

PROPOSED INFRASTRUCTURE DEVELOPMENT IN THE SANBI KWELERA NATIONAL BOTANICAL GARDEN

VISUAL IMPACT ASSESSMENT

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February 2019

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1 PROJECT TEAM AND EXPERTISE

In terms of Appendix 6 of the 2014 NEMA EIA Regulations (2014) (as amended) a specialist report must contain-

(a) Details of-

- (i) The specialist who prepared the report; and
- (ii) The expertise of that specialist to compile a specialist report including a curriculum vitae;

(b) A declaration that the specialist is independent in a form as may be specified by the competent authority;

1.1 Details of the specialist

Mr Michael Johnson (GIS)

Michael holds a BSc in Geoinformatics, a BSc (Hons) cum laude in Geoinformatics and an MSc in Geoinformatics from Stellenbosch University. Michael's Master's thesis examined the use of Remote Sensing and computer vision technologies for the extraction of near-shore ocean wave characteristic parameters. For the duration of his Master's, he was based at the CSIR in Stellenbosch. During this time, in addition to his Master's studies, he conducted work in collaboration with the CSIR Coastal Systems Research Group and provided GIS and Remote Sensing tutoring and technical assistance to the junior staff and fellow students. Michael graduated in March 2018 and has been working for CES since May 2018.

Ms Jaclyn Smith (Lead Report Writer)

Jaclyn is an environmental consultant. She holds a BSc with majors in Environmental Science and Geology from Rhodes University, as well as a BSc (Hons) in Geology from Nelson Mandela Metropolitan University. Jaclyn's honours dissertation looked at the sediment disturbance depth over two beaches in the Port Elizabeth. Jaclyn has over four years' experience as an environmental consultant and has undertaken various environmental impact studies and Environmental Management Plans with both a NEMA and NEMWA requirement.

Dr Alan Carter PhD (Report Reviewer)

Alan is the executive of the CES East London Office. He holds a PhD in Marine Biology and is a Certified Public Accountant, with extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He has 25 years' experience in environmental management and has specialist skills in sanitation, coastal environments and industrial waste. Dr Carter is registered as a Professional Natural Scientist under the South African Council for Natural Scientific Professions (SACNASP). He is also registered as an EAP with the Environmental Assessment Practitioners of South Africa (EAPSA) interim EAP certification body.

1.2 Expertise

Some of the visual assessments that CES has completed include:

Name of project	Date completed
Innowind Riverbank Wind Farm VIA	2016
Innowind Komga Wind Farm VIA	2015
Mainstream Waaihoek Wind Energy Facility, Utrecht, KZN VIA	2015
Toboshane Eco-Estate VIA	2013
Peddie Solar Plant VIA	2013
Wavecrest Hotel Expansion VIA	2016

1.3 Declaration – Dr Alan Carter

- I, Dr Alan Carter, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;
- I act as the independent specialist 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 the specialist report relevant to this application, 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 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;
- All the particulars furnished by me in this report are true and correct; 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.

2 INTRODUCTION

In terms of Appendix 6 of the 2014 NEMA EIA Regulations (2014) (as amended) a specialist report must contain-

- (c) An indication of the scope of, and the purpose for which, the report was prepared;
- (cA) An indication of the quality and age of the base data used for the specialist report;
- (d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;
- (i) A description of any assumptions made and any uncertainties or gaps in knowledge;
- (o) A description of any consultation process that was undertaken during the course of preparing the specialist report;
- (p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto

2.1 Project description and location

The project entails the development of new infrastructure and upgrading of existing infrastructure on the two portions of land that form the Kwelera National Botanical Garden (KwNBG). The KwNBG comprises approximately 160ha of the Kwelera Nature Reserve which will form the ‘natural’ portion of the KwNBG and approximately 10ha portion of land adjacent to the 160ha portion of land that will comprise the ‘landscaped’ portion of land.

The infrastructure developments at the 160ha natural portion of the KwNBG will involve the following:

- Upgrading of the gravel ring road;
- Refurbish existing braai stands along the coast;
- Replacement of post and rail pole fence sections of the ring road;
- Introduce benches at the current braai area spots;
- Upgrade the KwNBG fence in strategic areas where it borders adjacent farms and Kwelera village;
- Include a traffic control boom or bollards towards the back of the gravel road to reduce traffic flow around the KwNBG;
- Upgrading two existing beach access routes at Sunrise-on-Sea;
- Demolish the old ski boat clubhouse and replace with a new ablution facility (covering a greater footprint) equipped with a ramped walkway and a whale/dolphin-viewing platform above;
- Establish a fire break along the north eastern boundary of the Kwelera village; and
- Introduce a hiking trail through the forest and grassland.

The infrastructure development on the 10ha landscaped portion of the KwNBG will entail the following (Figure 2.1):

- Entrance gate and visitor centre;
- Administration centre;
- Community/education centre;
- Coffee shop/restaurant;
- Garden nursery and workshop;
- Staff accommodation;
- Seed bank facility;
- Library;
- Herbarium;

- Public parking; and
- Landscaped garden with associated plants and infrastructure.

2.2 Alternatives

Two layout alternatives were considered for the KwNBG and these relate largely to the proposed infrastructure developments within the natural portion of the KwNBG.

The preferred layout Alternative 1 (Figure 2.2) involves the upgrading of existing infrastructure within the natural portion of the KwNBG (difference in infrastructure highlighted in italics):

- Upgrading of the gravel ring road;
- *Refurbish existing braai stands along the coast;*
- Replacement of post & rail pole fence sections of the ring road;
- *Introduce benches at the current braai area spots;*
- Upgrade the KwNBG fence in strategic areas where it borders adjacent farms (including the ClearVu boundary fence around the 10ha landscaped portion of the KwNBG) and Kwelera village. The ClearVu boundary fence will follow the existing fenceline around the 10ha landscaped portion of the KwNBG and it will be adjacent to the existing vegetated fenceline along the DR02731 where possible;
- Include traffic control boom or bollards towards the back of the gravel road to reduce traffic flow around the reserve;
- Upgrading two existing beach access routes at Sunrise-on-Sea;
- Demolish the old ski boat clubhouse and replace with a new ablution facility (covering a greater footprint) equipped with a ramped walkway and a whale/dolphin-viewing platform above;
- Establish a fire break along the north eastern boundary of the Kwelera village; and
- Introduce a hiking trail through the forest and grassland.

The preferred layout alternative was designed following the public participation process.

The Layout Alternative 2 (Figure 2.3) involves the upgrading of existing and development of new infrastructure in the natural portion of the KwNBG (difference in infrastructure highlighted in italics below):

- Upgrading of the gravel ring road;
- *Demolish existing braai stands along the coast;*
- *Construct new centralised braai area;*
- *Establish new picnic spots;*
- *Construct new viewing platform along the point of the KwNBG;*
- *Construct new trail to Magoza peak;*
- Replacement of post & rail pole fence sections of the ring road;
- Upgrade the KwNBG fence in strategic areas where it borders adjacent farms (including the ClearVu boundary fence around the 10ha landscaped portion of the KwNBG) and Kwelera village. The ClearVu boundary fence will follow the existing fenceline around the 10ha landscaped portion of the KwNBG and it will be adjacent to the existing vegetated fenceline along the DR02731 where possible;
- Include traffic control boom or bollards towards the back of the gravel road to reduce traffic flow around the reserve;
- Upgrading two existing beach access routes at Sunrise-on-Sea;
- Demolish the old ski boat clubhouse and replace with a new ablution facility (covering a greater footprint) equipped with a ramped walkway and a whale/dolphin-viewing platform above;

- Establish a fire break along the north eastern boundary of the Kwelera village; and
- Introduce a hiking trail through the forest and grassland.

The layout alternatives look at different infrastructure designs and layouts within the natural portion of the KwNBG. The main differences between the layout alternatives relate to the braai spots and picnic areas, the establishment of a new dolphin viewing platform and trail to Magoza peak.



Figure 2.1 Preliminary layout of the 10ha landscaped portion of the KwNBG.



Figure 2.2: Preferred layout Alternative 1 of the proposed KwNBG.



Figure 2.3: Layout Alternative 2 of the proposed KwNBG.

2.3 Public participation

No consultation requirements were identified during the drafting of this report. The findings of this report should be included in the EIA. Any comments received on this report will be included in the EIA Report. This report was deemed necessary based on the sensitivity of the site and not as a result of issues raised by I&AP's.

2.4 Triggers for specialist visual input

The potential visual and aesthetic impacts associated with the proposed KwNBG have been identified as significant issue by the EAP.

One of the significant environmental issues associated with the KwNBG is the visual and aesthetic impact of the proposed development within the coastal landscape. For this reason, it was deemed necessary and prudent to provide specialist visual input into the EIA process relating to the proposed development.

Visual, scenic and cultural components of the environment can be seen as a resource, much like any other resource, which has a value to individuals, to society and to the economy of the region. In addition, this resource may have a scarcity value, be easily degraded, and is usually not replaceable.

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

The main issues relating to visual and aesthetic impacts can be summarised as follows:

- Impacts of design and built-form (e.g. use of building materials, height of structures; inconsistent with surrounding buildings) on aesthetic character of the area;
- Impacts of the overall development on sense of place and sense of privacy of the area;
- Impacts of the development on sensitive landscapes, particularly on the estuarine and coastal landscapes.

For the purposes of conducting the current Visual and Aesthetic Assessment, guidance was taken from the Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning (DEA&DP) Guideline for Involving Visual and Aesthetic Specialists in the EIA Process (2005).

The DEA&DP guideline suggests various triggers for conducting a visual impact assessment (VIA). With respect to the proposed KwNBG, it is suggested that a number of aspects of the development trigger the need for a VIA. These include:

- Areas with important vistas or scenic corridors (i.e. estuarine habitat, forests, reserves);
- Areas with visually prominent ridgelines or skylines; and
- Possible visual intrusion in the landscape.

2.5 Assumptions and limitations

The following limitations and assumptions are implicit:

- The report is based on a project description provided by the client;
- Descriptions of the natural environments are based on limited fieldwork and available literature; and
- View point locations were limited and inaccessible as a large majority of these areas are based on private land.

3 LEGAL, POLICY AND PLANNING CONTEXT

The following legal and policy documents are relevant to assessing the visual impacts of a proposed activity.

3.1 Legislation

The following legislation is directly relevant when assessing the visual and aesthetic aspects relating to a development:

3.1.1 National Environmental Management Act (NEMA) (No. 107 of 1998) and the EIA regulations

Current South African environmental legislation governing the EIA process, which may include consideration of visual impacts, if this is identified as a key issue of concern, is the National Environmental Management Act (NEMA) (No. 107 of 1998) and the EIA regulations promulgated in terms of the NEMA.

3.1.2 National Heritage Resources Act (No. 25 of 1999)

The National Heritage Resources Act (No. 25 of 1999) and the associated provincial regulations provides legislative protection for listed or proclaimed sites, such as urban conservation areas, nature reserves and proclaimed scenic routes.

3.1.3 Policy

3.1.4 White Paper for Sustainable Coastal Development (2000)

The White Paper for Sustainable Coastal Development in South Africa (2000) sets out policies that aim to achieve sustainable coastal development through integrated coastal management and is particularly relevant to the proposed KwNBG.

The White Paper for Sustainable Coastal Development makes specific reference to visual and aesthetic issues in a number of policy objectives.

	Objective
C3.2	Nodal development and densification of existing nodes shall be promoted to sustain the economic potential and protect the aesthetic , amenity, cultural and ecological values of coastal localities and regions.
C3.5	New structures in undeveloped coastal areas shall be designed and located in a manner that retains their visual beauty , wilderness character and associated benefits.
C4.1	The design and built form of coastal settlements shall be in harmony with the aesthetic , amenity, biophysical, economic, social and cultural opportunities and constraints of coastal localities and regions.

3.2 By-laws

We are not aware any municipal by-laws that relate to scenic areas or special areas that impact on the current development proposal.

4 VIA APPROACH

In terms of Appendix 6 of the 2014 NEMA EIA Regulations (2014) (as amended) a specialist report must contain-

(e) A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;

The purpose of conducting a visual and aesthetic assessment is to determine:

- The visibility of the proposed project;
- The potential visual impact on visual / scenic resources;
- The nature, extent, duration, magnitude, probability and significance of impacts, as well as measures to mitigate negative impacts and enhance benefits;
- The character and visual absorption capacity of the landscape

4.1 Selecting appropriate approach for the visual and aesthetic assessment

From Table 1 below, it can be seen that visual assessments become more critical where wilderness or protected landscapes are involved, as well as when high density urban development or large scale infrastructure are being considered.

Based on the matrix provided in Table 1, it was deemed that a “High Visual Impact is expected” for the proposed KwNBG was appropriate.

Table 1.1: Categorization of issues to be addressed by the visual assessment (DEA&DP Guidelines).

Type of environment	Type of development (see Box 3)					Low to high intensity
	Category 1 development	Category 2 development	Category 3 development	Category 4 development	Category 5 development	
Protected/wild areas of international, national, or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected	
Areas or routes of high scenic, cultural, historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	
Areas or routes of low scenic, cultural, historical significance / disturbed	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	
Disturbed or degraded sites / run-down urban areas / wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	

Type of development

Key to categories of Development

Category 1 development:
e.g. nature reserves, nature-related recreation, camping, picnicking, trails and minimal visitor facilities.

Category 2 development:
e.g. low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.

Category 3 development:
e.g. low density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.

Category 4 development:
e.g. medium density residential development, sports facilities, small-scale commercial facilities / office parks, one-stop petrol stations, light industry, medium-scale infrastructure.

Category 5 development:
e.g. high density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large-scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related processing plants.

Explanation of terms used:

Low-key development – generally small-scale, single-storey domestic structures, usually with more than 75% of the area retained as natural (undisturbed) open space.

*Low density development*¹ - generally single or double-storey domestic structures, usually with more than 50% of the area retained as natural (undisturbed) open space.

Medium density development - generally 1 to 3-storey structures, including cluster development, usually with more than 25% of the area retained as green open space.

High density development - generally multi-storey structures, or low-rise high density residential development.

4.2 Levels of visual impact expected

Below is a description of the key categories of visual impact expected:

Key to Categories of Issues

Very high visual impact expected:

- Potentially significant effect on wilderness quality or scenic resources;
- Fundamental change in the visual character of the area;
- Establishes a major precedent for development in the area.

High visual impact expected:

- Potential intrusion on protected landscapes or scenic resources;
- Noticeable change in visual character of the area;
- Establishes a new precedent for development in the area.

Moderate visual impact expected:

- Potentially some effect on protected

<p>landscapes or scenic resources;</p> <ul style="list-style-type: none"> - Some change in the visual character of the area; - Introduces new development or adds to existing development in the area. <p>Minimal visual impact expected:</p> <ul style="list-style-type: none"> - Potentially low level of intrusion on landscapes or scenic resources; - Limited change in the visual character of the area; - Low-key development, similar in nature to existing development. <p>Little or no visual impact expected:</p> <ul style="list-style-type: none"> - Potentially little influence on scenic resources or visual character of the area; - Generally compatible with existing development in the area; - Possible scope for enhancement of the area. <p>Explanation of terms used:</p> <ul style="list-style-type: none"> - Fundamental change— dominates the view frame and experience of the receptor; - Noticeable change— clearly visible within the view frame and experience of the receptor; - Some change— recognisable feature within the view frame and experience of the receptor; - Limited change— not particularly noticeable within the view frame and experience of the receptor; - Generally compatible— Practically not visible, or blends in with the surroundings. 	
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4.3 Current level of visual impact assessment

The approach adopted for the proposed infrastructure development in the KwNBG VIA is that prescribed for a development or activity where a **high visual impact is expected**.

HIGH

This is where there is:

- Potential intrusion on protected landscapes or scenic resources;
- Noticeable change in visual character of the area; and
- Establishes a new precedent for development in the area.

According to the DEA&DP guideline, this will require a **Level 4 Visual Assessment**.

Approach	Type of issue (see Box 4)				
	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	Very high visual impact expected
Level of visual input recommended	Level 1 visual input	Level 2 visual input	Level 3 visual assessment	Level 4 visual assessment	

Level 4 Visual Assessment

A Level 4 Visual Assessment consists of the following main elements:

- Identification of issues raised in scoping phase, and site visit;
- Description of the receiving environment and the proposed project;
- Establishment of view catchment area, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Description of alternatives, mitigation measures and monitoring programmes; and
- Complete 3D modelling and simulations, with and without mitigation
- Review by independent, experienced visual specialist (if required).

Some definitions

View shed - The outer boundary defining a view catchment area, usually along crests and ridgelines.

Viewpoint - A selected point in the landscape from which views of a particular project or other feature can be obtained.

View corridor - A linear geographic area, usually along movement routes, that is visible to users of the route.

View catchment area - A geographic area, usually defined by the topography, within which a particular project or other feature would generally be visible. Sometimes called the visual envelope.

Sense of place - The unique quality or character of a place, whether natural, rural or urban. Relates to uniqueness, distinctiveness or strong identity. Sometimes referred to as *genius loci* meaning 'spirit of the place'.

Visual absorption capacity - The ability of an area to visually absorb development as a result of screening topography, vegetation or structures in the landscape.

5 VISUAL ASSESSMENT INFORMATION

In terms of Appendix 6 of the 2014 NEMA EIA Regulations (2014) (amended in 2017) a specialist report must contain-

- (f) Details of an assessment of a specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure inclusive of a site plan identifying alternatives;
- (g) An identification of any areas to be avoided, including buffers;
- (h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.

5.1 Issues raised by I&APs and site visit

The importance of potential visual and aesthetic impacts associated with the proposed KwNBG have been identified as significant issue by the EAP. In addition, various legislation and policy also emphasise the importance of assessing visual and aesthetic impacts of proposed developments in coastal areas.

5.2 Description of the affected environment

The proposed infrastructure development in the KwNBG is on Farm 1505 and Farm 782 in Kwelera, Buffalo City Metropolitan Municipality, Eastern Cape. The KwNBG is comprised of a 160ha portion of the Kwelera Nature Reserve and an adjacent 10ha portion of land. Both portions of land have been gazetted as a national botanical garden under the National Environmental Management: Biodiversity Act. The 106ha portion will form the ‘natural’ portion of the KwNBG and the 10ha portion will form part of the ‘landscaped’ portion. The site is accessible via paved access road bordering the 10ha landscaped portion of the KwNBG. This paved road turns into a gravel ring road within the 160ha natural portion of the KwNBG. Farm 1505, the 10ha landscaped portion is owned by SANBI and the adjacent 160ha natural portion of the Kwelera Nature is owned and managed by the Eastern Cape Parks and Tourism Agency (ECPTA). The KwNBG will be co-managed by SANBI and ECPTA.

5.2.1 Surface water features

The perennial Kwelera River and Estuary is located in close proximity and to the north east of the site. The Kwelera River has not been assigned a National Freshwater Ecosystem Priority Area (NFEPA) classification. There are a number of non-perennial rivers associated with the Kwelera River and other unnamed rivers surrounding the site. These will not be affected by the proposed development.

According to NFEPA data there are two natural wetlands and five artificial wetlands (water storage dams) within 500m of the study area.

Site investigations showed there to be five wetlands within the 10ha portion of KwNBG. These have been delineated and assessed by CES (2017) and MacKenzie (2012).

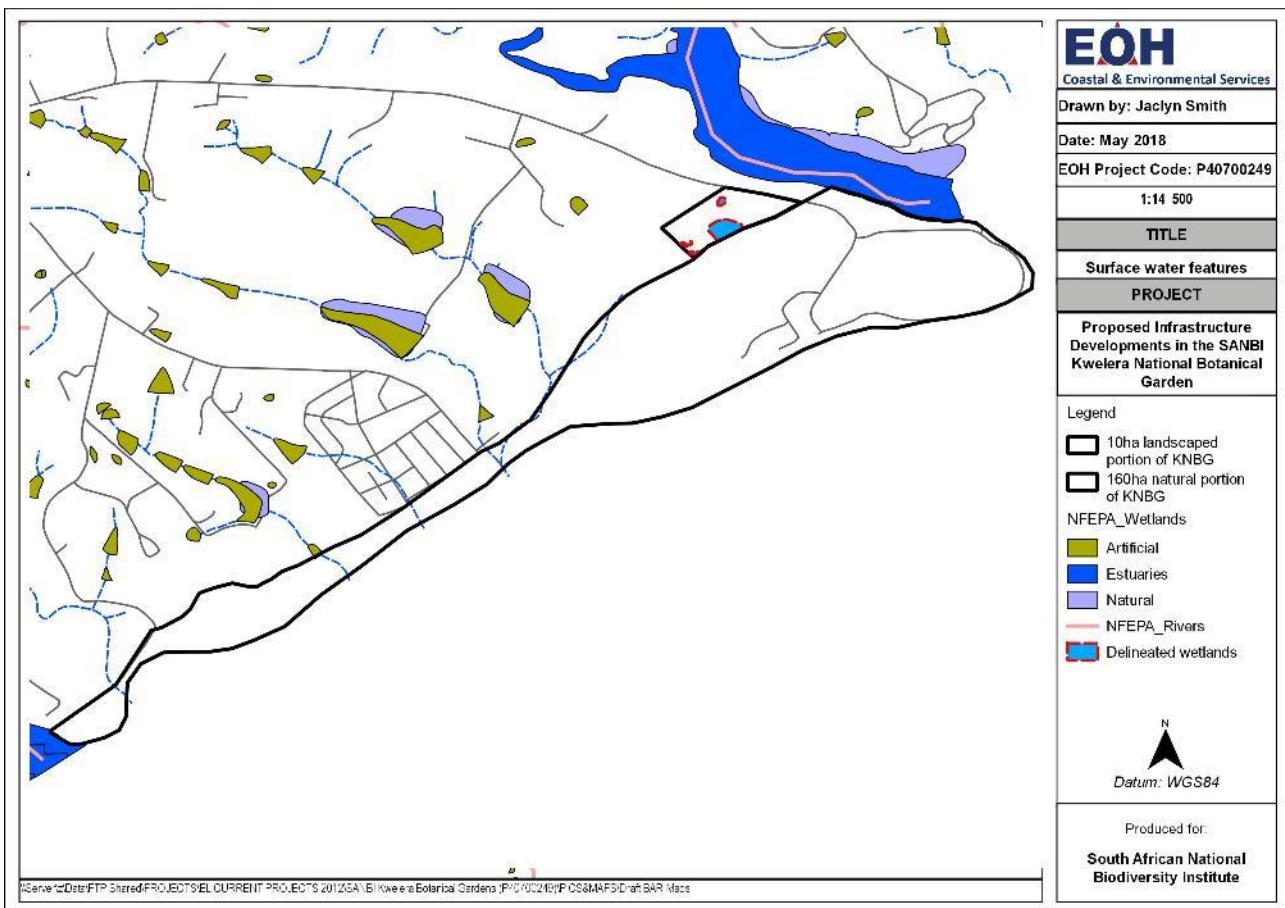


Figure 5.1: Hydrology map of the project site and surrounding environment

5.2.2 Landform

The proposed KwNBG site falls on a small plateau which is surrounded by hills, vegetated dunes, cliffs, rivers and the ocean.

5.2.3 Vegetation

The vegetation within the proposed KwNBG site includes the following main elements:

- Grasslands with bush clumps;
- Wetland vegetation;
- Dune forest;
- Strandveld/grassland;
- Transformed forest/thicket; and
- Transformed landscape.

5.2.4 Land-use

The proposed KwNBG site constitutes a number of land uses. The 10ha landscaped portion of the KwNBG has previously been used for agricultural purposes but has since been purchased for the KwNBG. The 160ha natural portion of the KwNBG falls predominately within the Kwelera Coastal Nature Reserve comprised of dune forest. Transformed areas surround and occur within the entire KwNBG site, these include minor structures/buildings, roads, services, cleared/mowed area and two coastal villages namely Kwelera and Sunrise-on-Sea.

5.3 Description of the proposed development and built form design

5.3.1 Layout of structures

Figure 2.2 and 2.3 depict the two layout alternatives, which differences between them focused within the 160ha natural portion of the KwNBG. Figure 2.1 depicts the preliminary layout within the landscaped portion of the KwNBG.

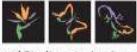
5.3.2 Nature of structures

The KwNBG will be comprised of a number of different elements including built areas, open multipurpose lawn areas, play areas, bioregional display gardens, a cycad garden, a succulent garden, wetland display areas and a xhosa kraal. The following images illustrate the proposed architectural designs of the different aspects of the proposed landscaped portion of the KwNBG developed by Habitat Landscape Architects (2018).



Figure 5.2: Conceptual built environment display of proposed KwNBG (Habitat Landscape Architects, 2018).



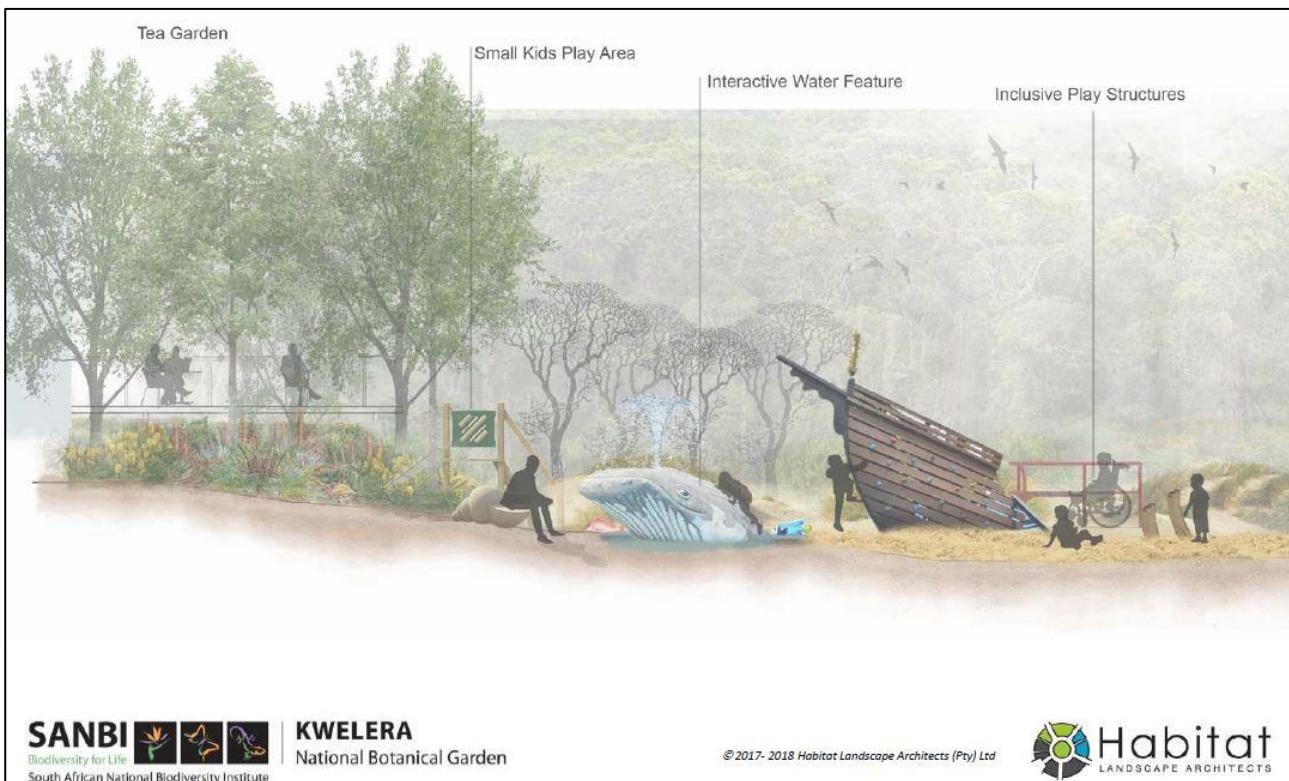
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 **Habitat**
LANDSCAPE ARCHITECTS

Figure 5.3: Conceptual display of the multipurpose open lawn areas for the proposed KwNBG (Habitat Design Architects, 2018).



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National Botanical Garden

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Figure 5.4: Conceptual design of a play area for the proposed KwNBG (Habitat Design Architects, 2018).



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Figure 5.5: Conceptual display of the succulent garden for the proposed KwNBG (Habitat Design Architects, 2018).



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Figure 5.6: Conceptual design of the wetland displays for the proposed KwNBG (Habitat Design Architects, 2018).



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Figure 5.7: Conceptual layout of the bioregional garden display area for the proposed KwNBG (Habitat Design Architects, 2018).

5.4 Scenic value

In terms of scenic value, the main elements of the proposed KwNBG site lie in an area of **HIGH** scenic value.

5.5 View catchment area, view corridors, viewpoints and receptors

In addition to considering the scenic value of an area, one should also consider the impact that a particular activity will have on surrounding land-owners, beach-goers, holiday makers and the general public. The following visual aspects should be considered:

- **View catchment area** - A geographic area, usually defined by the topography, within which a particular project or other feature would generally be visible, also sometimes called the visual envelope.
- **View shed** - The outer boundary defining a view catchment area, usually along crests and ridgelines.
- **Viewpoint** - A selected point in the landscape from which views of a particular project or other feature can be obtained.
- **View corridor** - A linear geographic area, usually along movement routes, that is visible to users of the route.

We consider that there are nine (9) main view sheds that could be affected by the proposed KwNBG. These are depicted in Figure 5.8. Figure 5.8 shows the view catchment boundary of 5km radius, the location in the landscape where the activity will be visible within the view catchment (view sheds) and the location of the view points taken.

View point	View shed and corridor	Receptors
1	North eastern view of the proposed KwNBG from the road to Glen Gariff village.	Residents and beach-goers.
2	North eastern view from the road to Yellow Sands Resort.	Residents, holiday makers and beach-goers.
3	North eastern view from the top of the Yellow Sand Resort.	Residents, holiday makers and beach-goers.
4	Northern view from Schafli Road.	Road users.
5	North western view from the road to Kwelera village.	Residents and beach-goers.
6	North western view from the road to Kwelera village of the landscaped of the KwNBG.	Residents and beach-goers.
7	South western view of the landscaped portion of the KwNBG from the Sunrise-on-Sea village.	Residents and beach-goers.
8	Western view from the road to Sunrise-on-Sea.	Residents and general public.
9	North eastern view from the coast.	Beach and sea users.

A site visit to the viewpoints was undertaken as part of the visual assessment to ‘ground truth’ the visual sensitivity of these areas based on the view shed. Refer to the visual sensitivity analysis in Section 5.6.



Figure 5.8: View shed for the proposed KwNBG (developed based on double storey buildings at the landscaped KwNBG (yellow), proposed KwNBG will not be visible from light pink areas and will be visible from light green areas).

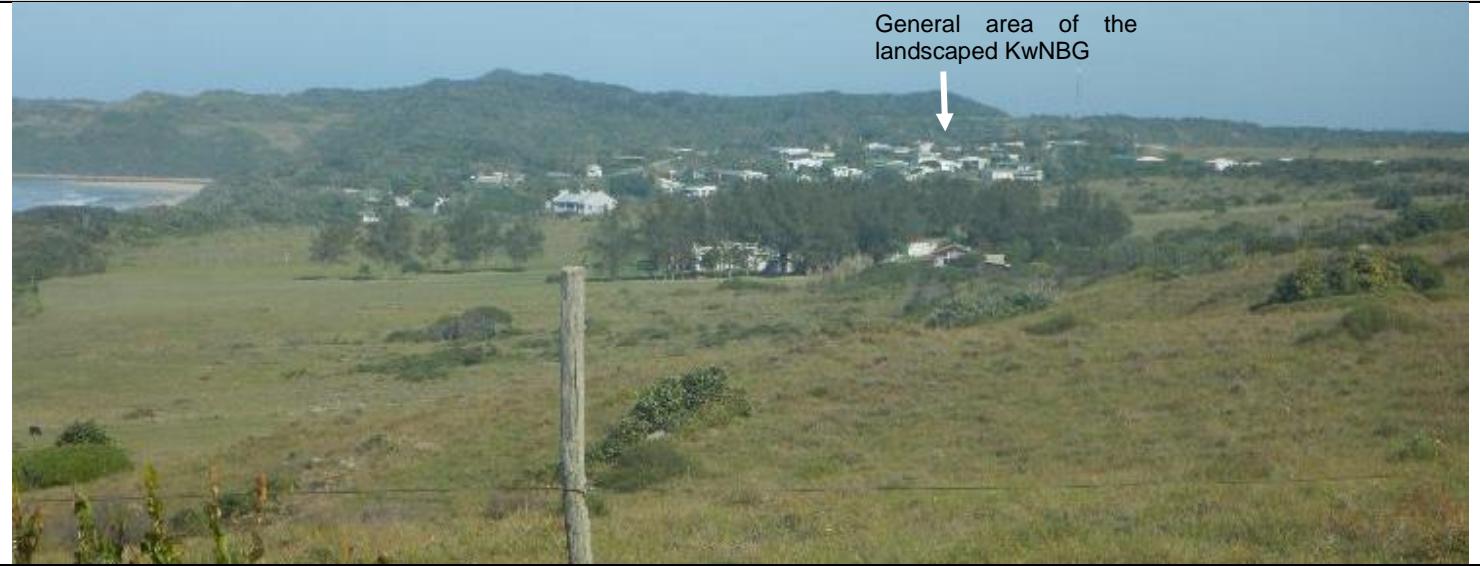
5.6 Visual sensitivity analysis

Visual sensitivity is a measure of how critically a change to the existing landscape is viewed by people from different areas. The assessment is based on the number of people affected, land-use, and the distance of the viewer from the proposal (EDAW, 2000).

For example, a significant change that is not frequently seen may result in a low visual sensitivity although its impact on a landscape may be high. Generally the following principles apply:

- Visual sensitivity decreases as the viewer distance increases.
- Visual sensitivity decreases as the viewing time decreases.
- Visual sensitivity can also be related to viewer activity (e.g. a person viewing an affected site whilst engaged in recreational activities will be more strongly affected by change than someone passing a scene in a car travelling to a desired destination).

The following figures provide an indication of the visual and scenic sensitivity of the view sheds within the view catchment:-

View point 1	Description
 <p>General area of the landscaped KwNBG</p>	<p>View point: North eastern view of the proposed KwNBG from the road to Glen Gariff village.</p> <p>Analysis:</p> <ul style="list-style-type: none"> Buildings and infrastructure within the landscaped and natural portion of the garden will be visible from sections of Glen Gariff however it is more than 2km away. Some structures may break the skyline. There will be some screening from existing vegetation. "Busyness" and presence of similar infrastructure within the landscape may take away some of the visual impacts of new buildings and infrastructure. Would be visible by residents and occasional beach-users and holiday makers. Overall visibility – MODERATE. Overall sensitivity – MODERATE to LOW.
<p>North eastern view from the road to Glen Gariff of the general area of the landscaped portion of the KwNBG.</p>  <p>General area of natural portion of KwNBG</p>	
<p>North eastern view from the road to Glen Gariff of the natural portion of the KwNBG.</p>	

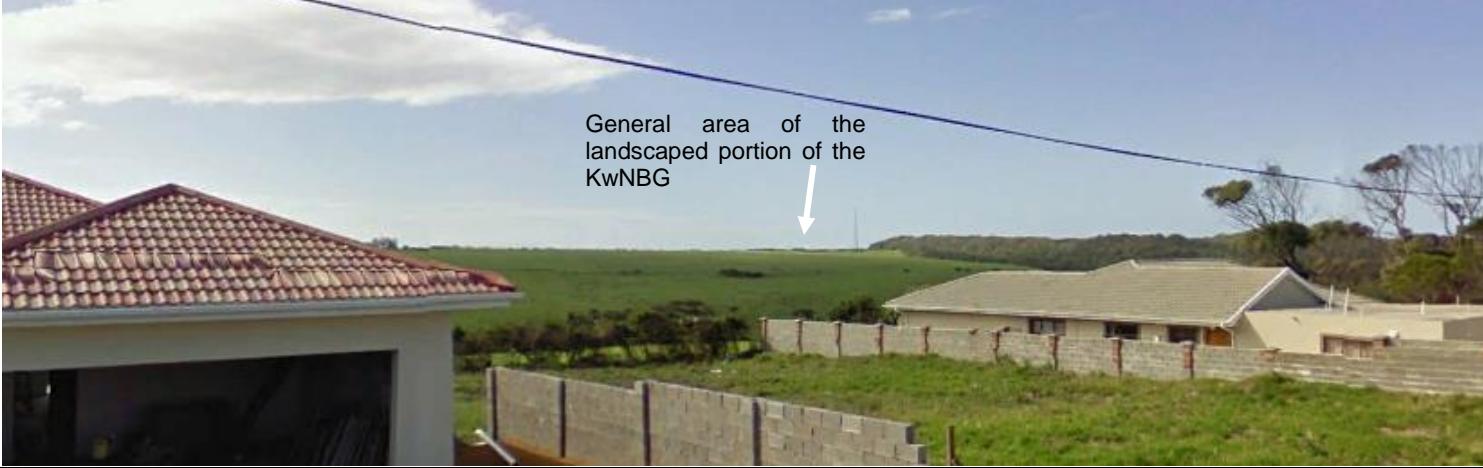
View point 2	Description
 <p data-bbox="898 293 1212 341">General area of landscaped portion of the KwNBG</p>	<p data-bbox="1635 195 2091 293">View point: North eastern view from the road to Yellow Sands.</p> <p data-bbox="1635 338 2091 366">Analysis:</p> <ul data-bbox="1635 377 2091 1013" style="list-style-type: none"> The infrastructure developments in the landscaped portion of the KwNBG will be visible from the road to Yellow Sands and south facing farms/properties from the road towards the site. There is a risk of a break in the skyline. There is limited screening and the site appears mostly exposed from high lying areas surrounding the view point and the effect of vegetation screening is increased. Overall visibility – MODERATE. Overall sensitivity – MODERATE to HIGH.

View point 3	Description
 <p data-bbox="152 827 1630 859">North eastern view from the top of the Yellow Sands Resort of the landscaped portion of the KwNBG.</p>	<p data-bbox="1630 195 2091 303">View point: North eastern view from the top of the Yellow Sands Resort.</p> <p data-bbox="1630 338 2091 370">Analysis:</p> <ul data-bbox="1630 377 2091 1051" style="list-style-type: none"> The infrastructure developments in the landscaped portion of the KwNBG will be visible from the south and south western portions of the Yellow Sands Resort. The portions of the Yellow Sands Resort are between 500m and 700m away from the development site. The view point is frequented by beach-goers and holiday makers especially during the peak seasons as well as permanent residents. Overall visibility – MODERATE to HIGH. Overall sensitivity – MODERATE to HIGH

View point 4	Description
 <p data-bbox="815 208 1215 258">General area of the landscaped portion of the KwNBG</p>	<p data-bbox="1668 195 2073 255">View point: Northern view from Schafli Road.</p> <p data-bbox="1668 303 1799 335">Analysis:</p> <ul data-bbox="1668 346 2084 948" style="list-style-type: none"> <li data-bbox="1668 346 2084 541">The infrastructure developments in the landscaped portion of the KwNBG would be visible from a small portion of Schafli Road. <li data-bbox="1668 552 2084 684">Visibility will vary in places with vegetation along Schafli Road screening much of the development. <li data-bbox="1668 695 2084 859">The distance from Schafli Road to the development is almost 3km, however, it is frequented by many road users. <li data-bbox="1668 870 2001 901">Overall visibility - LOW <li data-bbox="1668 913 2016 944">Overall sensitivity - LOW

View point 5	Description
 <p data-bbox="718 381 1100 428">General area of the landscaped portion of the KwNBG</p>	<p data-bbox="1662 190 1819 214">View point:</p> <p data-bbox="1662 222 2088 285">North western view from the road to Kwelera village.</p> <p data-bbox="1662 333 1796 357">Analysis:</p> <ul data-bbox="1662 365 2088 1048" style="list-style-type: none"> <li data-bbox="1662 365 2088 603">The proposed infrastructure developments in the landscaped portion of the KwNBG will be visible via through sections of the road and portions of the farm adjacent to the KwNBG. <li data-bbox="1662 619 2088 794">The view point is in close proximity to the KwNBG and will be highly visible from traffic (residents, beach-goers) passing by. <li data-bbox="1662 809 2088 968">There is some screening in terms of the vegetation however, this would only reduce the visibility of the development for road users. <li data-bbox="1662 984 1998 1008">Overall visibility – HIGH <li data-bbox="1662 1016 2021 1040">Overall Sensitivity - HIGH

View point 6	Description
 <p data-bbox="265 716 557 795">General area of the landscaped portion of the KwNBG</p> <p data-bbox="145 827 1304 859">North western view from the road to Kwelera village of the landscaped portion of the KwNBG</p>	<p data-bbox="1664 192 1821 215">View point:</p> <p data-bbox="1664 223 2095 295">North western view from the road to Kwelera village.</p> <p data-bbox="1664 339 1799 363">Analysis:</p> <ul data-bbox="1664 371 2095 909" style="list-style-type: none"> The proposed infrastructure developments in the landscaped portion of the KwNBG will be visible from all road users on the way to Kwelera village or the beach. There is some dense vegetation in patches along the fence line that will help screen some of the development. Any double storey buildings will likely break the skyline. Overall visibility - HIGH Overall sensitivity - HIGH

View point 7	Description
 <p>General area of the landscaped portion of the KwNBG</p> <p>South western view of the landscaped portion of the KwNBG from the Sunrise-on-Sea village.</p>	<p>View point: South-western view from the Sunrise-on-Sea village taken from google earth street view (2010).</p> <p>Analysis:</p> <ul style="list-style-type: none"> The proposed infrastructure developments on the landscape portion of the KwNBG will likely be visible from the houses at the top of the hill of Sunrise-on-Sea. Double storey buildings will likely break the skyline. There is some minor visual screening from existing surrounding houses and vegetation in Sunrise-on-Sea. Sunrise-on-Sea is over 1km from the KwNBG site reducing the visual impact. Overall visibility - MODERATE. Overall sensitivity – MODERATE.

View point 8	Description
 <p>General area of the landscaped portion of the KwNBG</p>	<p>View point: Western view from the road to Sunrise-on-Sea.</p> <p>Analysis:</p> <ul style="list-style-type: none"> The proposed infrastructure developments in the KwNBG will be seen from sections of the road to Sunrise-on-Sea and by some farms/properties north east of the roads. There is a risk that a double storey buildings could break the skyline. There is some screening from existing vegetation and infrastructure along the road which should help reduce visual impact. The road is used mostly by residents at Sunrise-on-Sea and surrounding farms. Overall visibility - MODERATE. Overall sensitivity - MODERATE to LOW.

View point 9	Description
 <p data-bbox="163 732 1641 763">Ski-boat club to be upgraded</p> <p data-bbox="163 732 1641 763">North eastern view of the proposed infrastructure upgrades in the natural portion of the KwNBG from the coast.</p>	<p data-bbox="1641 195 2104 298">View point: North eastern view from the coast.</p> <p data-bbox="1641 338 2104 370">Analysis:</p> <ul data-bbox="1641 377 2104 1089" style="list-style-type: none"> <li data-bbox="1641 377 2104 759">The proposed developments in the natural portion of the KwNBG where the proposed upgrading of the Old Ski Boat Clubhouse to an ablution facility and dolphin viewing platform as well as the braai areas would be visible from sections of the coast and the sea used by beach-goers and fishermen etc. <li data-bbox="1641 767 2104 901">Proposed developments in the landscaped portion of the KwNBG would be visible from sections of the coast and sea. <li data-bbox="1641 909 2104 973">There is some vegetation screening. <li data-bbox="1641 981 2104 1013">Overall visibility - MODERATE. <li data-bbox="1641 1021 2104 1084">Overall sensitivity - MODERATE to LOW.

6 POTENTIAL VISUAL IMPACTS

6.1 Source of impacts

Impacts from the proposed KwNBG would come from the following main activities:

- Construction of all buildings and infrastructure associated with the landscaped portion of the KwNBG;
- Proximity of the development to sensitive coastal landscapes;
- Lighting;
- Colour and design of structures;
- Loss of screening vegetation; and
- Structures that break the skyline.

6.2 Impact receptors / viewers

Visual impacts are impacts that are imposed on individuals, groups or communities (e.g. neighbouring property owners) as a result of an activity that results in a visual or aesthetic intrusion. The main focus of a VIA should therefore be to assess the impacts of a proposed activity based on impacted groups, called **receptors or viewers**.

Impact receptors or viewers – These are individuals, groups or communities who are subject to the visual influence of a particular project (also referred to as viewers or viewer groups).

The main receptors or viewers of visual impacts with respect to the proposed infrastructure developments in the KwNBG would be the following:

- Tourists and recreational users of the coastline (hikers, beach users, fishermen, surfers, cyclists.); and
- Local community and residents of surrounding villages and farms.

7 CONSIDERATION OF ALTERNATIVES

Integral to the EIA process is the consideration and evaluation of alternatives to the proposed development plan. This is also applicable when conducting specialist studies including visual impact assessments. In the case of the proposed KwNBG, the following “alternatives” are relevant:

- No development;
- Alternative layouts; and
- Alternative mitigatory measures and technologies.

7.1 No-Go development option

The “no-go development” option should always be considered as an alternative. This is not necessarily the optimal environmental option, as a site may not have intrinsic conservation value. In addition, from a socio-economic perspective, development of the site may contribute to some extent to socio-economic upliftment through for example job creation in the area. In the case of the proposed KwNBG, there will be some benefits from the No-Go option whereby there will be no visual impacts occurring if the development does not go ahead. However, the benefits associated with the proposed KwNBG in terms of the socio-economic aspects, tourism, conservation, research and knowledge outweigh the visual impacts associated with the proposed KwNBG.

7.2 Alternative layouts and densities

No alternative layouts are proposed. It should also be noted that the proposed layout was informed by input from the EAP.

7.3 Alternative mitigatory measures and technologies

It is the current opinion that a variety of mitigatory measures can reduce visual and aesthetic impacts associated with the proposed KwNBG, and may include (but are not limited to):

- Built form alternatives (e.g. appropriate aesthetic and architectural controls such as building height, architectural style, colours and finishes, etc.);
- Planting of screening vegetation; and
- Implementing appropriate lighting technologies that will reduce the impact of lighting.

8 ASSESSMENT

This section analyses the specific visual and aesthetic issues associated with the proposed KwNBG and assesses the significance of impacts pre- and post-mitigation.

8.1 Direct, indirect and cumulative effects

The visual impact assessment must also consider potentially significant direct, indirect and cumulative impacts of a proposed activity.

Definitions and components of direct, indirect and cumulative effects

Direct (or primary) effects occur at the same time and in the same space as the activity. For example, the loss of views through construction of buildings.

Indirect (or secondary) effects occur later in time, or at a different place, from the causal activity. For example, the construction of power lines leading to a subsequent drop in property values in the surrounding area.

Cumulative effects can be:

- Additive: the simple sum of all the effects, (e.g. sprawl effect of houses along a scenic route);
- Synergistic: effects interact to produce a total effect greater than the sum of individual effects, (e.g. incremental urban development eventually results in total loss of rural or wilderness character of an area);
- Time crowding: frequent, repetitive impacts on a visual resource at the same time (e.g. constant movement of heavy vehicles through an area); and
- Space crowding: high spatial density of impacts on a rural environment (e.g. rapid informal settlement).

8.2 Specific criteria for visual impact assessments

A number of criteria that relate specifically to visual impact assessments are given in table below. The proposed project should be assessed against these criteria before attempting the impact assessment summary criteria.

Table 7.2: The following criteria are useful for assessing the significance of visual impacts.

Criteria	High	Moderate	Low
Visibility of the project – the geographic area from which the project will be visible, or view catchment area. (The actual zone of visual influence of the project may be smaller because of screening by existing trees and buildings). This also relates to the number of receptors affected.	<i>High visibility</i> – visible from a large area (e.g. several square kilometres).	<i>Moderate visibility</i> – visible from an intermediate area (e.g. several hectares).	<i>Low visibility</i> – visible from a small area around the project site.

Visual exposure – based on distance from the project to selected viewpoints. Exposure or visual impact tends to diminish exponentially with distance.	<i>High exposure</i> – dominant or clearly noticeable;	<i>Moderate exposure</i> – recognisable to the viewer;	<i>Low exposure</i> – not particularly noticeable to the viewer;
Visual sensitivity of the area – the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement pattern. This translates into visual sensitivity.	<i>High visual sensitivity</i> – highly visible and potentially sensitive areas in the landscape.	<i>Moderate visual sensitivity</i> – moderately visible areas in the landscape.	<i>Low visual sensitivity</i> – minimally visible areas in the landscape.
Visual sensitivity of Receptors – The level of visual impact considered acceptable is dependent on the type of receptors.	<i>High sensitivity</i> – e.g. residential areas, nature reserves and scenic routes or trails;	<i>Moderate sensitivity</i> – e.g. sporting or recreational areas, or places of work;	<i>Low sensitivity</i> – e.g. industrial, mining or degraded areas.
Visual absorption capacity (VAC) - the potential of the landscape to conceal the proposed project, i.e.	<i>Low VAC</i> - e.g. little screening by topography or vegetation.	<i>Moderate VAC</i> - e.g. partial screening by topography and vegetation;	<i>High VAC</i> – e.g. effective screening by topography and vegetation;
Visual intrusion – the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.	<i>High visual intrusion</i> – results in a noticeable change or is discordant with the surroundings;	<i>Moderate visual intrusion</i> – partially fits into the surroundings, but clearly noticeable;	<i>Low visual intrusion</i> – minimal change or blends in well with the surroundings.
Note: Various components of the project, such as the structures, lighting or power-lines, may have to be rated separately, as one component may have fewer visual impacts than another. This could have implications when formulating alternatives and mitigations.			

8.3 Criteria used for the assessment of impacts

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

Criteria used for the assessment of impacts

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

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

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

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

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

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

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

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

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

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

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

8.4 Establishing thresholds of significance

Thresholds of significance define the level or limit at which point an impact changes from low to medium significance, or medium to high significance. These thresholds are often determined by current societal values which define what would be acceptable or unacceptable to society and may be expressed in the form of legislated standards, guidelines or objectives.

8.4.1 Problems relating to thresholds:

- Unlike water quality or air quality, thresholds for visual or scenic quality cannot be easily quantified, as they tend to be abstract, and often relate to cultural values or perceptions;

- A second difficulty is that natural, rural and urban landscapes are constantly changing, and the assessment will therefore need to consider this in determining the significance of impacts; and
- A third difficulty may be the divergence of opinion on what constitutes 'acceptable' change, by the individual, the community or society in general.

The visual assessment should recognise that some change to the landscape over time is inevitable with the expansion of urban areas and introduction of new technologies, such as communication masts. This will have a bearing on significance ratings, particularly in identified growth areas.

9 IMPACT ASSESSMENT

In terms of Appendix 6 of the 2014 NEMA EIA Regulations (2014) (amended 2017) a specialist report must contain-

- (cB) A description of the existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;
- (j) A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;
- (k) Any mitigation measures for inclusion in the EMPr;

The following table summarises the assessment of visual and aesthetic impacts associated with the proposed infrastructure developments in the KwNBG.

Table 9.1 Visual impacts assessed for the proposed KwNBG.

	Issue	Description of visual features	Nature of impact	Visibility	Visual exposure (distance)	Visual sensitivity of the area	Visual sensitivity of Receptors	Visual absorption capacity (VAC)	Visual intrusion	Overall severity	Probability	Significance pre-mitigation	Mitigation measure	Significance post-mitigation
All + Preferred alternative layout 1														
DIRECT	View point 1	View point: North eastern view of the proposed KwNBG from the road to Glen Gariff village.	Description <ul style="list-style-type: none"> Buildings and infrastructure within the landscaped and natural portion of the garden will be visible from sections of Glen Gariff however, it is more than 2km away. Some structures may break the skyline. There will be some screening from existing vegetation. “Busyness” and presence of similar infrastructure within the landscape may take away some of the visual impacts of new buildings and infrastructure. Would be visible by residents and occasional beach-users and holiday makers. 	MODERATE	MODERATE	MODERATE	HIGH	MODERATE	MODERATE	MODERATE	PROBABLE	MODERATE	Implement visual impact mitigatory measures as indicated as concluding section.	MODERATE TO LOW
	View point 2	View point: North eastern view from the road to Yellow Sands.	Description: <ul style="list-style-type: none"> The infrastructure developments in the landscaped portion of the KwNBG will be visible from the road to Yellow Sands and south facing farms/properties from the road towards the site. There is a risk of a break in the skyline. There is limited screening and the site appears mostly exposed from high lying areas surrounding the view point and the effect of vegetation screening is increased. 	MODERATE	MODERATE	MODERATE	HIGH	MODERATE	HIGH	MODERATE	PROBABLE	MODERATE	Implement visual impact mitigatory measures as indicated as concluding section.	MODERATE TO LOW
	View point 3	View point: North eastern view from the top of the Yellow Sands Resort.	Description <ul style="list-style-type: none"> The infrastructure developments in the landscaped portion of the KwNBG will be visible from the south and south western portions of the Yellow Sands Resort. The portions of the Yellow Sands Resort are between 500m and 700m away from the development site. The view point is frequented by beach-goers and holiday makers especially during the peak seasons as well as permanent residents. 	MODERATE	MODERATE	HIGH	HIGH	MODERATE	MODERATE	MODERATE	PROBABLE	MODERATE	Implement visual impact mitigatory measures as indicated as concluding section.	MODERATE TO LOW
	View point 4	View point: Northern view from Schafli Road.	Description <ul style="list-style-type: none"> The infrastructure developments in the landscaped portion of the KwNBG would be visible from a small portion of Schafli Road. Visibility will vary in places with vegetation along Schafli Road screening much of the development. The distance from Schafli Road to the development is almost 3km, however, it is frequented by many road users. 	LOW	LOW	LOW	MODERATE	MODERATE	LOW	LOW	PROBABLE	LOW	Implement visual impact mitigatory measures as indicated as concluding section.	LOW

Issue	Description of visual features	Nature of impact	Visibility	Visual exposure (distance)	Visual sensitivity of the area	Visual sensitivity of Receptors	Visual absorption capacity (VAC)	Visual intrusion	Overall severity	Probability	Significance pre-mitigation	Mitigation measure	Significance post-mitigation
View point 5	View point: North western view from the road to Kwelera village.	<p>Description:</p> <ul style="list-style-type: none"> The proposed infrastructure developments in the landscaped portion of the KwNBG will be visible via through sections of the road and portions of the farm adjacent to the KwNBG. The view point is in close proximity to the KwNBG and will be highly visible from traffic (residents, beach-goers) passing by. There is some screening in terms of the vegetation however, this would only reduce the visibility of the development for road users. 	MODERATE	HIGH	HIGH	HIGH	Moderate	HIGH	HIGH	PROBABLE	HIGH	Implement visual impact mitigatory measures as indicated as concluding section.	HIGH TO MODERATE
View point 6	View point: North western view from the road to Kwelera village.	<p>Description:</p> <ul style="list-style-type: none"> The proposed infrastructure developments in the landscaped portion of the KwNBG will be visible from all road users on the way to Kwelera village or the beach. There is some dense vegetation in patches along the fence line that will help screen some of the development. Any double storey buildings will likely break the skyline. 	MODERATE	HIGH	HIGH	HIGH	Moderate	HIGH	HIGH	PROBABLE	HIGH	Implement visual impact mitigatory measures as indicated as concluding section.	HIGH TO MODERATE
View point 7	View point: South-western view from the Sunrise-on-Sea village taken from google earth street view (2010).	<p>Description:</p> <ul style="list-style-type: none"> The proposed infrastructure developments on the landscape portion of the KwNBG will likely be visible from the houses at the top of the hill of Sunrise-on-Sea. Double storey buildings will likely break the skyline. There is some minor visual screening from existing surrounding houses and vegetation in Sunrise-on-Sea. Sunrise-on-Sea is over 1km from the KwNBG site reducing the visual impact. 	MODERATE	LOW	Moderate	HIGH	Moderate	LOW	Moderate	PROBABLE	Moderate	Implement visual impact mitigatory measures as indicated as concluding section.	Moderate To Low
View point 8	View point: Western view from the road to Sunrise-on-Sea.	<p>Description:</p> <ul style="list-style-type: none"> The proposed infrastructure developments in the KwNBG will be seen from sections of the road to Sunrise-on-Sea and by some farms/properties north east of the roads. There is a risk that a double storey buildings could break the skyline. There is some screening from existing vegetation and infrastructure along the road which should help reduce visual impact. The road is used mostly by residents at Sunrise-on-Sea and surrounding farms. 	MODERATE	LOW	LOW	HIGH	Moderate	LOW	Moderate to Low	PROBABLE	Moderate to Low	Implement visual impact mitigatory measures as indicated as concluding section.	Moderate To Low
View point 9	View point: North eastern view from the coast.	<p>Description:</p> <ul style="list-style-type: none"> The proposed developments in the natural portion of the KwNBG would be visible from sections of the coast and the sea used by beach-goers and fishermen etc. Proposed developments in the landscaped portion of the KwNBG would be visible from sections of the coast and sea. There is some vegetation screening. 	LOW	Moderate	Moderate	HIGH	Moderate	Moderate	Moderate	PROBABLE	Moderate	Implement visual impact mitigatory measures as indicated as concluding section.	Moderate To Low

	Issue	Description of visual features	Nature of impact	Visibility	Visual exposure (distance)	Visual sensitivity of the area	Visual sensitivity of Receptors	Visual absorption capacity (VAC)	Visual intrusion	Overall severity	Probability	Significance pre-mitigation	Mitigation measure	Significance post-mitigation
Alternative layout 2														
	View POINT 9		Description: <ul style="list-style-type: none"> The proposed developments in the natural portion of the KwNBG would be visible from sections of the coast and the sea used by beach-goers and fishermen etc. Proposed developments in the landscaped portion of the KwNBG would be visible from sections of the coast and sea. There is some vegetation screening. 	MODERATE	MODERATE	MODERATE	HIGH	MODERATE	HIGH	MODERATE	MODERATE	Implement visual impact mitigatory measures as indicated as concluding section.	MODERATE	
INDIRECT	View catchment	NONE NOTED	NA	NA	NA	NA	NA	NA	NA	MODERATE	PROBABLE	NA	NA	NA
CUMULATIVE	View catchment	Viewpoints 1-9	<ul style="list-style-type: none"> The combined visual impacts could be cumulative. Potential to attract similar or associated developments in the area which will increase the visual impact. 	MODERATE*	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	PROBABLE	MODERATE TO LOW	Implement visual impact mitigatory measures as indicated as concluding section.	MODERATE TO LOW

10 CONCLUSIONS AND RECOMMENDED MANAGEMENT ACTIONS

In terms of Appendix 6 of 2014 NEMA EIA Regulations (2014) (amended 2017) a specialist report must contain-

- (l) Any conditions for inclusion in the environmental authorisation;
- (m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation;
- (n) A reasoned opinion as to-
 - (i) whether the proposed activity, activities or portions thereof should be authorised; and
 - (iA) regarding the acceptability of the proposed activity or activities, and
 - (ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;
- (q) Any other information requested by the competent authority.

The project entails the development of new infrastructure and upgrading of existing infrastructure on the two portions of land that form the KwNBG. The KwNBG comprises approximately 160ha of the Kwelera Nature Reserve which will form the ‘natural’ portion of the KwNBG and approximately 10ha portion of land adjacent to the 160ha portion of land that will comprise the ‘landscaped’ portion of land.

The current VIA report provides specialist visual input into the EIA process relating to the proposed infrastructure developments in the KwNBG.

The requirement to consider visual and aesthetic impacts when assessing the impacts of a proposed activity or development is provided for in various legislation and policy documents as indicated earlier.

10.1 Impact assessment

An assessment of visual impacts was conducted for each of the 9 viewpoints proposed for the KwNBG. Visual impacts were assessed according to the following specific visual impact criteria:

- Visibility;
- Visual exposure (distance);
- Visual sensitivity of the area;
- Visual sensitivity of receptors;
- Visual absorption capacity (VAC); and
- Visual intrusion.

Two layout alternatives were assessed for the proposed KwNBG. The layout alternatives mainly involve differences in the infrastructure upgrades and developments within the natural portion of the KwNBG. The preferred layout alternative 1 mostly involves upgrading of existing infrastructure and the alternative layout 2 involves the upgrading of existing infrastructure and the development of more infrastructure. Preferred layout alternative 1 would therefore result in less visual impacts as most of the infrastructure is already existing while the alternative 2 will have more visual impacts as it will have an overall larger footprint and development of new infrastructure that does not already exist.

10.2 Conclusion

The most sensitive visual receptors (viewpoints 5 and 6) with the highest visual sensitivity would be those surrounding the 10ha landscaped portion of the KwNBG including adjacent farms and property owners as well as all road users of the main road to Kwelera beach and village. The impact of the development on these visual receptors can be reduced to moderate where all mitigation measures are implemented.

Viewpoints 1, 2, 3, 7 and 9, which are the visual receptors/areas on the way to and within the Glen Gariff village, Yellow Sands, Sunrise-on-Sea and the Kwelera coastline will likely have a moderate sensitivity given that, although the proposed KwNBG is visible from these areas the distance from the visual receptors varies from 500m to over 2km. Impacts of these visual receptors can be reduced to moderate to low provided the mitigation measures are implemented.

Visual receptors around viewpoints 4 and 8 will likely have low to moderately low visual sensitivity given the large distance between the visual receptors and the proposed KwNBG site and existing the “busy” landscape between the two.

The infrastructure developments within the landscaped portion of the KwNBG will likely have the biggest visual impacts when compared to the natural portion of the KwNBG. Although there are some negative visual impacts associated with the development, it is anticipated that once the KwNBG is operational, these visual impacts will be reduced over time given the nature of the development (being a botanical garden) which is associated with the planting of natural vegetation and well designed and integrated landscapes.

10.3 Recommended mitigation measures

The following mitigation measures **must** be adopted to mitigate visual impacts of the proposed KwNBG:

- **Sighting and scale of structures:**
 - An Independent Environmental Control Officer (ECO) **must** assist in the sighting of development.
 - For the buildings, **building heights** should preferably be restricted to double storey, at most, and tucked into the landscape.
- **Architectural guidelines must** be formulated with a view to blending buildings into the landscape through selection of specific materials and colours. Natural materials should be adopted if possible (e.g. stone, wood, etc.) and roof and wall colours must be natural (greens, browns and greys).
- **Screening measures:**
 - Natural vegetation should be retained where possible, especially along the existing fence line along the road where there is already a “natural screen” that has developed.
 - Where vegetation has been disturbed, re-vegetation and rehabilitation should be undertaken as soon as possible.
 - Appropriate indigenous tree and plant species must be planted to create visual screen for all structures and buildings.
- **General measures:**
 - Appropriate lighting should be installed which does not produce excessive light.
 - Limit the clearance of vegetation to the project footprint only.
 - Rehabilitation of cleared/disturbed areas must take place as soon as possible to reduce erosion and scarring of the landscape.
 - No painting or marking of natural features shall take place. Marking for surveying and other purposes shall only be done with pegs and beacons.
 - Materials (including paint) should fit into the natural environment.

10.4 Impact statement and opinion of specialist

It can therefore be concluded that impacts of all aspects of the proposed development are considered to be acceptable provided the mitigation measures in this report are implemented. Implementation of the mitigation measures will reduce the significance of the impacts.

It is the opinion of the specialist that there are no fatal flaws are associated with the proposed KwNBG.

It is recommended that the proposed KwNBG is authorised provided that all mitigation measures in this report are implemented.