (EIA) for GreenTech in Zone 2 of the Atlantis Special Economic Zone, Atlantis Industrial, Western Cape

DRAFT SCOPING REPORT

APPENDIX D

Other information

CONTENTS

1. EXCERPT FROM THE DEA SCREENING TOOL REPORT (SENSITIVITIES IDENTIFIED BY THE TOOL) 2

2. CONFIRMATION FROM THE DEA&DP (DATED 11 OCTOBER 2017) THAT A NOISE IMPACT ASSESSMENT IS NOT NECESSARY FOR THIS PROPOSED DEVELOPMENT 3

1. Excerpt from the DEA Screening Tool Report (sensitivities identified by the tool)

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme			X	

Disclaimer applies
17/10/2018

Civil Aviation Theme		X		
Defence Theme				X
Terrestrial Biodiversity Theme	X			

2. Confirmation from the DEA&DP (dated 11 October 2017) that a Noise Impact Assessment is not necessary for this proposed development

From: Alvan Gabriel
Sent: 11 October 2017 12:19 PM
To: Henri Fortuin <Henri.Fortuin@westerncape.gov.za>
Subject: RE: Requirement for Noise Impact Assessment - Industrial Zone

Hi Henri,

Yes I agree - I think it's SANS 10103, and the city by-laws. That should certainly suffice. Also, they should check what the DEA screening tool throws out for their development footprint!

Best regards
Alvan

From: Henri Fortuin
Sent: 11 October 2017 12:08 PM
To: Alvan Gabriel <Alvan.Gabriel@westerncape.gov.za<mailto:Alvan.Gabriel@westerncape.gov.za>>
Subject: RE: Requirement for Noise Impact Assessment - Industrial Zone

Hi Alvan,

Do you think a sufficient solution would be to require them to abide by the SANS codes through their construction and operational EMPr, and not ask for a noise assessment?

From: Kelly Stroebel [mailto:KStroebel@csir.co.za]
Sent: 11 October 2017 11:48 AM
To: Henri Fortuin <Henri.Fortuin@westerncape.gov.za<mailto:Henri.Fortuin@westerncape.gov.za>>
Subject: Requirement for Noise Impact Assessment - Industrial Zone

Good Morning Mr. Fortuin,

I am contacting you regarding a proposal that CSIR is submitting for the City of Cape Town and GreenCape for an EIA for a green technology manufacturing facility on a few portions of land in the Atlantis Industrial Area.

We are just wanting to find out what the requirements are for a Noise Impact Assessment, given that the area is zoned industrial and there are several heavy industries surrounding the land (i.e. Ankerlig Power Station and Atlantis Foundries). Would it be recommended that a full noise assessment is done for the EIA, despite the zoning and lack of sensitive receptors?

Your advice with regards to the above would be greatly appreciated.

Kind Regards,

Kelly Stroebel
Environmental Assessment Practitioner (EAP)
CSIR Stellenbosch

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