Proposed Sea-based Aquaculture Development Zone in Saldanha Bay:

Visual Impact Assessment

Report Prepared for

Department of Agriculture, Forestry and Fisheries

Report Prepared by

srk consulting

Report Number 499020/42A

September 2016

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SRK Consulting

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Profile and Expertise of Specialists

SRK Consulting (South Africa) (Pty) Ltd (SRK) has been appointed by the Department of Agriculture, Forestry and Fisheries (DAFF) to undertake the Environmental Impact Assessment (EIA) process required in terms of the National Environmental Management Act 107 of 1998, as amended (NEMA). SRK has appointed a team of professionals to conduct the Visual Impact Assessment (VIA) specialist study as part of the EIA process.

SRK Consulting comprises over 1 400 professional staff worldwide, offering expertise in a wide range of environmental and engineering disciplines. SRK's Cape Town environmental department has a distinguished track record of managing large environmental and engineering projects, extending back to 1979. SRK has rigorous quality assurance standards and is ISO 9001 accredited.

In accordance with the Department of Environmental Affairs and Development Planning EIA guidelines for specialists (Brownlie, 2005) and NEMA, the qualifications and experience of the key individual specialists involved in the study are detailed below.

Project Director and Reviewer: Sue Reuther, BSc Hons (Economics); MPhil (Environmental Management)

Certified with the Interim Board for Environmental Assessment Practitioners South Africa (CEAPSA)

Sue Reuther is a Principal Environmental Consultant with more than 12 years of experience, primarily in South Africa, Southern and West Africa and South America (Suriname). She has managed complex Environmental Impact Assessments for a wide range of projects in the infrastructure, mining, coastal and industrial sectors. Sue holds a BSc (Hons) in Economics and MPhil in Environmental Management and is a CEAPSA.

Specialist Consultant: Scott Masson, BSc (Hons) (EnvMan); MLA (L.Arch.)

Registered Professional Landscape Architect with the South African Council of the Landscape Architecture Profession (SACLAP)

Scott Masson is an Environmental Consultant and has been involved in the environmental and landscape architectural field for the past 7 years. His expertise includes Visual Impact Assessments, Environmental Impact Assessment, Environmental Management Plans and Environmental Control Officer work, Integrated Water and Waste Management Plans, environmental planning and sensitivity studies; and landscape architectural planning and design. Scott holds a BSc (Hons) in Environmental Management, a MLA in Landscape Architecture, is a CEAPSA and is a registered Professional Landscape Architect with the SACLAP.

Statement of SRK Independence

Neither SRK nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SRK. SRK has no beneficial interest in the outcome of the assessment which is capable of affecting its independence.

Disclaimer

The opinions expressed in this report have been based on the information supplied to SRK by DAFF. SRK has exercised all due care in reviewing the supplied information, but conclusions from the review are reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

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Acronyms and Abbreviations

BA	Basic Assessment
DAFF	Department of Agriculture, Forestry and Fisheries
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
ha	hectares
GIS	Global Information Systems
GPS	Global Positioning System
IDZ	Industrial Development Zone
MPA	Marine Protected Area
NEMA	National Environmental Management Act 107 of 1998
SRK	SRK Consulting (South Africa) (Pty) Ltd
ToR	Terms of Reference
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
WCNP	West Coast National Park

Glossary

Landscape Integrity	The relative intactness of the existing landscape or townscape, whether natural, rural or urban, and with an absence of intrusions or discordant structures (Oberholzer, 2005).
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' (Oberholzer, 2005).
Viewshed	The topographically defined area from which the project *could* be visible.
Visibility	The area from which the project components would actually be visible and depends upon topography, vegetation cover, built structures and distance.
Visual Absorption Capacity	The potential for the area to conceal the proposed development.
Visual Character	The elements that make up the landscape including geology, vegetation and land-use of the area.
Visual Exposure	The zone of visual influence or viewshed. Visual exposure tends to diminish exponentially with distance.
Visual Impact	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 (Oberholzer, 2005).
Visual Intrusion	The nature of intrusion of an object on the visual quality of the environment resulting in its compatibility (absorbed into the landscape elements) or discord (contrasts with the landscape elements) with the landscape and surrounding land uses.
Visual Quality	The experience of the environment with its particular natural and cultural attributes.
Visual Receptors	Individuals, groups or communities who are subject to the visual influence of a particular project (Oberholzer, 2005).

1 Introduction

1.1 Background

The Department of Agriculture, Forestry and Fisheries (DAFF) aims to develop and facilitate aquaculture (the sea-based or land-based rearing of aquatic animals or the cultivation of aquatic plants for food) in South Africa to supply food, create jobs in marginalised coastal communities and contribute to national income. Saldanha Bay is a highly productive marine environment and has an established aquaculture industry, with potential for growth.

DAFF proposes to establish a sea-based Aquaculture Development Zone (ADZ) in Saldanha Bay, Western Cape to encourage investor and consumer confidence, create incentives for industry development, provide marine aquaculture services, manage the risks associated with aquaculture and provide skills development and employment for coastal communities.

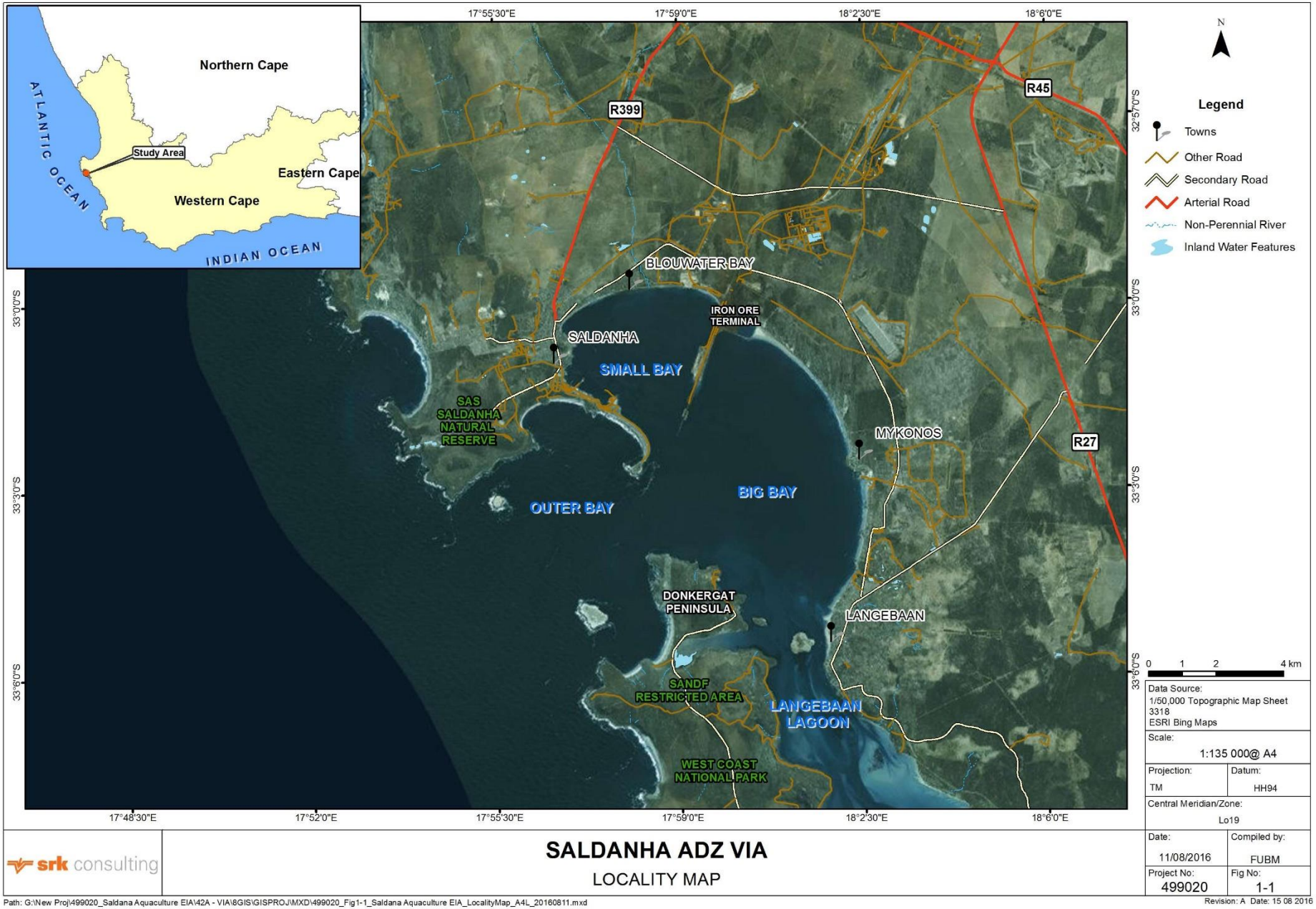
SRK Consulting (South Africa) Pty Ltd (SRK) has been appointed by DAFF to undertake the Basic Assessment (BA) process required in terms of the National Environmental Management Act 107 of 1998 (NEMA) and the Environmental Impact Assessment (EIA) Regulations, 2014. A Visual Impact Assessment (VIA) of the project is one of the investigations being undertaken by specialists as part of the BA process.

The VIA will consider both the magnitude of the visual impact (rated according to visual assessment criteria) and the significance of the visual impact (rated according to standard EIA rating methodology, as prescribed in the Terms of Reference (ToR)).

1.2 Terms of Reference

The primary aims of the study are to describe the visual baseline, assess the visual impacts of the project and identify effective and practicable mitigation measures. More specifically, the ToR for the study are as follows:

- Determine the character and sensitivity of the visual environment and identify sensitive areas;
- Identify visual resources and key viewing corridors / viewpoints;
- Determine and groundtruth the existing visual character and quality in order to understand the sensitivity of the landscape;
- Identify potential impacts of the project on the visual environment through analysis and synthesis of the following factors:
    - Visual exposure;
    - Visual absorption capacity;
    - Sensitivity of viewers (visual receptors);
    - Viewing distance and visibility; and
    - Landscape integrity.
- Assess the impacts of the project on the visual environment and sense of place using the prescribed impact assessment methodology;
- Identify and assess potential cumulative impacts resulting from the proposed development in relation to other proposed and existing developments in the surrounding area;
- Recommend practicable mitigation measures to avoid and/or minimise/reduce impacts and enhance benefits. Assess the effectiveness of proposed mitigation measures using the prescribed impact assessment methodology; and
- Recommend and draft a monitoring campaign to ensure the correct implementation and adequacy of recommenced mitigation and management measures, if applicable.


Northern Cape
Eastern Cape
Western Cape
Study Area
ATLANTIC OCEAN
INDIAN OCEAN
17°55'30"E
17°59'0"E
18°2'30"E
18°6'0"E
17°48'30"E
17°52'0"E
33°0'0"S
33°3'0"S
33°6'0"S
32°57'0"S
R399
R45
R27
BLOUWATER BAY
IRON ORE TERMINAL
SALDANHA
SMALL BAY
SAS SALDANHA NATURAL RESERVE
MYKONOS
BIG BAY
OUTER BAY
DONKERGAT PENINSULA
LANGEBAAN
SANDF RESTRICTED AREA
LANGEBAAN LAGOON
WEST COAST NATIONAL PARK
N
Legend
Towns
Other Road
Secondary Road
Arterial Road
Non-Perennial River
Inland Water Features
0 1 2 4 km
Data Source:
1/50,000 Topographic Map Sheet 3318
ESRI Bing Maps
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Projection:
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Datum:
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SALDANHA ADZ VIA
LOCALITY MAP
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Revision: A Date: 15 08 2016

2 Approach and Method

Given the nature of visual issues, assessing the visual impacts of a development/site in absolute and objective terms is not achievable. Thus, qualitative as well as quantitative techniques are required. In this VIA, emphasis has therefore been placed on ensuring that the methodology and rating criteria are clearly stated and transparent. The focus of the baseline study is to determine the character and sensitivity of the visual environment, the visual catchment area and identifying visual resources and viewing corridors. For impact assessment, all ratings are motivated and, where possible, assessed against explicitly stated and objective criteria.

There are very few guidelines that provide direction for visual assessment; the most relevant are the Landscape Institute's "Guideline for Landscape and Visual Impact Assessments" and the Department of Environmental Affairs and Development Planning's "Guideline for Involving Visual and Aesthetic Specialists in EIA Processes" (2005), which have been considered in this VIA.

2.1 Approach

The approach to this study was selected to be as accurate and thorough as possible. Analytical techniques are selected so as to endorse the reliability and credibility of the assessment.

The approach to and reporting of the VIA study comprises three major, phased elements (as summarised in Figure 2-1 below):

1. A description of the visual context (baseline);
2. The identification and discussion of the potential visual impacts; and
3. An assessment of those potential impacts.

Visual impacts are assessed as one of many interrelated effects on people (i.e. the viewers and the impact of an introduced object into a particular view or scene) (Young, 2010). In order to assess the visual impact the project has on the affected environment, the visual context (baseline) in which the project is located must be described. The inherent value of the visual landscape to viewers is informed by geology/topography, vegetation and land-use and is expressed *as Visual Character* (overall impression of the landscape), *Visual Quality* (how the landscape is experienced) and *Sense of Place* (uniqueness and identity).

Visual impact is measured as the change to the existing visual environment caused by the project as perceived by the viewers (Young, 2010). The visual impact(s) may be negative, positive or neutral (i.e. the visual quality is maintained). The magnitude or intensity of the visual impacts is determined through analysis and synthesis of the visual absorption capacity (VAC) of the landscape (potential of the landscape to absorb the project), viewshed (zone of visual influence or exposure), visibility (viewing distances), compatibility of the project with landscape integrity (congruence), and the sensitivity of the viewers (receptors).

Sources of visual impacts are identified for the operational phase[1] of the project. The significance of those visual impacts is then assessed using the prescribed impact rating methodology, which includes the rating of:

[1] No substantial impacts have been identified for the construction phase. Refer to Section 2.3.

- Impact consequence, determined by extent, duration and magnitude/intensity of impact (see above);
- Impact probability;
- Impact significance, determined by combining the ratings for consequence and probability; and
- Confidence in the significance rating.

The significance rating methodology is described in more detail in Appendix B.

Mitigation measures recommended to avoid and/or reduce the significance of negative impacts, or to optimise positive impacts, are identified for the project. Impact significance is re-assessed assuming the effective implementation of mitigation measures.

2.2 Method

The following method was used to assess the visual baseline for the project:

1. Describe the project using information supplied by the proponent and EIA team.
2. Collect and review visual data.
3. Undertake fieldwork (05 August 2016), comprising an extensive reconnaissance of the study area, particularly the project site and key viewpoints. The objectives of the fieldwork were to:
    - Familiarise the specialist with the site and its surroundings;
    - Identify key viewpoints / corridors; and
    - Determine and groundtruth the existing visual character and quality in order to understand the sensitivity of the landscape. Visual 'sampling' using photography was undertaken to illustrate the likely zone of influence and visibility. The location of the viewpoints was recorded with a GPS.
4. Undertake a mapping exercise to define the visual character of the study area and identify sensitive areas, opportunities and constraints.

The following method was used to assess the visual impact of the project:

1. Make field observations at key viewpoints to determine the likely distance at which visual impacts will become indistinguishable.
2. Rate impacts (direct, indirect, and cumulative) on the visual environment and sense of place based on a professional opinion and the prescribed impact rating methodology.
3. Recommend mitigation measures to reduce the significance of negative impacts.
4. Provide environmental management measures to be included in the Environmental Management Programme (EMP).

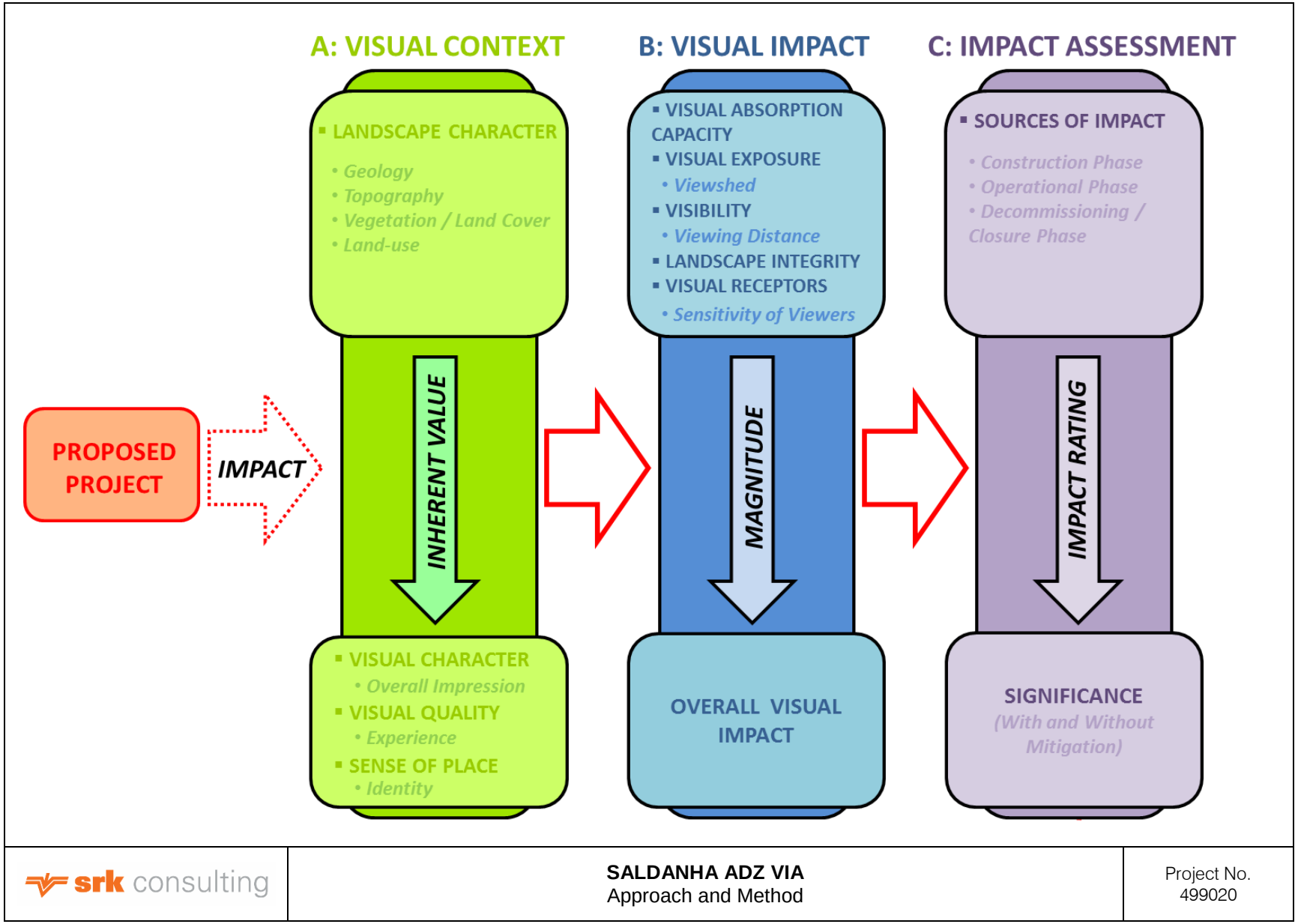


Figure 2-1: Approach and method of the VIA study

2.3 Assumptions and Limitations

As is standard practice, the VIA is based on a number of assumptions and is subject to certain limitations, which should be borne in mind when considering information presented in this report. The validity of the findings of the study is not expected to be affected by these assumptions and limitations:

- VIA is not, by nature, a purely objective, quantitative process, and depends to some extent on subjective judgments. Where subjective judgments are required, appropriate criteria and motivations for these have been clearly stated.
- The assessment is based on technical background information supplied to SRK, which is assumed to be accurate. This includes the proposed locations, dimensions and layouts of the project.
- The visual impact of existing aquaculture operations in Small Bay were not s assessed or modelled as it is an existing impact experienced by receptors.
- The viewshed calculation was undertaken using 20 m contour intervals. The viewshed depicts the area from which the project might be visible. It does not take localised undulations, vegetation and existing man-made structures - which may obscure views - into account. This means that the project is not necessarily visible from everywhere within the viewshed, i.e. from some places the project may be obscured by existing structures, vegetation or local variations in topography. It therefore indicates a “maximum exposure” or “worst case” scenario.
- The viewshed is based on a modelling height of 1.5 m above sea level to account for the height of the vessels likely to be working in the area.
- No construction impacts have been identified. During installation, aquaculture infrastructure (e.g. longlines, rafts, etc.) will be transported to the farms by vessels used throughout operations, placed in the water and fastened/weighted to the sea floor. These activities will be of very limited intensity and will be similar to those activities undertaken throughout operations. The aquaculture infrastructure is unlikely to be installed at once and will expand over time.
- The study considers the visual impact of marine-based operations. The visual impacts of land-based operations and infrastructure have not been assessed as the sites, layouts and type of structures have not yet been determined. It is likely that land-based infrastructure will be located within areas congruent with the surrounding land uses.
- This study does not provide motivation for or against the project, but rather seeks to give insight into the visual character and quality of the area, its visual absorption capacity and the significance of the anticipated visual impacts created by the project. In the event that unacceptable visual impacts are identified, this is clearly indicated in the report.

3 Project Description

3.1 Project Location

Saldanha Bay is located on the semi-arid West Coast of South Africa, in the Western Cape, approximately 120 km north of Cape Town. The Port of Saldanha is the main iron ore terminal in South Africa. A number of other vessel types, primarily oil tankers, also frequent the port.

Saldanha Bay supports many economic activities including a major aquaculture industry as well as numerous recreational activities. In

addition, tourism is an important income stream in the area. A number of industrial operations are located in the area, including the ArcelorMittal steel plant, Tronox smelter and a number of fish processing plants. The Saldanha Bay Industrial Development Zone (IDZ) has been established at the back of the port and is South Africa's first dedicated development in the Oil & Gas Services and Marine Repair Cluster to support Upstream Exploration & Production developments in the West and East African regions, and potentially the South African market.

The Saldanha Bay-Langebaan Lagoon system can be divided into the Outer Bay, Saldanha Bay itself (comprising Big Bay and Small Bay) and the Langebaan Lagoon (Figure 1-1). The boundary between Big Bay and Small Bay is the iron ore jetty at the Port of Saldanha. Marcus Island causeway forms the boundary between the Outer Bay and Small Bay.

Saldanha Bay falls within the Cape West Coast Biosphere Reserve. Langebaan Lagoon has been declared a RAMSAR wetland of international importance and forms part of the West Coast National Park (WCNP) located south of Saldanha Bay. Three existing Marine Protected Areas (MPAs) are located at the entrance to the Langebaan Lagoon and around Malgas and Jutten Islands.

3.2 Project Description

The proposed ADZ comprises five main precincts in Small Bay, Big Bay and Outer Bay, providing approximately 1 871 ha of aquaculture areas in Saldanha Bay (Figure 3-1):

- Small Bay - existing (approved) locations within Small Bay;
- Outer Bay - North: north of the Port entrance channel, near Malgas Island;
- Outer Bay - South: south of the Port entrance channel, near Jutten Island;
- Big Bay - North: north of the Mykonos entrance channel; and
- Big Bay - South: south of the Mykonos entrance channel.

3.2.1 Small Bay

Currently, 163 ha has been allocated (but not yet fully utilised) to aquaculture in Small Bay. Small Bay is deemed to have reached its ecological carrying capacity mainly due to restricted current flow. Additionally, future harbour development restricts further expansion of aquaculture in Small Bay.

3.2.2 Outer Bay – North

This precinct extends from the Marcus Island causeway to the Malgas Island MPA and from the 10 m depth contour to the 30 m depth contour north of the Port entrance channel (Points A-D in Figure 3-1). This area is suitable for mussel culture and possibly other bivalve species with cold water tolerance.

Areas deeper than 15 m may be suitable for finfish cage culture or submerged longlines. Shallower areas may be suitable for surface longlines. Rafts are not viable due to oceanographic conditions.

3.2.3 Outer Bay – South

This precinct extends from the Donkergat Peninsula to the Jutten Island MPA and from the 10 m depth contour towards the Port entrance channel (Points O-W in Figure 3-1).

Areas deeper than 15 m may be suitable for finfish cage culture or submerged longlines. Areas deeper than 10 m in the more protected sections between the mainland and Jutten Island may be suitable for bivalve surface longlines. Rafts are not viable due to oceanographic conditions.

3.2.4 Big Bay – North

This precinct extends from the 5 m contour towards the Port jetty and south to the Mykonos harbour entrance channel (Points E-H in Figure 3-1). This area was already demarcated for aquaculture in the 1980s.

Areas deeper than 15 m in the south-western portion of the precinct may be suitable for finfish cage culture. Surface longlines and rafts for bivalve production may be viable in the precinct due to the protection from extreme oceanographic conditions.

3.2.5 Big Bay – South

This precinct extends from the Mykonos harbour entrance channel towards the Langebaan Lagoon MPA, and from the 5 m depth contour towards the Donkergat Peninsula (Points I,J,K,L,M,N in Figure 3-1). An alternative layout for this precinct extends from the 10 m depth contour towards the Donkergat Peninsula to accommodate recreational users in shallow waters south of Mykonos and vessel traffic into and out of the Langebaan Lagoon near Donkergat (Points I,J,K1,L1,M1,N1 in Figure 3-1). This area was already demarcated for aquaculture in the 1980s.

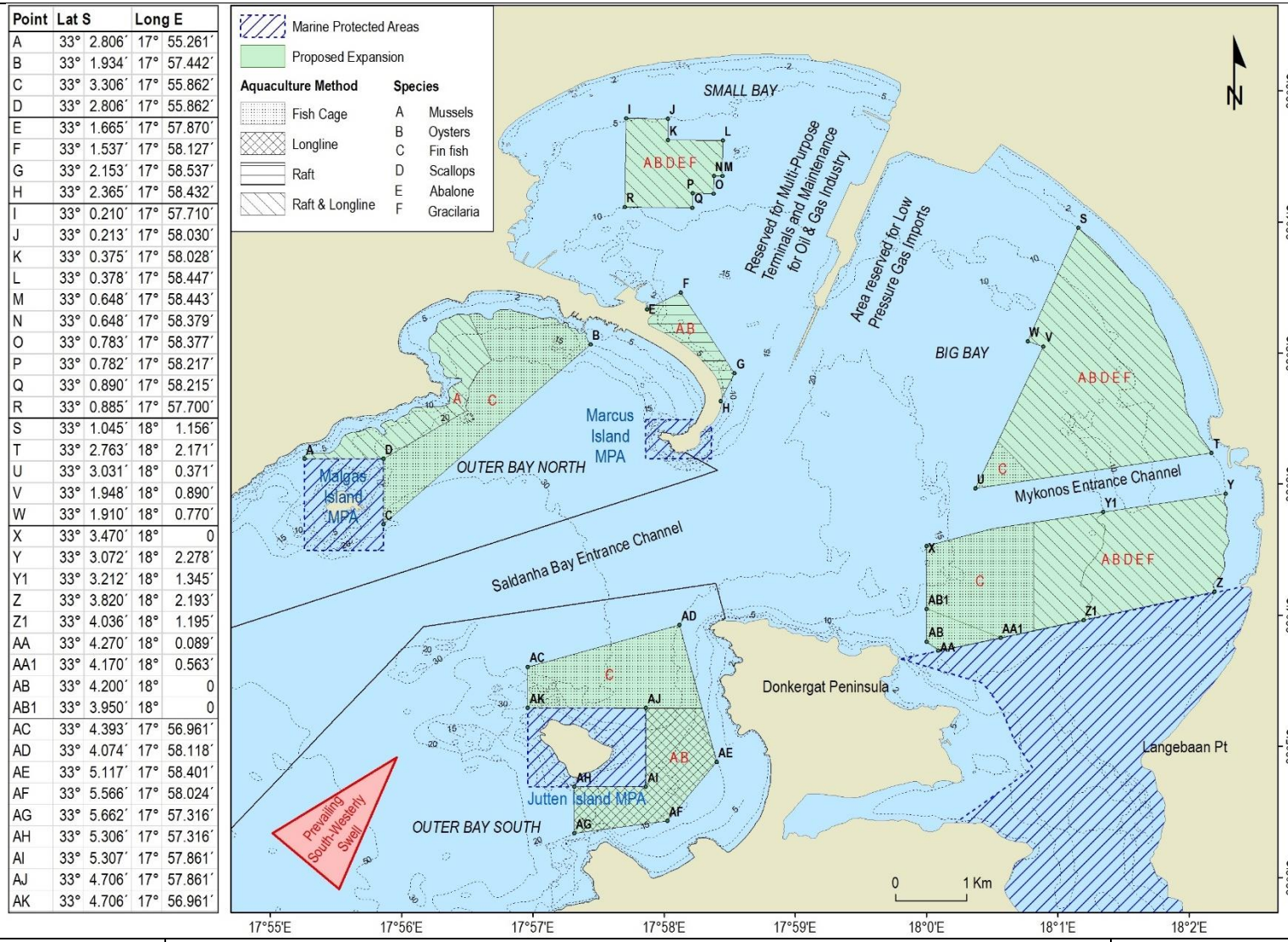
Areas deeper than 15 m in the western portion of the precinct may be suitable for finfish cage culture. Surface longlines and rafts for bivalve production may be viable in the precinct due to the protection from extreme oceanographic conditions.

3.2.6 Project Infrastructure

The following production methods are considered most viable for farming in the ADZ (Figure 3-2):

- **Longlines** for bivalve culture, comprising surface ropes with floats and moored at each end to fix the lines in position. The production ropes for mussels or oyster racks are then suspended from the surface rope. The recommended spacing is 10 m between longlines and 40 m between lease areas;
- **Rafts** for bivalve culture, comprising a floating top structure from which mussel ropes are suspended. A raft provides a stable surface structure for initial processing of mussels and reduces dependence on larger support vessels for harvesting and processing. The recommended density is one raft per hectare;
- **Cages** for finfish production, constructed of circular flexible high density polyethylene with multi-mooring systems, deployed at depths of more than ~25 m (larger cages) or ~13 m (smaller cages). Cages in Saldanha Bay have a high fouling rate, requiring regular replacement of cages; and
- **Barrel culture** for abalone, which can be deployed from rafts and longlines. Barrel culture requires regular servicing to feed the abalone.

Point	Lat S		Long E	
A	33°	2.806′	17°	55.261′
B	33°	1.934′	17°	57.442′
C	33°	3.306′	17°	55.862′
D	33°	2.806′	17°	55.862′
E	33°	1.665′	17°	57.870′
F	33°	1.537′	17°	58.127′
G	33°	2.153′	17°	58.537′
H	33°	2.365′	17°	58.432′
I	33°	0.210′	17°	57.710′
J	33°	0.213′	17°	58.030′
K	33°	0.375′	17°	58.028′
L	33°	0.378′	17°	58.447′
M	33°	0.648′	17°	58.443′
N	33°	0.648′	17°	58.379′
O	33°	0.783′	17°	58.377′
P	33°	0.782′	17°	58.217′
Q	33°	0.890′	17°	58.215′
R	33°	0.885′	17°	57.700′
S	33°	1.045′	18°	1.156′
T	33°	2.763′	18°	2.171′
U	33°	3.031′	18°	0.371′
V	33°	1.948′	18°	0.890′
W	33°	1.910′	18°	0.770′
X	33°	3.470′	18°	0
Y	33°	3.072′	18°	2.278′
Y1	33°	3.212′	18°	1.345′
Z	33°	3.820′	18°	2.193′
Z1	33°	4.036′	18°	1.195′
AA	33°	4.270′	18°	0.089′
AA1	33°	4.170′	18°	0.563′
AB	33°	4.200′	18°	0
AB1	33°	3.950′	18°	0
AC	33°	4.393′	17°	56.961′
AD	33°	4.074′	17°	58.118′
AE	33°	5.117′	17°	58.401′
AF	33°	5.566′	17°	58.024′
AG	33°	5.662′	17°	57.316′
AH	33°	5.306′	17°	57.316′
AI	33°	5.307′	17°	57.861′
AJ	33°	4.706′	17°	57.861′
AK	33°	4.706′	17°	56.961′



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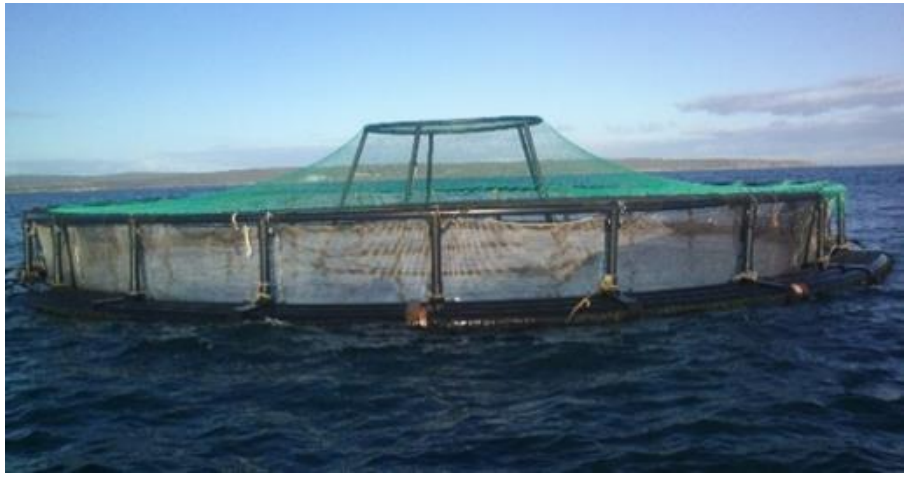
SALDANHA ADZ VIA
Layout of Saldanha ADZ

Project No.
499020

Figure 3-1: Layout of Saldanha ADZ
Source: CapMarine, 2016

Longlines in Big Bay

Raft in Small Bay



Fish Cage in Big Bay

Barrel Culture (to be suspended on long line under water)

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SALDANHA ADZ VIA
Project Components

Project No.
499020

Figure 3-2: Project components

Source: CapMarine, 2016

4 Visual Context (Affected Environment)

The following description of the affected environment focuses on the *Visual Character* of the area surrounding and including the project areas and discusses the *Visual Quality* and *Sense of Place*[2]. This baseline information provides the context for the visual analysis.

4.1 Landscape Character

Landscape character is the description of the pattern of the landscape, resulting from particular combinations of natural (physical and biological) and cultural (land use) characteristics. It focuses on the inherent nature of the land rather than the response of a viewer (Young, 2000). Each of the key characteristics is discussed below.

Refer to Figure 4-1 to Figure 4-4 for visual representations of landscape character.

4.1.1 Geology and Topography

The geology and topography of the area, together with the Mediterranean climate and the marine environment, have determined the basic landscape features and visual elements of the study area.

The area surrounding Saldanha Bay is characterised by a gently undulating coastal plain with low hills.

Aeolian (wind-blown) deposits of the Langebaan Formation overlie the intrusive Langebaan Pluton bedrock of the Cape Granite suite and the Elandsfontyn Formation. Evidence of the granite pluton is seen as hills and outcrops of granite boulders in the area (predominantly along the western shoreline). Inland, the Langebaan Formation is underlain mainly by marine deposits of the Pliocene age. Closer to the coast, the older Velddrif Formation units are interbedded in the aeolian deposits.

Recent windblown sands and dunes along the beach occur predominantly on the eastern shoreline of the Saldanha Bay, with prominent dune plumes extending north from the sandy beaches.

4.1.2 Vegetation

Saldanha is located within the Cape Floristic Kingdom and the Fynbos Biome and in the original extent of the following vegetation types:

- Saldanha Granite Strandveld west of the Bay and on the granite outcrops across the plain and at the WCNP;
- Saldanha Flats Strandveld and Saldanha Limestone Strandveld on the coastal plain;
- Langebaan Dune Strandveld extending along the coast; and
- Cape Seashore vegetation on the primary dune system along the coast.

Farming, mining, development (urban and industrial) as well as alien plant infestation have fragmented the natural land cover of the area. Much of the area surrounding the Bay has been transformed for agricultural and industrial use. The natural vegetation remaining is low wind-pruned scrub vegetation seldom exceeding 1 m in height, which provides no significant screening effect.

[2] These terms are explained in the relevant sections below.

4.1.3 Land Use

The Port of Saldanha, including the Iron Ore Terminal jetty extending approximately 4 km into the Bay, is located on the northern edge of Saldanha Bay in a generally flat and open area that is characterised by a number of Saldanha's most notable large-scale industrial facilities including:

- ArcelorMittal Steel Plant;
- Tronox smelter;
- Strategic Fuel Fund oil storage facility;
- Saldanha Fabrication Facility and Marine and Rig Repair Centre; and
- VDM Facility.

The Saldanha Bay IDZ is forming in the Back of Port area for the manufacturing, mineral beneficiation, oil and gas, ship and rig repair and renewable energy sectors (sbid.co.za, 2015). The terminal, quay, industrial shed-like structures and large ships moored in the Bay underpin the industrial character of the area.

The town of Saldanha on the western shoreline of Saldanha Bay has a modernised fishermen's town appearance with the typical white washed buildings right up to the beachfront. The town is orientated to overlook the Bay and makes use of local topographic elevations to optimise views. The residential areas of White City, Diazville and Blue Water Bay are located to the south, west and east of the Saldanha Central Business District, respectively. The SAS Saldanha Nature Reserve, owned by the South African National Defence Force (SANDF), is located to the south-west, and access is restricted.

Development and most of the commercial activities in Saldanha occur within and around the more protected Small Bay.

The picturesque and modern holiday town of Langebaan borders onto Langebaan Lagoon and the scenic WCNP. The white beaches and clear waters of Langebaan Lagoon are the main attractions of the town. The Club Mykonos resort and the Longacres Country Estate are located to the north of Langebaan on Big Bay.

The total (current) leased area in Saldanha Bay for aquaculture is 430 hectares (ha), of which 152 ha are currently being farmed for oysters and mussels. Currently, ~125 ha of the farmed areas are located in Small Bay, which has deemed to have reached its ecological carrying capacity mainly due to restricted current flow. Trials are underway to determine the viability of farming finfish in the Bay.

Granite outcrops along the more exposed coastline of Outer Bay

Sheltered coastline of Small Bay

Saldanha Bay

Sandy coastline of Big Bay

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Figure 4-1: Landscape character

Saldanha Bay town with existing aquaculture in Small Bay and the Port of Saldanha in the background

Club Mykonos in the foreground, the town of Langebaan along Lagoon edge and the WCNP in the background

srk consulting	**SALDANHA ADZ VIA** Landscape Character	Project No. 499020

Figure 4-2: Landscape character

Big Bay and the Port of Saldanha in the background

WCNP south of the entrance to Saldanha Bay

Longline farms in Small Bay

Rafts in Small Bay and the Iron Ore Terminal jetty in the background

srk consulting	**SALDANHA ADZ VIA** Landscape Character	Project No. 499020

Figure 4-3: Landscape character

4.2 Visual Character

Visual character is descriptive and non-evaluative, which implies that it is based on defined attributes that are neither positive nor negative. A change in visual character cannot be described as having positive or negative attributes until the viewer's response to that change has been taken into consideration. The probable change caused by the project is assessed against the existing degree of change caused through development.

Typical character attributes, used to describe the visual character of the affected area and to give an indication of potential value to the viewer, are provided in Table 4-1.

The basis for the visual character of the area is provided by the geology/topography, vegetation and land use of the area, giving rise to an overall dominant coastal character.

The western shoreline of Saldanha Bay has been severely modified at the Transnet Iron Ore Terminal and south of Saldanha at the fishing harbour. The eastern shoreline is dominated by white sandy beaches, vegetated dunes with granite outcrops and residential development. WCNP, the Donkergat Peninsula and the coastline surrounding Outer Bay are more natural with less development in these protected areas.

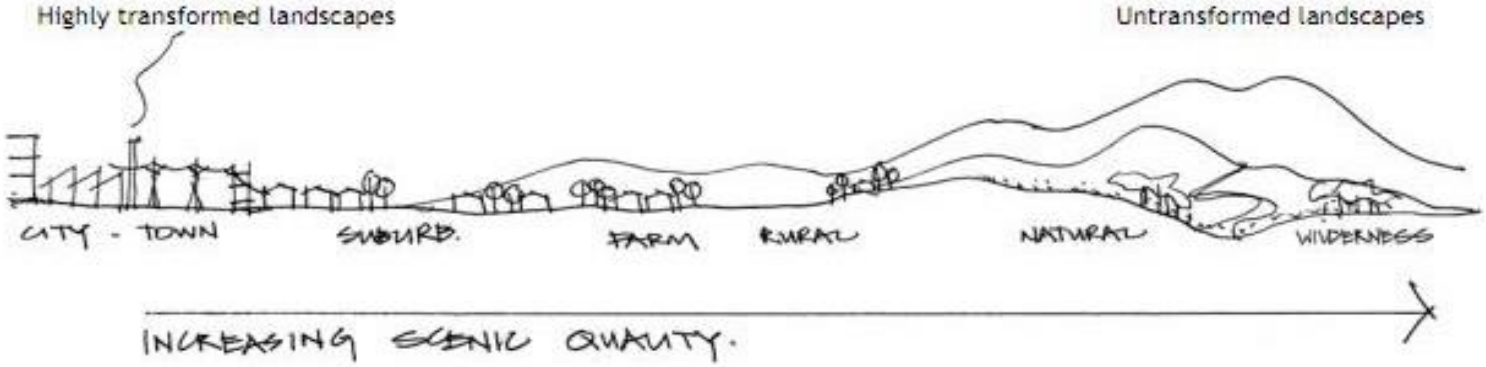
The overall area can be described as a *transition landscape* associated with the interface between industrial and port/harbour facilities and the coastline along the western shoreline of Saldanha Bay and the interface between suburban development and the coastline along the eastern shoreline. The WCNP and the coastline to the south of Saldanha Bay have a more natural visual character.

Figure 4-4: View across Small Bay towards the Port of Saldanha

Figure 4-5: View of residential development along the eastern shoreline of the Bay

Table 4-1: Typical Visual Character Attributes

Highly Transformed Landscape – Urban/Industrial	Transition Landscape	Modified Rural Landscape	Natural Transition Landscape	Untransformed Landscape – Natural
Substantially developed landscape. High levels of visual impact associated with buildings, factories, roads and other related infrastructure (e.g. powerlines).	Transitional landscape associated with the interface between, rural, agricultural area and more developed suburban or urban zones.	Typical character is rural landscape, defined by field patterns, forestry plantations and agricultural areas and associated small-scale roads and buildings.	A changing landscape character associated with the interface between natural areas and modified rural / pastoral or agricultural zones.	No / minimal impact associated with the actions of man. National parks, coastlines, pristine forest areas.



Source: CNDV, 2006

http://www.shandinglu.org

http://www.nightjartravel.com

http://www.boschkloof.com

4.3 Visual Quality

Aesthetic value is an emotional response derived from our experience and perceptions. As such, it is subjective and difficult to quantify in absolute terms. Studies in perceptual psychology have shown that humans prefer landscapes with higher complexity (Crawford, 1994). Landscape quality can be said to increase when:

- Topographic ruggedness and relative relief increases;
- Water forms are present;
- Diverse patterns of grasslands and trees occur;
- Natural landscape increases and man-made landscape decreases; and
- Where land-use compatibility increases.

The visual quality of the overall area is largely determined by the:

- Industrial and marine-based activities (e.g. oil and gas, iron ore handling, fishing, sailing);
- White sandy beaches, granite outcrops and vegetated dunes; and
- Long, predominantly open views across Saldanha Bay and Langebaan Lagoon towards the WCNP.

There are features that detract from the visual quality in the study area, cluttering the visual landscape, notably the dominant Iron Ore Terminal separating Small Bay and Big Bay (Figure 4-4).

The visual quality of the study area is considered to be ***moderate***.

4.4 Sense of Place

Our sense of a place depends not only on spatial form and quality, but also on culture, temperament, status, experience and the current purpose of the observer (Lynch, 1992). Central to the idea of 'sense of place' or *Genius Loci* is identity. An area will have a stronger sense of place if it can easily be identified, that is to say if it is unique and distinct from other places. Lynch defines 'sense of place' as "the extent to which a person can recognise or recall a place as being distinct from other places – as having a vivid or unique, or at least a particular, character of its own" (Lynch, 1992:131).

It is often the case that sense of place is linked directly to visual quality and that areas/spaces with high visual quality have a strong sense of place. However, this is not an inviolate relationship and it is plausible that areas of low visual quality may have a strong sense of place or – more commonly – that areas of high visual quality have a weak sense of place. The defining feature of sense of place is uniqueness, generally real or biophysical (e.g. trees in an otherwise treeless expanse), but sometimes perceived (e.g. visible but unspectacular sacred sites and places which evoke defined responses in receptors). Tourism can sometimes serve as an indicator of sense of place insofar as it is often the uniqueness (and accessibility) of a space/place which attracts tourists.

The region has scenic value in terms of the coastal setting, and tourists are attracted to Langebaan and Saldanha because of their location on the coasts of Langebaan Lagoon and Saldanha Bay, providing a dominant coastal character and sense of place.

5 Analysis of the Magnitude of the Visual Impact

The following section outlines the analysis that was undertaken to determine the **magnitude or intensity** of the overall visual impact resulting from the project. Various factors were considered in the assessment, including:

- Visual exposure;
- Visual absorption capacity;
- Potential visual receptors;
- Visibility and viewing distance; and
- Integrity with existing landscape / townscape.

The analysis of the magnitude or intensity of the visual impact, as described in this section, is summarized and integrated in Table 5-6 and forms the basis for the assessment and rating of the impact as documented in the next section (Section 6).

5.1 Visual Exposure

Visual exposure is determined by the zone of visual influence or viewshed. The viewshed is the topographically defined area that includes all the major observation sites from which the project could be visible. The viewsheds for this VIA are based on 20 m contours and are presented in Figure 5-1 to Figure 5-3.

Figure 5-1 represents the Outer Bay precincts' viewshed. Figure 5-2 represents the Big Bay precincts' viewshed[3]. Figure 5-3 represents the Big Bay precincts with the Big Bay South alternative.

The viewshed analysis assumes maximum visibility of the project in an environment stripped bare of vegetation and structures. It is therefore important to remember that the project is ***not necessarily visible from all points within the viewshed*** as views may be obstructed by visual elements such as trees, dense scrub, built structures and/or localised variations or irregularities in topography.

Analysis of the viewsheds of the ADZs (Figure 5-1 to Figure 5-3) is instructive and leads to the following observations:

- The viewsheds of the ADZs are limited to the coastline and elevated areas inland of Saldanha Bay;
- The Outer Bay precincts[4] are visible to receptors in Langebaan (although over 8 km away) but are not visible to the majority of receptors in Saldanha. The precincts are visible at the publicly accessible SAS Saldanha Nature Reserve to the north. Visual exposure to the south is limited to the SANDF Restricted Area on the Donkergat Peninsula; and
- The viewsheds of the Big Bay precincts (Figure 5-2) and the Big Bay alternative (Figure 5-3) are identical. The Big Bay precincts are visible to receptors in Saldanha and Langebaan and in limited areas of the WCNP.

Overall, the visual exposure of the ADZs will be ***moderate*** as, although the (combined) viewshed is limited to an area adjacent to the coast, the project will be exposed to a large number of receptors. Note though that the viewsheds do not take into account the screening provided by local variations in topography, the built fabric along the coastline and, notably, the Iron Ore Terminal jetty and the Marcus Island Causeway.

[3] Note that the western boundary of Big Bay North has been amended slightly after the viewsheds were generated, reducing the ADZ precinct. This is not expected to materially impact the viewsheds (the viewsheds show the worst-case scenario).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17°59'0"E
18°2'30"E
18°6'0"E
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33°6'0"S
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R45
R27
BLOUWATER BAY
IRON ORE TERMINAL
SALDANHA
SMALL BAY
SAS SALDANHA NATURAL RESERVE
NORTH
OUTER BAY
BIG BAY
MYKONOS
SOUTH
DONKERGAT PENINSULA
LANGEBAAN
SANDF RESTRICTED AREA
LANGEBAAN LAGOON
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Arterial Road
Non-Perennial River
Inland Water Features
Proposed Aquaculture Precincts
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Projection:
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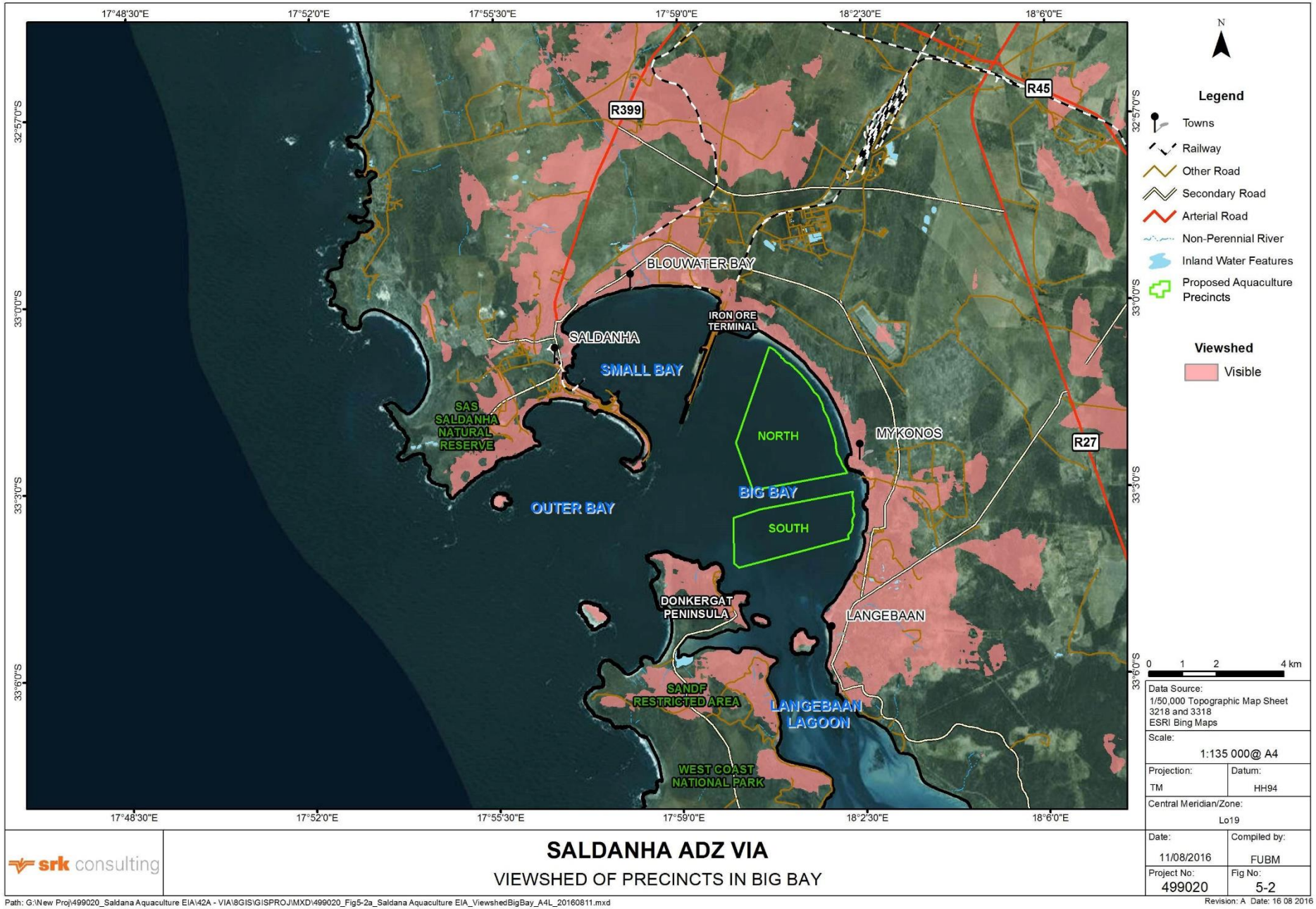
Revision: A Date: 16 08 2016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Revision: A Date: 16 08 2016


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5.2 Visual Absorption Capacity

The VAC is the potential for the area to conceal the proposed project. Criteria used to determine the VAC of the affected area are defined in Table 5-1. The VAC of the area is increased by:

- Local topographical variations in a generally flat and open landscape which provide partial screening. Low hills and vegetated dunes along the coast limit the viewshed, particularly beyond the immediate coastline;
- Existing urban fabric along the coastline; and
- Oceanographic conditions e.g. sea swell and 'ocean haze' concealing the aquaculture infrastructure.

Overall, the area is rated as having a ***low to moderate*** VAC mainly due to local topographical variations in the landscape screen project infrastructure beyond the immediate coastline. However, many of the residences along the eastern shoreline of the Bay are positioned on higher elevations to overlook the visually exposed (and "flat") Big Bay.

The precincts in Outer Bay are located in visually sheltered bays and have a higher VAC.

5.3 Visual Receptors

Receptors are important insofar as they inform visual sensitivity. The sensitivity of viewers is determined by the number of viewers and by how likely they are to be impacted upon. Potential viewers include the following:

- **Residents and holiday-makers**: The project will be particularly visible to receptors along the eastern shoreline, north of Langebaan (Mykonos, Calypso). These receptors at higher elevations will have clear views of project infrastructure in Big Bay.
- **Visitors to WCNP and SAS Saldanha Nature Reserve:**

  Although visitors to the WCNP are considered to be sensitive receptors, the Postberg Section of the WCNP is only open in August and September each year and the land north of the Postberg Section (Donkergat Peninsula) is a SANDF Restricted Area.

  The SAS Saldanha Nature Reserve is open to visitors throughout the year and is a particularly popular destination during the flowering season. Visitors to the Nature Reserve will have clear views of project infrastructure in Outer Bay – North.

The sensitivity of viewers or visual receptors potentially affected by the visual impact of the project is considered to be ***moderate***.

Table 5-1: Visual Absorption Capacity Criteria

High	Moderate	Low
The area is able to absorb the visual impact as it has: • Undulating topography and relief • Good screening vegetation (high and dense) • Is highly urbanised in character (existing development is of a scale and density to absorb the visual impact).	The area is moderately able to absorb the visual impact, as it has: • Moderately undulating topography and relief • Some or partial screening vegetation • A relatively urbanised character (existing development is of a scale and density to absorb the visual impact to some extent.	The area is not able to absorb the visual impact as it has: • Flat topography • Low growing or sparse vegetation • Is not urbanised (existing development is not of a scale and density to absorb the visual impact to some extent.)
 *http://www.franschhoek.co.za*	 *http://wikipedia.org*	 *http://www.butbn.cas.cz*
 *http://commons.wikimedia.org*	 *http://blogs.agu.org*	 *http://fortheinterim.com*

5.4 Viewing Distance and Visibility

The distance of a viewer from an object is an important determinant of the magnitude of the visual impact. This is because the visual impact of an object diminishes/attenuates as the distance between the viewer and the object increases. Thus the visual impact at 1 000 m would, nominally, be 25% of the impact as viewed from 500 m. At 2 000 m it would be 10% of the impact at 500 m (Hull and Bishop, 1988 in Young, 2000).

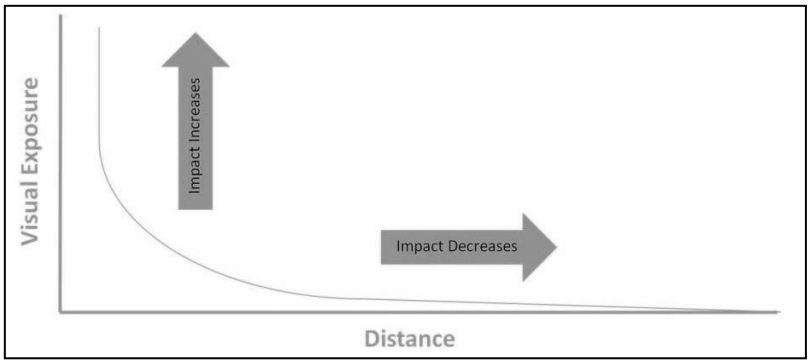


Figure 5-4: Visual Exposure vs Distance (Adapted from Hull and Bishop, 1998)

Three basic distance categories can be defined for a project of this scale (as discussed and represented in Table 5-2):

- Foreground;
- Middleground; and
- Background.

A range of viewpoints were selected in order to identify potential receptors and to provide an indication of the likely visibility of the project. The viewpoints were not randomly selected, but were chosen because they are likely to best represent the visibility of the project to receptors.

Table 5-2: Distance Categories

FOREGROUND (0 – 1 km)	The zone where the proposed project will dominate the frame of view. The project will be *highly visible* unless obscured.
MIDDLEGROUND (1 – 5 km)	The zone where colour and line are still readily discernible. The project will be *moderately visible* but will still be easily recognisable.
BACKGROUND (> 5 km)	This zone stretches from 5 km to the point from where the project can no longer be seen. Objects in this zone can be classified as *marginally visible* to *not visible*.

The selected viewpoints are shown in

Figure 5-5, and views from these viewpoints are shown in the accompanying photographs included as **Appendix A**. The criteria used to determine the visibility of the proposed project are set out in Table 5-3 and the visibility of from each viewpoint is summarised in Table 5-4.

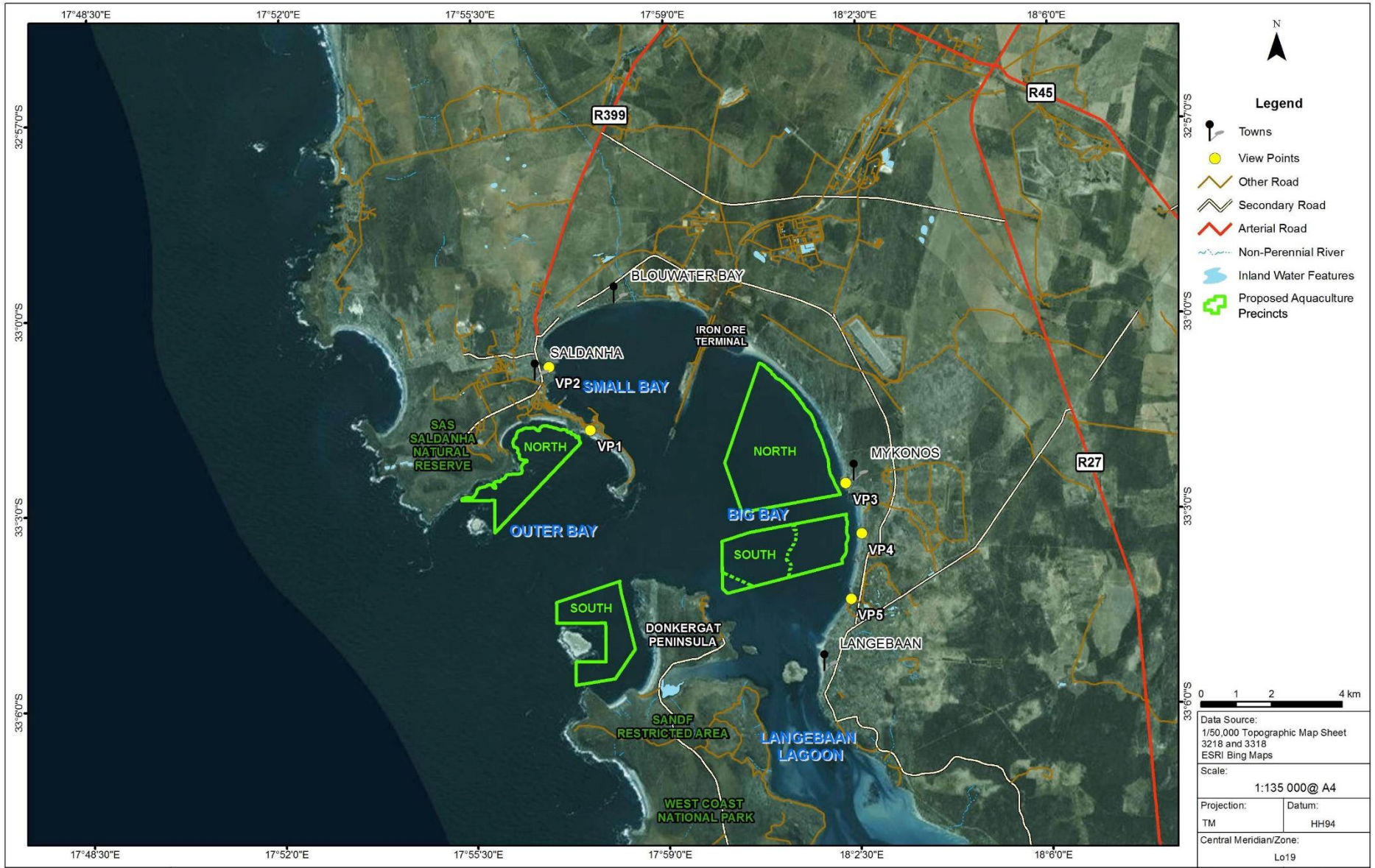
The visibility of the project can be summarised as follows:

- The precincts in Outer Bay will be visible to a limited number of sensitive receptors (i.e. visitors to the SAS Nature Reserve and residents of the SANDF military base). The precincts in the Outer Bay are well screened to other receptors by topography.
- The Big Bay precincts will be highly visible to residents and visitors to residential estates along the eastern shoreline of Saldanha Bay (i.e. Club Mykonos, Calypso). The Big Bay precincts will be less visible to residents in Langebaan town. It should be noted that the project is unlikely to be visible to visitors to the WCNP because of screening provided by topography and the distance from the precincts (> 5km).

Overall, the visibility of the project components is ***moderate***, due to the low visibility of the Outer Bay precincts and the high visibility of the Big Bay precincts.

Table 5-3: Visibility Criteria

NOT VISIBLE	Project cannot be seen	
MARGINALLY VISIBLE	Project is only just visible / partially visible (usually in background zone)	
VISIBLE	Project is visible although parts may be partially obscured (usually in middleground zone)	
HIGHLY VISIBLE	Project is clearly visible (usually in foreground or middleground zone)	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MYKONOS
VP3
BIG BAY
SOUTH
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DONKERGAT PENINSULA
LANGEBAAN
SANDF RESTRICTED AREA
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Table 5-4: Visibility from Viewpoints

View Point #	Location	Co-ordinates	Direction of view from the view point	Distance of the nearest precinct from the view point	Time Photograph Taken	Potential Significant Receptors and Visibility
1A	Marcus Island Causeway	33° 1'44.62"S; 17°57'37.03"E	West	500 m (Outer Bay North)	10h00	• Visitors to the SAS Saldanha Nature Reserve – highly visible. • Residents and employees at the SANDF base – highly visible.
1B			South	4 000 m (Outer Bay South)		• Visitors to the SAS Saldanha Nature Reserve – marginally visible. • Residents and employees at the SANDF base – marginally visible.
2	Saldanha	33° 0'46.03"S; 17°56'52.29"E	South-east	1 700 m (Outer Bay North) 5 000 m (Big Bay North)	10h33	• Residents and visitors to Saldanha – not visible as the Outer Bay South precinct will be screened by topography and the Big Bay North precinct will be screened by the Iron Ore Terminal jetty.
3A	Club Mykonos	33° 2'35.68"S; 18° 2'16.08"E	South-west	700 m (Big Bay South)	11h40	• Residents and visitors to Club Mykonos – highly visible.
3B			North-west	500 m (Big Bay North)		
4	Calypso	33° 3'22.05"S; 18° 2'32.90"E	North-west	500 m (Big Bay South)	11h55	• Residents and visitors to Calypso – highly visible.
5	Die Strandloper, Langebaan	33° 4'22.38"S; 18° 2'20.93"E	North-west	500 m (Big Bay South)	12h10	• Residents and visitors to Langebaan – highly visible.

5.5 Landscape Integrity

Landscape (or townscape) integrity refers to the compatibility of the development/visual intrusion with the existing landscape. The landscape integrity of the project is rated based on the relevant criteria listed in Table 5-5.

Table 5-5: Landscape Integrity Criteria

High	Moderate	Low
The project: • Is consistent with the existing land use of the area; • Is highly sensitive to the natural environment; • Is consistent with the urban texture and layout; • The buildings and structures are congruent / sensitive to the existing architecture / buildings; and • The scale and size of the development is similar to nearby existing development.	The project: • Is moderately consistent with the existing land use of the area; • Is moderately sensitive to the natural environment; • Is moderately consistent with the urban texture and layout; • The buildings and structures are moderately congruent / sensitive to the existing architecture / buildings; and • The scale and size of the development is moderately similar to nearby existing development.	The project: • Is not consistent with the existing land use of the area; • Is not sensitive to the natural environment; • Is very different to the urban texture and layout; • The buildings and structures are not congruent / sensitive to the existing architecture / buildings; and • The scale and size of the development is different to nearby existing development.

The proposed aquaculture development precincts are large areas between 299 ha and 584 ha in size. Although the infrastructure is predominantly low (average height of less than 1 m above sea level), the scale and texture of the precincts is very different to the existing nature of the sites (i.e. open water). Although aquaculture occurs in Saldanha Bay, operations are currently limited to Small Bay near a working harbour[5].

The aquaculture development precincts are incompatible with the existing use of the area as the precincts will be of a scale and texture very different to the current nature of the sites. Residents and visitors to the area may consider the project to be congruent with the marine environment and perceived use of Saldanha Bay as a marine development zone (also considering the existing aquaculture operations within the Bay).

Overall, the project is considered to have ***low*** landscape integrity.

5.6 Magnitude of the Overall Visual Impact

Based on the above criteria, the magnitude or intensity of the overall visual impact that is expected to result from the project has been rated. Table 5-6 provides a summary of the criteria, a descriptor summarizing the status of the criteria and projected impact magnitude ratings.

The overall magnitude of the visual impact that is expected to result from the project is rated as ***moderate*** to ***high***. The low level of compatibility of the project and the high visibility of the Big Bay precincts increases the intensity of the project.

[5] Pilot aquaculture projects occur within Big Bay.

Table 5-6: Magnitude of Overall Visual Impact

Criteria	Rating	Comments
Visual Exposure (Viewshed)	Moderate	Although the (combined) viewshed is limited to an area adjacent to the coast, the project will be exposed to a large number of receptors.
Visual Absorption Capacity	Low to Moderate	Local topographical variations in the landscape screen project infrastructure beyond the immediate coastline.
Viewer Sensitivity (Receptors)	Moderate	Sensitive receptors particularly along the eastern shoreline of the Bay.
Viewing Distance and Visibility	Moderate	Low visibility of the Outer Bay precincts and high visibility of the Big Bay precincts.
Landscape Integrity	Low	Texture and scale incompatible with the existing use of the area.

6 Impact Assessment and Mitigation Measures

The following section describes the visual impacts during the operations phase and assesses them utilising the impact rating methodology presented in **Appendix B**.

Direct visual and aesthetic impacts are likely to result from the following project interventions and/or activities:

- Change in character of the sites from aquaculture infrastructure (buoys, rafts, longlines etc.) and operational activities; and
- Lighting.

The visual and aesthetic impacts generated by the project are likely to be associated with changes to sense of place and visual intrusion.

6.1 Altered Sense of Place and Visual Intrusion from the Proposed Development

The project will result in a change in character of the sites (i.e. the aquaculture development precincts) from flat predominantly open water to “built” sites. The precincts will be of a scale and texture very different to the current nature of the sites.

The precincts in Outer Bay are well screened by topography and will only be visible to a limited number of sensitive receptors (i.e. visitors to the SAS Nature Reserve and residents of the SANDF military base). The Outer Bay precincts will have a lower visual impact than the Big Bay precincts. The Big Bay precincts will be highly visible to residents and visitors along the eastern shoreline of Saldanha Bay. Many of these receptors (e.g. residents of Calypso and Club Mykonos) are positioned to overlook the visually exposed (and “flat”) Big Bay.

It must be noted that the existing aquaculture precincts in Small Bay are visually unappealing, particularly on still days when the surface of the water is calm. The variety of shapes and colours of the buoys, inconsistent spacing and the dilapidated infrastructure make these areas look untidy (refer to Figure 6-1). Damaged infrastructure (ropes, buoys, etc.) washes ashore and this litter along the beach is visually intrusive (refer to Figure 6-2).

If the mitigation measures are implemented, residents and visitors to the area may consider the project to be congruent with the marine environment and perceived use of Saldanha Bay as a marine development zone (also considering the existing aquaculture operations within the Bay).

Figure 6-1: Existing aquaculture in Small Bay

Figure 6-2: Aquaculture infrastructure washed ashore

Source: A. Wicht, 2016.

The impact is assessed to be of ***high*** significance and with the implementation of mitigation, is reduced to ***medium*** (Table 6-1).

Although the Big Bay South alternative (Points X,Y1,Z1,AA1,AB1 in Figure 3-1) will not reduce the overall impact rating, the implementation of this alternative layout will greatly reduce the visual impact of this particular precinct.

Table 6-1: Altered sense of place and visual intrusion from the proposed development

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Without mitigation	Local	High	Long-term	High	Probable	**HIGH**	-ve	High
	1	3	3	7				
Mitigation Measures: ▪ Use grey based hues for all project components (rafts, cages, barrels, buoys/flotation devices) visible above the surface of the water as far as possible including for existing operations. ▪ Ensure project components are of a similar style, scale and have a consistent spacing between them to promote visual cohesiveness. ▪ Utilise the minimum number of safety/warning buoys as far as possible. Only demarcate the corner points of each precinct and the minimum interval distance along the precinct boundary to meet Ports Authority (Transnet) safety requirements. ▪ Maintain all project infrastructure in good working order. ▪ Implement the Big Bay South alternative (Points X,Y1,Z1,AA1,AB1). ▪ Incorporate a 1 km buffer from residents along the eastern shoreline in the design of the Big Bay North precinct (particularly Point Z).								
With mitigation	Local	Medium	Long-term	Medium	Probable	**MEDIUM**	-ve	High
	1	2	3	6				

6.2 Altered Sense of Place and Visual Quality caused by Light Pollution at Night

The Ports Authority (Transnet) is likely to require safety/warning lights demarcating the precincts at night.

The existing ambient light condition in the area is high because of lighting at existing industrial and port facilities and residential areas (refer to Figure 6-3). Although the lights would not create a large visual impact or large amount of light, these lights would contribute to the change in the character of the seascape at night.

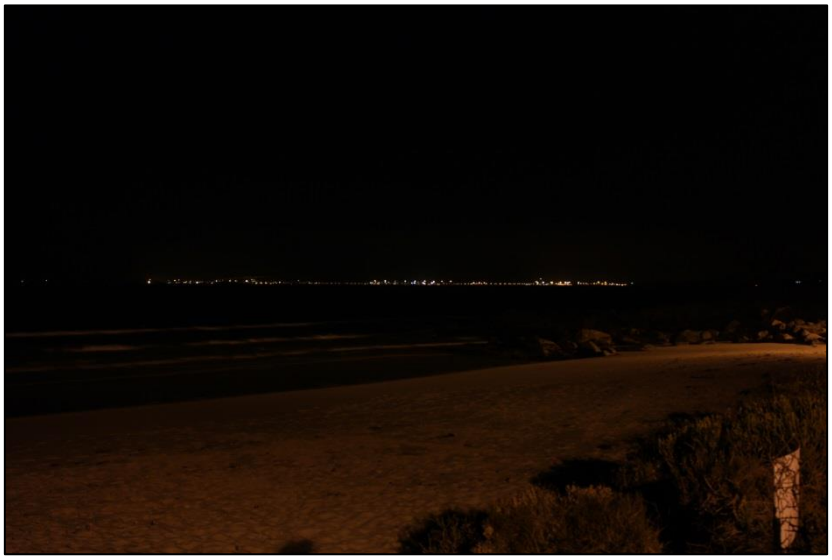

Figure 6-3: The nightscape across Big Bay from View Point 4 (Calypso)

The impact is assessed to be of ***low*** significance and with the implementation of mitigation, is reduced to ***very low*** (Table 6-2).

Table 6-2: Altered sense of place and visual quality caused by light pollution at night

	Extent	*Intensity*	*Duration*	*Consequence*	*Probability*	*Significance*	*Status*	*Confidence*
Without mitigation	Local	Low	Long-term	Low	Probable	**LOW**	-ve	High
	1	1	3	5				
Mitigation Measures: ▪ Restrict operations at night. ▪ Utilise the minimum number of safety/warning lights as far as possible. Only locate lights on the corner points of each precinct and the minimum interval distance along the precinct boundary to meet Ports Authority (Transnet) safety requirements. ▪ Confirm with key stakeholders (notably Port Captain, representatives of water users in the area and the South African Navy) whether certain boundaries of the ADZ located away from night-time traffic require lighting. ▪ If the Ports Authority requires flashing lights, ensure the lights flash simultaneously.								
With mitigation	Local	Low	Long-term	Low	Possible	**VERY LOW**	-ve	High
	1	1	3	5				

6.3 The No Go Alternative

The No Go alternative entails no change to the *status quo*, in other words, the precincts identified for aquaculture are likely to remain as "unbuilt", open water areas. Aquaculture will continue to take place in Small Bay and in isolated areas in Outer Bay and Big Bay. There is a possibility that future development will take place in Big Bay related to the Oil and Gas industry and iron ore operations.

7 Findings and Recommendations

The VIA describes and interprets the visual context or affected environment in which the project is located: this provides a visual baseline or template and aims to ascertain the aesthetic uniqueness of the project area. To better understand the *magnitude* or *intensity* of visual and sense of place impacts, the capacity of the project area and receptors to accommodate, attenuate and absorb impacts was analysed in considerable detail. To assess impact significance, the project was "introduced" into the baseline, taking account of the attenuating capacity of the project area.

7.1 Findings

The following findings are pertinent:

- DAFF proposes to establish a sea-based ADZ in Saldanha Bay comprising of four main precincts in Big Bay and Outer Bay, providing an additional 1 399 ha of aquaculture areas in Saldanha Bay;
- The basis for the **visual character** of the area is provided by the geology/topography, vegetation and land use of the area, giving rise to an overall dominant coastal character. The western shoreline has been severely modified and the eastern shoreline is dominated by white sandy beaches, vegetated dunes and granite

outcrops and residential development. The area can be described as a *transition landscape* associated with the interface between industrial and port/harbour facilities and the coastline along the western shoreline of Saldanha Bay and the interface between suburban development and the coastline along the eastern shoreline;

- The **visual quality** of the overall area is largely determined by the industrial and marine-based activities; white sandy beaches, granite outcrops and vegetated dunes; and long predominantly open views across Saldanha Bay and Langebaan lagoon towads the WCNP. There are features that detract from the visual quality in the study area, cluttering the visual landscape, notably the dominant Iron Ore Terminal separating Small Bay and Big Bay;
- The region has scenic value in terms of the coastal setting and tourists are attracted to Langebaan and Saldanha because of their location on Langebaan Lagoon and Saldanha Bay, providing a dominant coastal character and **sense of place**;
- Although the **viewshed** is limited by topography (particularly for the Outer Bay precincts), many of the residences along the eastern shoreline are positioned on higher elevations to overlook the visually exposed Bay;
- The project will be particularly visible to **receptors** along the eastern shoreline, north of Langebaan (Mykonos, Calypso). These receptors at higher elevations will have clear views of project infrastructure in Big Bay. It is unlikely that the project will be visible to visitors to the WCNP, but visitors to the SAS Saldanha Nature Reserve will have clear views of project infrastructure in Outer Bay – North;
- Overall, the **visibility** of the project components is *moderate*, due to the low visibility of the Outer Bay precincts and the high visibility of the Big Bay precincts;
- Overall, the project is considered to have *low* **landscape integrity** as the aquaculture development precincts will be of a scale and texture very different to the current nature of the sites. However, as aquaculture is a marine related activity, residents and visitors to the area may consider the project to be congruent with the marine environment and perceived use of Saldanha Bay.
- The project will result in a **change in character of the sites** from flat predominantly open water to “built” sites. The Big Bay precincts will be highly visible to residents and visitors along the eastern shoreline of Saldanha Bay. The precincts in Outer Bay are well screened by topography and will only be visible to a limited number of sensitive receptors and will therefore have a lower visual impact The overall impact is assessed to be of *high* significance and with the implementation of mitigation, is reduced to *medium;*
- The Ports Authority (Transnet) is likely to require safety/warning **lights** demarcating the precincts at night. Although the lights would not create a large visual impact or large amount of light, these lights would contribute to the change in the character of the seascape at night. The impact is assessed to be of *low* significance and with the implementation of mitigation, is reduced to *very low.*

7.2 Conclusion

The project will result in moderate to high intensity visual impacts because of the high visibility of the Big Bay precincts to sensitive receptors and the low level of compatibility with the existing seascape. However, if the mitigation measures are implemented, residents and visitors to the area may consider the project to be congruent with the marine environment and perceived use of Saldanha Bay as a marine development zone (also considering the existing aquaculture operations within the Bay).

The Outer Bay precincts will have a lower visual impact than the Big Bay precincts. The precincts in Outer Bay are well screened by topography and will only be visible to a limited number of sensitive receptors. The Big Bay precincts will be highly visible to sensitive receptors along the eastern shoreline of Saldanha Bay. The overall visual impact of the project can be reduced if the Big Bay precincts are reduced in size.

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Appendices

Appendix A: Viewpoint Photographs

VP1A: Looking south-west towards Outer Bay (north) from the Causeway

VP1B: Looking south towards Outer Bay (south) from the Causeway

srk consulting	**SALDANHA ADZ VIA** Viewpoint 1	Project No. 499020

VP2: Looking south-east across Small Bay towards Outer Bay (north) – existing rafts visible in the distance

srk consulting	**SALDANHA ADZ VIA** Viewpoint 2	Project No. 499020

VP3A: Looking south over Big Bay towards Langebaan and the WCNP. The Club Mykonos harbour entrance visible in the foreground.

VP3B: Looking north from Club Mykonos over Big Bay

srk consulting	**SALDANHA ADZ VIA** Viewpoint 3	Project No. 499020

VP4: Looking west across Big Bay towards Saldanha from Calypso

VP5: Looking west across Big Bay towards Saldanha from Langebaan (Die Strandloper)

srk consulting	**SALDANHA ADZ VIA** Viewpoints 4 & 5	Project No. 499020

Appendix B: Impact Rating Methodology

IMPACT RATING METHODOLOGY

The assessment of impacts will be based on specialists' expertise, SRK's professional judgement, field observations and desk-top analysis.

The significance of potential impacts that may result from the proposed mine expansion will be determined in order to assist decision-makers (typically by a designated authority or state agency, but in some instances, the proponent).

The **significance** of an impact is defined as a combination of the **consequence** of the impact occurring and the **probability** that the impact will occur.

The criteria used to determine impact consequence are presented in the table below.

Table 1: Criteria Used to Determine the Consequence of the Impact

Rating	Definition of Rating	Score
A. *Extent* *– the area over which the impact will be experienced*		
Local	Confined to project or study area or part thereof (e.g. viewshed)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
(Inter) national	Nationally or beyond	3
B. ***Intensity*** *– the magnitude of the impact in relation to the sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources*		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered	3
C. ***Duration*** *– the timeframe over which the impact will be experienced and its reversibility*		
Short-term	Up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years	3

The combined score of these three criteria corresponds to a **Consequence Rating**, as follows:

Table 2: Method Used to Determine the Consequence Score

***Combined Score* (A+B+C)**	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very high

Once the consequence will be derived, the probability of the impact occurring will be considered, using the probability classifications presented in the table below.

Table 3: Probability Classification

Probability *– the likelihood of the impact occurring*	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall **significance** of impacts will be determined by considering consequence and probability using the rating system prescribed in the table below.

Table 4: Impact Significance Ratings

		Probability			
		Improbable	Possible	Probable	Definite
Consequence	Very Low	**INSIGNIFICANT**	**INSIGNIFICANT**	**VERY LOW**	**VERY LOW**
	Low	**VERY LOW**	**VERY LOW**	**LOW**	**LOW**
	Medium	**LOW**	**LOW**	**MEDIUM**	**MEDIUM**
	High	**MEDIUM**	**MEDIUM**	**HIGH**	**HIGH**
	Very High	**HIGH**	**HIGH**	**VERY HIGH**	**VERY HIGH**

Finally the impacts will be also considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is laid out in the table below.

Table 5: Impact Status and Confidence Classification

Status of impact	
Indication whether the impact is adverse (negative) or beneficial (positive).	+ ve (positive – a 'benefit')
	– ve (negative – a 'cost')
Confidence of assessment	
The degree of confidence in predictions based on available information, SRK's judgment and/or specialist knowledge.	Low
	Medium
	High

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings ascribed below:

- **INSIGNIFICANT**: the potential impact is negligible and **will not** have an influence on the decision regarding the proposed activity/development.
- **VERY LOW**: the potential impact is very small and **should not** have any meaningful influence on the decision regarding the proposed activity/development.
- **LOW**: the potential impact **may not** have any meaningful influence on the decision regarding the proposed activity/development.
- **MEDIUM**: the potential impact **should** influence the decision regarding the proposed activity/development.
- **HIGH**: the potential impact **will** affect the decision regarding the proposed activity/development.
- **VERY HIGH**: The proposed activity should only be approved under special circumstances.

In the VIA, practicable mitigation and optimisation measures will be recommended and impacts will be rated in the prescribed way both without and with the assumed effective implementation of mitigation and optimisation measures. Mitigation and optimisation measures will either be:

- **Essential**: best practice measures which must be implemented and are non-negotiable; and
- **Best Practice**: recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be shown to have been considered and sound reasons provided by the proponent if not implemented.

Negative impacts (with mitigation) rated high or very high will be shaded in red, while positive impacts (with optimisation) rated high or very high will be shaded green.

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