

Proposed Sea-Based Aquaculture Development Zone in Saldanha Bay

Final Basic Assessment Report

Report Prepared for
Department of Agriculture, Forestry and Fisheries

Report Number 499020 / 3



Report Prepared by

 **srk** consulting

May 2017

Proposed Sea-Based Aquaculture Development Zone in Saldanha Bay Final Basic Assessment Report

Department of Agriculture, Forestry and Fisheries

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BA for Proposed Sea-Based Aquaculture Development Zone in Saldanha Bay: EAP Affirmation

Section 16 (1) (b) (iv), Appendix 1 Section 3 (1) (r), Appendix 2 Sections 2 (j) and (k) and Appendix 3 Section 3 (s) of the Environmental Impact Assessment (EIA) Regulations, 2014 (promulgated in terms of the National Environmental Management Act 107 of 1998, as amended - NEMA), require an undertaking under oath or affirmation by the Environmental Assessment Practitioner (EAP) in relation to:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from stakeholders and interested and affected parties;
- Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties; and
- The level of agreement between the EAP and interested and affected parties on the Plan of Study for undertaking the environmental impact assessment.

SRK Consulting (South Africa) (Pty) Ltd and the EAPs managing this project hereby affirm that:

- To the best of our knowledge the information provided in the report is correct, and no attempt has been made to manipulate information to achieve a particular outcome. Some information, especially pertaining to the project description, was provided by the applicant and/or their sub-contractors. In this respect, SRK's standard disclaimer (inserted in this report) pertaining to information provided by third parties applies.
- To the best of our knowledge all comments and inputs from stakeholders and interested and affected parties have been captured in the report and no attempt has been made to manipulate such comment or input to achieve a particular outcome. Written submissions are appended to the report while other comments are recorded within the report. For the sake of brevity, not all comments are recorded *verbatim*, and in instances where many stakeholders have made similar comments, they are grouped together, with a clear listing of who submitted which comment(s).
- Information and responses provided by the EAP to interested and affected parties are clearly presented in the report. Where responses are provided by the applicant (not the EAP), these are clearly indicated.
- With respect to EIA Reports, SRK will take account of interested and affected parties' comments on the Plan of Study and, insofar as comments are relevant and practicable, accommodate these during the Impact Assessment Phase of the EIA process.

SRK Consulting - Certified Electronic Signature

499020/42868/Other
3508-6662-5599-REUT
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Sue Reuther CEAPSA

Principal Environmental Consultant

Note:

In response to stakeholder comments, the Basic Assessment Report (BAR) (SRK Report 499020/1) was updated at the end of the comment period to produce this Final BAR.

All changes in the Final BAR and vis-a-vis the previously released BAR are italicised and underlined for easier reference.

*A **Comments and Responses Report**, reflecting stakeholder comments received during the stakeholder engagement process and responses by SRK, specialists and DAFF, is included in Appendix E8.*

Table of Contents

Section A: Activity Information

1. Project Description
2. Feasible and Reasonable Alternatives
3. Physical Size of the Activity
4. Site Access
5. Locality Map
6. Layout / Route Plan
7. Sensitivity Map
8. Site Photographs
9. Facility Illustration
10. Activity Motivation
11. Applicable Legislation, Policies and / or Guidelines
12. Waste, Effluent, Emission and Noise Management
13. Water Use
14. Energy Efficiency

Section B: Site / Area / Property Description

1. Gradient of the Site
2. Location in Landscape
3. Groundwater, Soil and Geological Stability of the Site
4. Groundcover
5. Surface Water
6. Land Use Character of Surrounding Area
7. Cultural / Historical Features
8. Socio-economic Character
9. Biodiversity

Section C: Public Participation

1. Advertisement and Notice
2. Determination of Appropriate Measures
3. Issues raised by Interested and Affected Parties
4. Comments and Response Report
5. Authority Participation
6. Consultation with other Stakeholders

Section D: Impact Assessment

1. Impacts that may result from the Planning and Design, Construction, Operational, Decommissioning and Closure Phases as well as Proposed Management of Identified Impacts and Proposed Mitigation Measures
2. Environmental Impact Statement

Section E: Recommendation of Practitioner

Section F: Appendices

Appendix A:	Maps
Appendix B:	Photographs
Appendix C:	Facility illustration(s)
Appendix D:	Specialist reports (including terms of reference)
* Appendix D1:	Project Definition Report
Appendix D2:	Marine Ecology Specialist Study
Appendix D3:	Visual Specialist Study
Appendix D4:	Heritage Specialist Input
<u>Appendix D5:</u>	<u>Visual Specialist Study Review</u>
Appendix E:	Public Participation
* Appendix E1:	Advert and Posters
* Appendix E2:	Initial Notification of Stakeholders
* Appendix E3:	Background Information Document
* Appendix E4:	Technical Stakeholder Workshop Documentation
* Appendix E5:	Project Definition Summary and Distribution
* Appendix E6:	Notes of <i>Initial</i> Meeting with South African Sailing
* Appendix E7:	Copies of <i>Initial</i> Stakeholder Comments
Appendix E8:	Registered Stakeholders
<u>Appendix E9:</u>	<u>BAR Notification of Stakeholders (including Extension)</u>
Appendix E10:	Comments and Responses Table
<u>Appendix E11:</u>	<u>Copies of Stakeholder Comments on BAR</u>
* <u>Appendix E12:</u>	* <u>Copies of Stakeholder Petitions</u>
<u>Appendix E13:</u>	<u>Notes of Meeting held during the BAR Comment Period</u>
<u>Appendix E14:</u>	<u>BAR Public Open Day Attendance Register and Posters</u>
Appendix F:	Impact Assessment
Appendix G:	Environmental Management Programme (EMPr)
Appendix H:	Details of EAP and expertise
Appendix I:	Declarations of Interest
Appendix J:	Additional Information
<u>Appendix J1:</u>	<u>Risk Assessments Conducted for DAFF</u>
<u>Appendix J2:</u>	<u>Information regarding Vredenburg landfill</u>

* Appendices marked with a star are not included in the printed copies of the Final BAR distributed for stakeholder comments in May 2017, as these documents were already released in full with the draft BAR and have not changed. For Appendix E12 a sample form is provided to reduce the document volume.

The appendices are available in full on SRK's website www.srk.co.za – Library – Public Documents.

The appendices will be included in full in the submission to DEA.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

BASIC ASSESSMENT REPORT

14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES	NO
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If YES, please complete the form entitled “Details of specialist and declaration of interest” for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

A. 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. Some 468 ha of the Bay are currently allocated for aquaculture production. Of these, some 152 ha are actively farmed, mostly in Small Bay and for mussels and oysters (see Figure 1). DAFF specialist scientists have published a peer-reviewed paper that has established that the carrying capacity of the Bay can support higher bivalve production. Operation Phakisa has triggered increased interest in starting new aquaculture projects and expanding existing projects within Saldanha Bay.

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, address cumulative impacts and provide skills development and employment for coastal communities.

B. ADZ areas assessed in the BA

The potential ADZ areas to be assessed in the Basic Assessment (BA) process¹ comprise of five precincts in Saldanha Bay, adding 1 404 ha of new aquaculture areas in Saldanha Bay for a total ADZ comprising 1 872 ha (see Table 1 and Figure 1):

- Small Bay: no additional aquaculture areas are proposed (though allocated areas are not fully utilized);
- Big Bay North: north of Mykonos entrance channel;
- Big Bay South: south of Mykonos entrance channel – two alternative layouts are proposed for this area;
- Outer Bay North: north of Port entrance channel, near Malgas Island; and
- Outer Bay South: south of Port entrance channel, near Jutten Island.

Currently farmed areas will be incorporated into the ADZ.

Table 1: ADZ precincts assessed in the BA

ADZ Precinct	Currently allocated	Currently farmed	New areas	Total future
Small Bay	163	125	-	163
Big Bay North	254	25	271	525
Big Bay South	4	1	517	521
Outer Bay North	37	1	299	336
Outer Bay South	10	-	317	327
Total	468	152	1 404	1 872

Potentially suitable areas for aquaculture were identified based on oceanographic conditions such as depth, waves and swell. Aspects such as nutrients and dissolved oxygen in any one area were not taken

¹ The Project Definition developed by CapMarine describes the project that was assessed in the BA (see Appendix D1).

BASIC ASSESSMENT REPORT

into account in the selection of areas, but will have to be considered by prospective farmers in relation to individual operations.

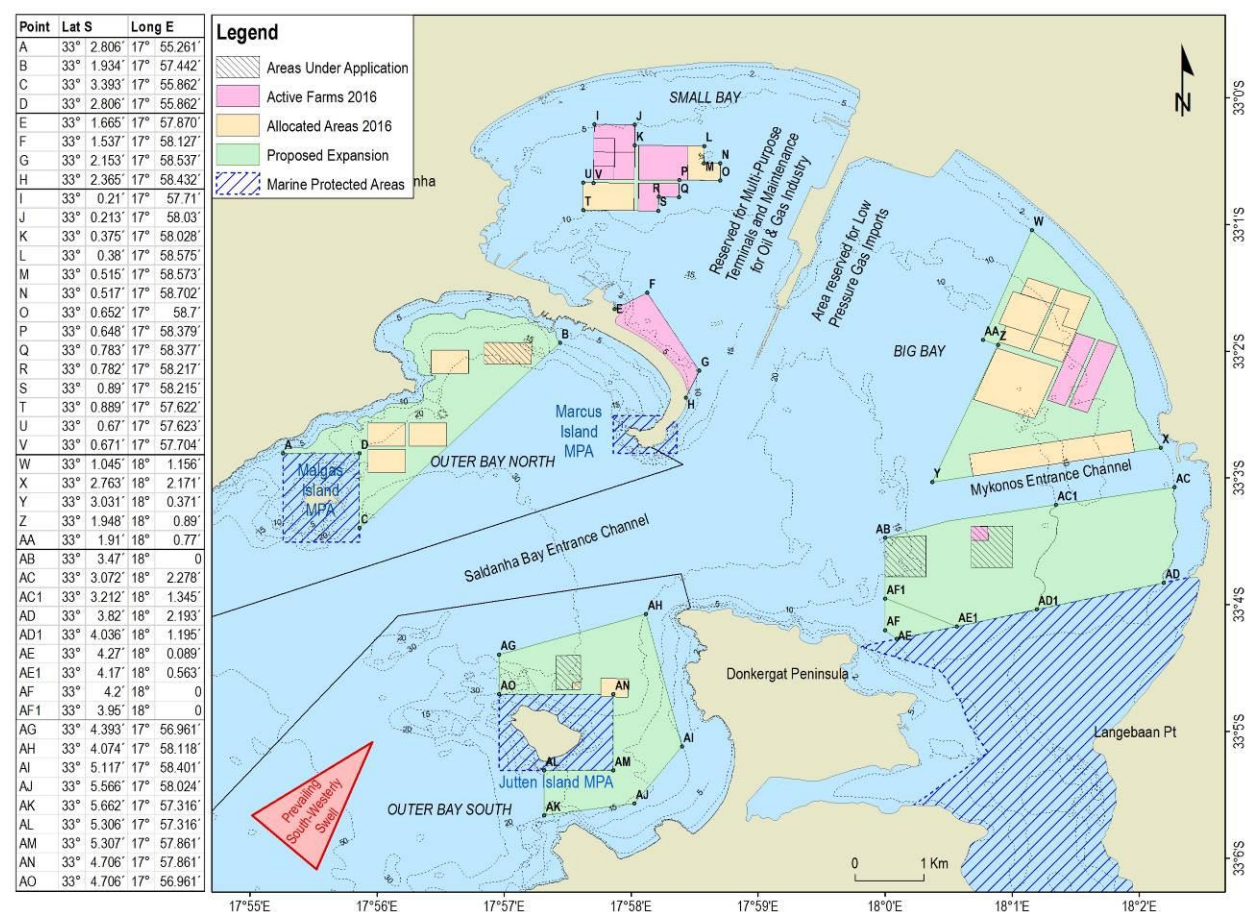


Figure 1: Existing (yellow and pink) and assessed (green) aquaculture areas in Saldanha Bay

C. Proposed species and methods

The following species are considered for farming in the ADZ:

- Currently cultivated bivalve species:
 - Pacific oyster (*Crassostrea gigas*)
 - Mediterranean mussel (*Mytilus galloprovincialis*)
 - Black mussel (*Choromytilus meridionalis*)
- Indigenous shellfish species not currently cultivated:
 - Abalone (*Haliotis midae*)
 - South African scallop (*Pecten sulcicostatus*)
- Indigenous finfish species:
 - White Stumpnose (*Rhabdosargus globiceps*)
 - Silver Kob (*Argyrosomus inodorus*)
 - Yellowtail (*Seriola lalandi*)
- Alien finfish species:
 - Atlantic salmon (*Salmo salar*)
 - Coho salmon (*Oncorhynchus kisutch*)
 - King/Chinook salmon (*Oncorhynchus tshawytscha*)
 - Rainbow trout (*Oncorhynchus mykiss*)
 - Brown trout (*Salmo trutta*)²

² Note: *S. trutta* was added to the list of species that form part of this application as it has very similar characteristics to Rainbowtrout (*O. mykiss*) included in this application, notably:

- Brown trout is not a listed species in terms of NEM:BA;

BASIC ASSESSMENT REPORT

- Seaweed:
 - *Gracilaria gracilis*

The following production methods are considered most viable for farming in the ADZ:

- *Longlines* for bivalve culture, comprising a surface rope with floats and moored at each end to fix the line in position. The production ropes for mussels or oyster racks are then suspended from the surface rope;
- *Rafts* for bivalve culture, comprising a floating top structure moored to the seabed from which mussel ropes are suspended;
- *Cages* for finfish production, constructed of circular flexible high density polyethylene with multi-mooring systems; and
- *Barrel culture* for abalone, which can be deployed from rafts and longlines.

Table 2 summarises the proposed species and production methods per ADZ precinct. These are also shown in Figure 2 below.

Table 2: Assessed Saldanha Bay ADZ areas, species and production methods

ADZ Precinct	Recommended species (*individual species as per list provided above)	Recommended Production Method
Small Bay	Currently cultivated bivalve species* Indigenous shellfish species not currently cultivated* Seaweed*	Rafts / longlines
Big Bay - North	Currently cultivated bivalve species* Indigenous shellfish species not currently cultivated* Seaweed*	Longlines / rafts
	Indigenous finfish species* Alien finfish species*	Floating cages (depths of more than 13m)
Big Bay – South	Currently cultivated bivalve species* Indigenous shellfish species not currently cultivated* Seaweed*	Longlines / rafts
	Indigenous finfish species* Alien finfish species*	Floating cages (depths of more than 13m)
Outer Bay - North	Mediterranean mussel (<i>Mytilus galloprovincialis</i>) Black mussel (<i>Choromytilus meridionalis</i>)	Sub-surface longlines
	Indigenous finfish species* Alien finfish species*	Floating cages
Outer Bay - South	Mediterranean mussel (<i>Mytilus galloprovincialis</i>) Black mussel (<i>Choromytilus meridionalis</i>)	Sub-surface longlines
	Indigenous finfish species* Alien finfish species*	Floating cages

- The DAFF Biodiversity Risk and Benefit Assessment (BRBA) identified a low risk (and low biosecurity requirements) for culture of Brown trout in marine environments (outside of MPAs). Noting the proximity of proposed aquaculture in Saldanha Bay to MPAs, however, higher levels of biosecurity are deemed necessary;
- The BRBA identified very little difference in risk between *S. trutta* and *O. mykiss*; and
- DAFF has already issued Marine Right for Brown trout in Saldanha.

BASIC ASSESSMENT REPORT

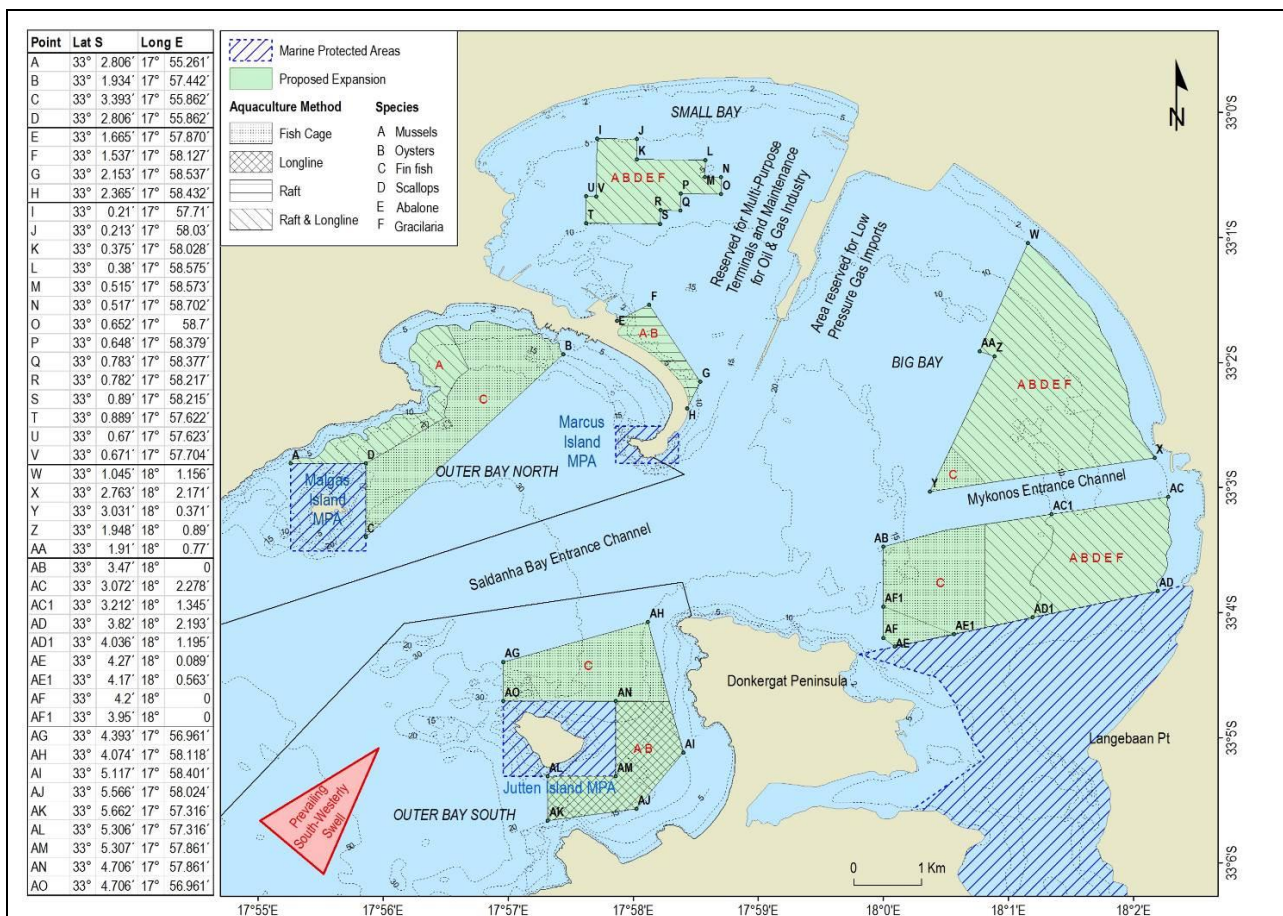


Figure 2: Assessed Saldanha Bay ADZ areas, species and production methods

Table 3 indicates the full extent of identified ADZ areas for bivalves and fish, as shown in Figure 2 above. It is assumed that areas identified as suitable for fish are also suitable for bivalve cultivation, but less so vice versa. Note that low-oxygen conditions previously experienced in Outer Bay North; these were not taken

Table 3: ADZ for bivalve and fish areas (ha) assessed in the BA

ADZ Precinct	Total ADZ Area	Bivalves	Fish
Small Bay	163	163	-
Big Bay North	525	503	22
Big Bay South	521	326	195
Outer Bay North	336	112	224
Outer Bay South	327	153	174
Total	1 872	1 257	615

D. Production volumes

D1. Bivalves

The ADZ bivalve production volumes assessed in the BA were determined based on:

- Ecological carrying capacity estimated by Probyn *et al* (2015)³ for bivalves; and

³ Probyn TA, Atkins JF and Pitcher GC (2015). Saldanha Bay, South Africa III: new production and carrying capacity for bivalve aquaculture. African Journal of Marine Science, 37:4, 521-531, DOI: 10.2989/1814232X.2015.1113203.

BASIC ASSESSMENT REPORT

- Discussion with industry and industry proposals submitted to DAFF for fish farming.

Probyn distinguishes between two carrying capacity concepts:

- Production Carrying Capacity (PCC), which relates to total production in the system – Probyn *et al* (2015) identify a lower and higher PCC scenario; and
- Ecological Carrying Capacity (ECC), which considers environmental requirements and provides a more conservative, management-oriented estimate of carrying capacity available for aquaculture – Probyn *et al* (2015) identify lower (10% of PCC) and higher (25% of PCC) levels for the ECC.

Table 4 provides a matrix for the various PCC and ECC densities for higher and lower scenarios for (ungraded) mussel and oyster production. Ungraded production refers to the total production volume (marketed, re-seeded and discarded) of mussels, whereas graded production refers to the marketable mussel portion only. For oysters, graded and ungraded volumes are generally equal. Probyn *et al*'s assumed a mussel : oyster ratio of 70 : 30 to derive the below densities.

Table 4: PCC and ECC densities for mussels and oysters in Saldanha Bay (t/ha)

Scenario	PCC		ECC			
	Mussels	Oysters	Mussels		Oysters	
			Low ECC	High ECC	Low ECC	High ECC
Low PCC	40	4.6	4	10	0.46	1.15
High PCC	53	6	5.3	13.25	0.6	1.5

Table 5 shows the minimum and maximum production volumes for the ADZ when applying the lowest and highest ECC densities shown (and shaded) in Table 4 to the full ADZ areas.

Table 5: Minimum and maximum mussel and oyster production volumes in the ADZ

ADZ Precinct	Area (ha)	Low PCC / Low ECC scenario (tpa)			High PCC / High ECC scenario (tpa)		
		Mussels		Oysters	Mussels		Oysters
		Ungraded	Graded		Ungraded	Graded	
Small bay	163	652	326	75	2 160	1 080	245
Big Bay North	525	2 100	1 050	242	6 956	3 478	788
Big Bay South	520	2 080	1 040	239	6 890	3 445	780
Outer Bay North	336	1 344	672	155	4 452	2 226	504
Outer Bay South	327	1 308	336	150	4 333	2 167	491
Total Area	1 871	7 484	3 742	861	24 791	12 396	2 807
Mussels and oysters		Ungraded: 8 345 / Graded: 4 603			Ungraded: 27 597 / Graded: 15 203		

Based on Probyn's calculations, the full ADZ could support total annual graded aquaculture bivalve production of between 4 603 t and 15 203 t, an increase of between 131% and 660% relative to current graded production of ~2 000 tpa.

D2. Finfish

The ADZ finfish production volumes assessed in the BA were determined based on:

- The area available for finfish farming, with an assumed average farming density of 40 t of fish per ha based on current proposals by the industry; and
- Estimated generation of nutrients from waste as Nitrate (N) as a proportion of overall estimated N in Saldanha Bay.

Table 6 indicates that some 24 600 t of finfish could be produced in the ADZ areas deemed potentially suitable for finfish production (full scenario) at an assumed density of 40 t/ha.

Table 6: Theoretical finfish production in full ADZ at 40 t/ha

ADZ Precinct	Area available for fish (ha)	Finfish production (t)
Small Bay	-	-
Big Bay North	22	880
Big Bay South	195	7 800
Outer Bay North	224	8 960
Outer Bay South	174	6 960
Total	615	24 600

The nutrient load in Saldanha Bay was approximated using nutrient levels quoted by Monteiro et al. (1998), cited in Probyn et al (2015), which indicates N physical flux for entrainment in the Bay at 7.94 mmol Nm⁻² d⁻¹, equating to 0.03335 kg/N/m²/yr assuming a 300 day upwelling year (Probyn pers. comm.). Total natural N in Saldanha Bay (~8 960 ha) is thus estimated at approximately 3 000 tons.

Numerous studies estimate waste production from fish farming, with considerable variation (Price and Morris, 2013)⁴. The value used to determine fish waste production for the Saldanha Bay ADZ was derived as the mean of the upper and lower estimates by Strain and Hargrave (2005)⁵, resulting in 87.5 kg of N generated per ton of fish farmed.

It is recommended as a precautionary approach that finfish production be initially capped so that estimated N produced by finfish farming does not exceed 15% of estimated N load in the Bay, or ~450 t of N. This equates to finfish production of ~5 150 tpa.

D3. Seaweed

Research on growing seaweed commercially in southern Africa is limited, and realizing the potential of this resource will require cooperation between research agencies and industry. In the Saldanha ADZ, potentially suitable areas for *Gracilaria* production are likely located in Small Bay and Big Bay in areas shallower than 6 m.

E. Sea-based aquaculture activities

Sea-based activities associated with aquaculture in the ADZ include:

- Servicing and maintenance of aquaculture structures (such as rafts, lines, cages);
- Harvesting of cultivated species;
- Initial processing of bivalves, including de-clumping and grading, typically on the raft or support vessel; and
- Vessel trips between the shore and aquaculture areas, e.g. to service structures or harvest species.

F. Associated sea-based infrastructure

Besides the rafts, lines, cages and barrels (including moorings and flotation devices) required for aquaculture, the following associated sea-based infrastructure is required:

- Navigational lights demarcating aquaculture areas;
- Mooring facilities for boats.

G. Associated land-based infrastructure and activities

⁴ Price, C.S. and J.A. Morris, Jr. (2013). Marine Cage Culture and the Environment: Twenty-first Century Science Informing a Sustainable Industry. NOAA Technical Memorandum NOS NCCOS 164. 158 pp.

⁵ Strain, P.M., and B.T. Hargrave. In press. Salmon aquaculture. nutrient fluxes, and ecosystem processes in southwestern New Brunswick. In Hargrave B.T. (Ed.). Environmental Effects of Marine Finfish Aquaculture. The Handbook of Environmental Chemistry Volume 5: Water Pollution. Springer Verlag. Berlin Heidelberg New York, NY.

BASIC ASSESSMENT REPORT

Land-based infrastructure and activities depend on cultivated species, production methods and processing. Mussels can largely be harvested, de-clumped and graded on the raft or support vessel. Basic land-based support infrastructure includes:

- Landing quays (catering for personnel, equipment and product) that are accessible for vehicles;
- Mooring space in protected harbour areas for support vessels;
- Product holding facilities (which can be off-site if they do not rely on seawater as is the case for mussels); and
- Processing facilities.

The capacity of existing quays is deemed sufficient to accommodate a moderate expansion of the aquaculture industry.

Detailed (design) information on (new) land-based facilities, as would be required for the authorisation of such facilities in terms of NEMA and the ICMA, cannot be provided as part of this study. As such, no land-based facilities that require Environmental Authorisation (EA) are included in this assessment, and obtaining authorisation will be the responsibility of individual operators.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 983, 984 and 985 of 2014, <i>as amended in GN 327, 325 and 324 of 2017</i>	Description of project activity
<p>GN R.983 Activity 7: The development and related operation of facilities, infrastructure or structures for aquaculture of sea-based cage culture of finfish, crustaceans, reptiles, amphibians, molluscs, echinoderms and aquatic plants where the facility, infrastructure or structure will have a production output exceeding 50 000 kg per annum (wet weight).</p>	<p>The ADZ aims to establish new facilities, infrastructure or structures in Saldanha Bay for sea-based cultivation, primarily of molluscs (e.g. mussels, oysters), seaweeds and finfish. The ADZ area is projected to potentially produce up to:</p> <ul style="list-style-type: none"> - 27 597 ungraded / 15 203 graded tpa of bivalves; and - 5 000 tpa of finfish. <p>Anticipated production will thus exceed the threshold of 50 tpa at full operation of the ADZ.</p> <p>Anticipated ADZ facilities, infrastructure or structures include:</p> <ul style="list-style-type: none"> - Structures such as mussel rafts, longlines, fish cages and barrels, moored to the sea bed and held afloat by buoys, in four designated ADZ precincts within Saldanha Bay; and - Navigational buoys and lights to demarcate the position of aquaculture areas / infrastructure. <p>It is expected that operators will initially make use of existing land-based facilities and vessel (off-) loading and mooring structures.</p>
<p>GN R.983 Activity 17: Development (i) in the sea; in respect of (f) infrastructure <u>or structures</u> with a development footprint of 50 square metres or more.</p> <p><i>Note: This is now sub-activity (e) in terms of GN</i></p>	<p>The aquaculture structures (such as mussel rafts, longlines, fish cages and barrels) will be moored to the sea bed. The combined footprint of moorings for each structure is well below 50 m². The combined footprint of all moorings for all structures within the ADZ may, however, exceed</p>

BASIC ASSESSMENT REPORT

<p><u>327 of 2017.</u></p>	<p>50 m².</p>
<p>GN R.983 Activity 42: The expansion and related operation of facilities, infrastructure or structures for aquaculture of sea-based cage culture of finfish, crustaceans, reptiles, amphibians, molluscs, echinoderms and aquatic plants where the annual production output of such facility, infrastructure or structures will be increased by 50 000 kg (wet weight) or more.</p>	<p>A total of 468 ha are currently allocated for aquaculture in Saldanha Bay; of these 152 ha are operational. Existing operators also manage a number of on-shore processing facilities. The existing aquaculture areas will be located in and incorporated into the future ADZ areas.</p> <p>The proposed ADZ will increase the total allocated aquaculture area by 1 404 ha to 1 872 ha in future. Annual production is expected to increase by more than 50 000 kg (wet weight) per annum at full operation of the ADZ.</p> <p>Spatially, the ADZ may thus be considered an expansion of existing aquaculture facilities, infrastructure or structures. However, the new farms in the ADZ may also be considered new (though similar) structures, which may be operated by a range of (existing and/or new) operators, in which case it is understood that GN R.983 Activity 7 applies.</p>
<p>GN R.983 Activity 54: Expansion of facilities (i) in the sea in respect of (f) infrastructure <u>or structures</u> where the development footprint is expanded by 50 square metres or more.</p> <p><u>Note: This is now sub-activity (e) in terms of GN 327 of 2017.</u></p>	<p>The aquaculture structures (such as rafts, longlines and fish cages) will be moored to the sea bed. The combined footprint of moorings for each structure is well below 50 m². The combined footprint of all moorings for all structures within the ADZ may, however, exceed 50 m².</p> <p>As aquaculture structures are already moored in Saldanha Bay, the ADZ may thus spatially be considered an expansion of existing infrastructure in the sea by more than 50 m².</p> <p>However, the new farms in the ADZ may also be considered new (though similar) structures, which may be operated by a range of (existing and/or new) operators, in which case it is understood that GN R.983 Activity 42 applies.</p>

1. FEASIBLE AND REASONABLE ALTERNATIVES

“**alternatives**”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific

BASIC ASSESSMENT REPORT

instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
The project relates to the establishment of a marine ADZ in Saldanha Bay. No alternative sites were investigated.	See Section 2 b) regarding coordinates	
<p><i><u>The motivation for considering Saldanha Bay as the only project location is provided below.</u></i></p> <p><i><u>Unlike other countries that have built significant aquaculture sectors, South Africa has a very exposed coastline and a limited number of sheltered bays that allow for sea based aquaculture. Saldanha Bay has been producing shellfish since the 1980s and large portions of the bay were, and continue to be, zoned for aquaculture.</u></i></p> <p><u>Mussel farming</u></p> <p><i><u>Saldanha Bay is a prime existing site for aquaculture due to the sheltered conditions and high primary productivity. The area is responsible for around 50% of current marine aquaculture production in South Africa.</u></i></p> <p><i><u>Since the launch of Operation Phakisa Oceans Economy in October 2014, the number of registered Operation Phakisa aquaculture projects in Saldanha Bay has increased from four to fifteen due to the economic potential of salmon, oysters and mussels culture and progress achieved in unlocking water space and leases for aquaculture through Operation Phakisa.</u></i></p> <p><i><u>No projects have registered or expressed interest in equivalent new seawater lease areas that would require an Environmental Authorisation in other parts of South Africa, and from this perspective there is no (demand for) alternative sites.</u></i></p> <p><i><u>A feasibility study conducted for the DAFF in 2016 identified Saldanha Bay as the primary site available for mussel culture in South Africa. The study noted that "In southern Africa, Mediterranean mussels are distributed along the entire west coast (Western Cape and Northern Cape coastlines) and the southern coast (Western Cape and Eastern Cape coastlines) up to East London (Viladomiu, 2004). However, mussel culture is reliant on sheltered areas that are not exposed to high-energy wave patterns. Furthermore, production is only feasible where growth is rapid due to naturally-occurring and dense nutrient concentrations. For these reasons, the areas suitable for mussel aquaculture are limited in South Africa, despite the distribution of the Mediterranean mussel along the west and southern coastlines. Saldanha Bay is the optimal site, as it provides both shelter and nutrient-rich waters (Figure 1) (DAFF, 2017)".</u></i></p>		

BASIC ASSESSMENT REPORT

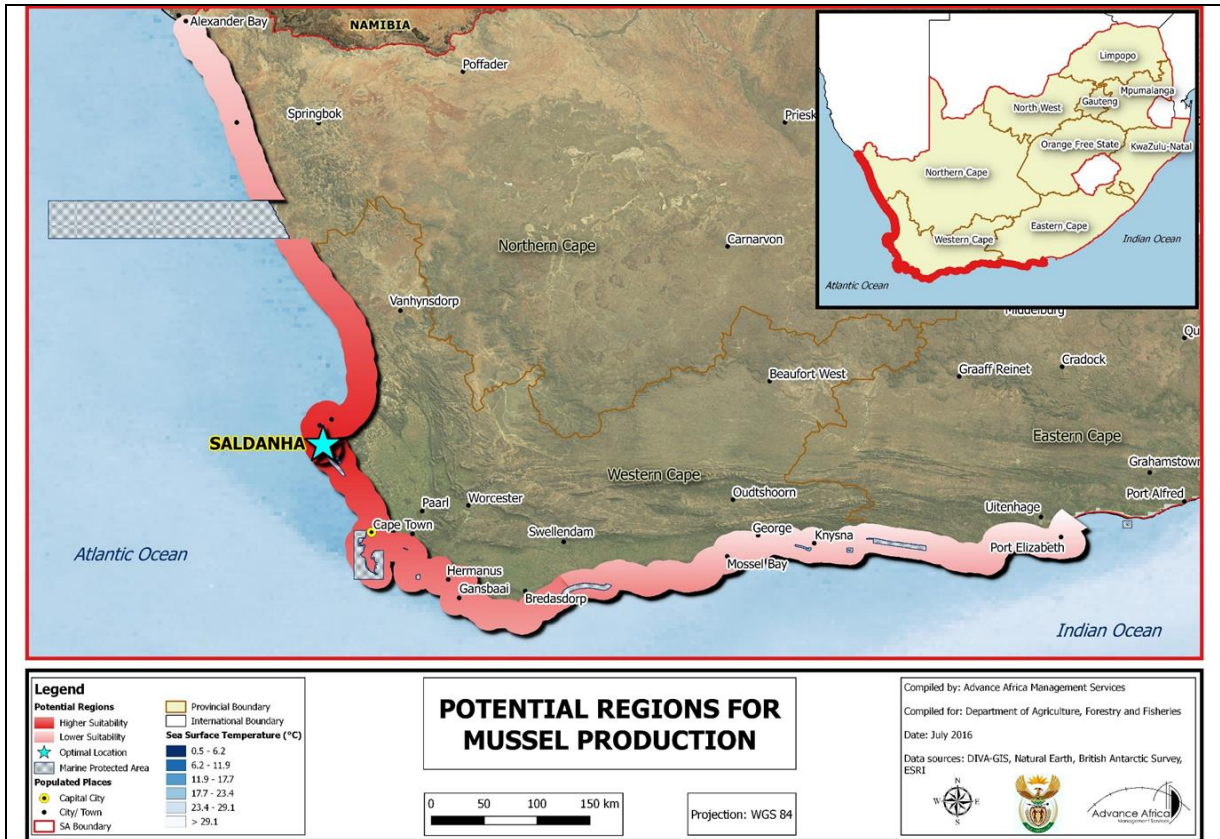


Figure 1: Suitable areas for mussel culture in South Africa

Oyster farming

A feasibility study conducted for the DAFF in 2016 identified Saldanha Bay and Algoa Bay as potentially suitable for sea-based oyster production, and the estuaries between the two areas as suitable for nursery production. Although Algoa Bay does produce oysters and is suitable, the study notes that “Saldanha Bay is the optimal location for grow-out of oysters in South Africa. It is situated adjacent to a rich upwelling system with high phytoplankton abundance (Olivier et al., 2013). Growth rates and meat quality are higher in Saldanha Bay than other oyster production areas such as Algoa Bay and Kleinsee on the west coast (Pieterse et al., 2012). These areas are less optimal in that growth and meat quality are lower but are still suitable for oyster culture in South Africa (Figure 2). On a broader level, the west coast offers more favourable conditions for oyster culture than the east coast (DAFF 2017)”.

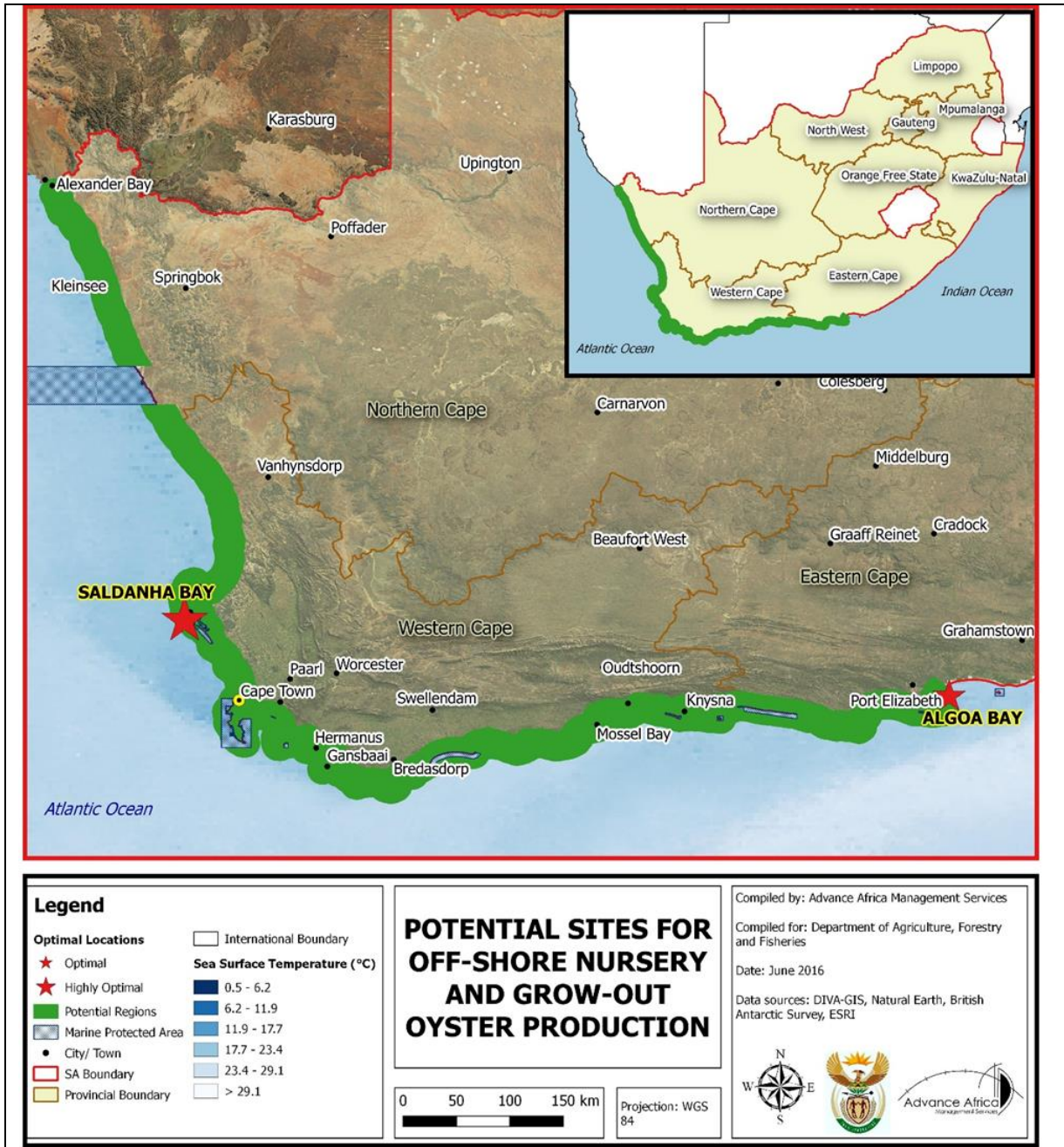


Figure 2: Suitable sites for oyster culture in South Africa

Finfish farming

A financial feasibility study commissioned by the DAFF in 2016 identified Saldanha Bay and Gansbaai as the only two areas suitable for cage-based salmon production in South Africa (Figure 3) due to environmental conditions, specifically temperature and sea conditions.

However, the national Strategic Environmental Assessment (SEA) for finfish culture (Clarke et al 2012) noted that Gansbaai was generally too exposed, and a previous pilot salmon cage trial in Gansbaai was not successful. The experimental salmon and trout cage farming currently underway in Saldanha Bay, on the other hand, has yielded promising results to date, with industry indicating their interest in further investment and commercialisation of the operation.

The west coast north of Saldanha Bay does not provide appropriate cage culture opportunities due to the frequency and intensity of Harmful Algal Blooms in the area and the exposed shoreline. The south and east coasts of South Africa are not suitable for salmon production due to the warmer sea temperatures, which exceed 20°C.

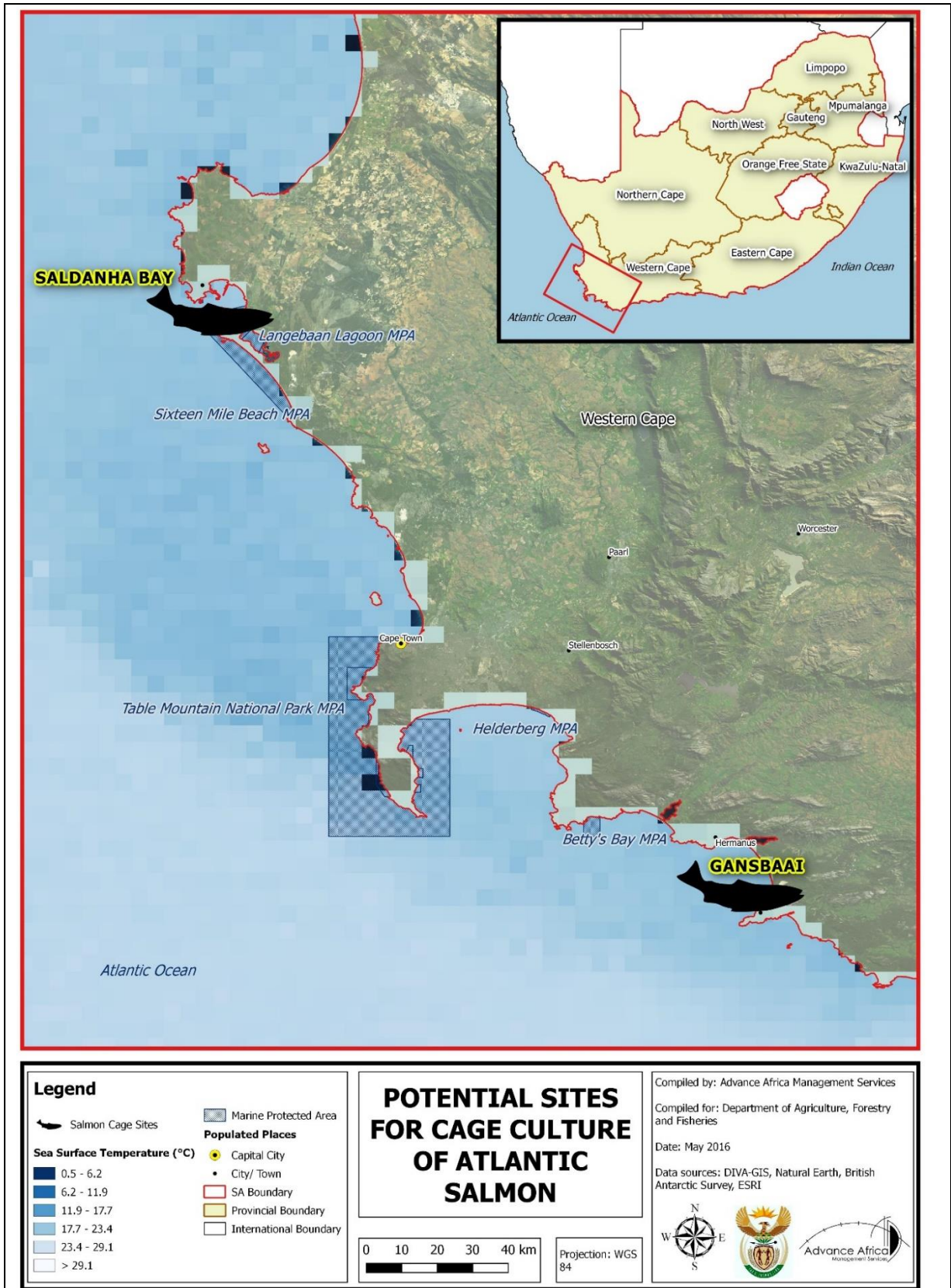


Figure 3: Sites potentially suitable for cage based salmon farming in South Africa

BASIC ASSESSMENT REPORT

Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
n/a		
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)
n/a		

In the case of linear activities:

Alternative:	Latitude (S):	Longitude (E):
Alternative S1 (preferred)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S2 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S3 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
<p>This alternative is referred to as the "Full Big Bay South Alternative".</p> <p>Five ADZ precincts in Saldanha Bay:</p> <ul style="list-style-type: none"> • Small Bay (<i>identical for both alternatives</i>): This precinct encompasses the existing aquaculture allocations in Small Bay. • Big Bay North (<i>identical for both alternatives</i>): This precinct extends from the 5m contour towards the Port jetty up to the proposed Port of Saldanha LNG and LPG developments, and south to the Mykonos harbour entrance channel. • Big Bay South (<i>this precinct is larger for Alternative 1, extending to the 5 m contour</i>): This precinct extends from the Mykonos harbour entrance channel towards the 	Small Bay:	

BASIC ASSESSMENT REPORT

Langebaan Lagoon MPA, and from the 5 m depth contour towards the Donkergat Peninsula.

- Outer Bay North (*identical for both alternatives*): This precinct extends from the Marcus Island causeway to the Malgas Island Marine Protected Area (MPA) and from the 10 m depth contour to the 30 m depth contour north of the Port entrance channel.
- Outer Bay South (*identical for both alternatives*): This precinct extends from the Donkergat Peninsula to the Jutten Island MPA and from the 10 m depth contour towards the Port entrance channel.

See map in Appendix A.

Point	Lat S	Long E
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'

Big Bay North:

Point	Lat S	Long E
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'

Big Bay South (**Alternative 1**):

Point	Lat S	Long E
X	33° 3.470'	18° 0
Y	33° 3.072'	18° 2.278'
Z	33° 3.825'	18° 2.193'
AA	33° 4.270'	18° 0.090'
AB	33° 4.200'	18° 0

Outer Bay North:

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'

Outer Bay South:

BASIC ASSESSMENT REPORT

	Point	Lat S	Long E																								
	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'																								
Alternative 2																											
Description	Lat (DDMMSS)	Long (DDMMSS)																									
<p>This alternative is referred to as the “Reduced Big Bay South Alternative”.</p> <p>Five ADZ precincts in Saldanha Bay:</p> <ul style="list-style-type: none"> • Small Bay (<i>identical for both alternatives, as described above</i>). • Big Bay North (<i>identical for both alternatives, as described above</i>). • Big Bay South (<i>this precinct is smaller for Alternative 2, extending to the 10 m contour</i>): This precinct extends from the Mykonos harbour entrance channel towards the Langebaan Lagoon MPA, and from the 10 m depth contour towards the Donkergat Peninsula. • Outer Bay North (<i>identical for both alternatives, as described above</i>). • Outer Bay South (<i>identical for both alternatives, as described above</i>). 	<p>Coordinates are identical to those provided for Alternative 1, except:</p> <p>Big Bay South (Alternative 2):</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 15%;">Point</th> <th style="width: 25%;">Lat S</th> <th style="width: 25%;">Long E</th> <th style="width: 35%;"></th> </tr> </thead> <tbody> <tr> <td>X</td> <td>33° 3.470'</td> <td>18°</td> <td>0</td> </tr> <tr> <td>Y1</td> <td>33° 3.212'</td> <td>18°</td> <td>1.345'</td> </tr> <tr> <td>Z1</td> <td>33° 4.037'</td> <td>18°</td> <td>1.193'</td> </tr> <tr> <td>AA1</td> <td>33° 4.170'</td> <td>18°</td> <td>0.563'</td> </tr> <tr> <td>AB1</td> <td>33° 3.950'</td> <td>18°</td> <td>0</td> </tr> </tbody> </table>			Point	Lat S	Long E		X	33° 3.470'	18°	0	Y1	33° 3.212'	18°	1.345'	Z1	33° 4.037'	18°	1.193'	AA1	33° 4.170'	18°	0.563'	AB1	33° 3.950'	18°	0
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AB1	33° 3.950'	18°	0																								
Alternative 3																											
Description	Lat (DDMMSS)	Long (DDMMSS)																									
n/a																											

c) Technology alternatives

Alternative 1 (preferred alternative)
<p>A range of different aquaculture methods are proposed for the ADZ, such as cultivation of bivalves from rafts and longlines. The preferred culture method in different ADZ areas is shown in Figure 2 (also see Appendix A). Individual operators will decide on the preferred aquaculture method employed in any one area, which will depend on the environmental conditions in that area and the species farmed.</p>
Alternative 2
n/a
Alternative 3
n/a

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)
n/a
Alternative 2
n/a
Alternative 3
n/a

e) No-go alternative

The No-Go alternative implies that existing aquaculture production in Saldanha Bay will continue as long as lease agreements / authorisations are valid (and aquaculture remains viable).

Management measures recommended as part of the ADZ development would, however, not become binding on existing aquaculture operations.

Paragraphs 3 – 13 below should be completed for each alternative.

2. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:		Size of the activity:
Alternative A1	Total ADZ	1 872 ha
	New aquaculture areas	1 404 ha
Alternative A2 (if any)	Total ADZ	1 629 ha
	New aquaculture areas	1 157 ha
Alternative A3 (if any)		ha

or, for linear activities:

Alternative:	Length of the activity:
Alternative A1 (preferred activity alternative)	m
Alternative A2 (if any)	m
Alternative A3 (if any)	m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	Size of the site/servitude:
Alternative A1 (preferred activity alternative)	Saldanha Bay measures approximately 8 000 ha
Alternative A2 (if any)	
Alternative A3 (if any)	m ²

3. SITE ACCESS

Does ready access to the site exist?

YES	NO
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

n/a

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

4. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s);
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

5. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

6. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

DAFF's project motivation is provided below:

Operation Phakisa

In 2013 Cabinet commissioned a study of the economic potential of South Africa's oceans, which found that in 2010 the South African Oceans Economy contributed around R54 billion to GDP and accounted for some 316 000 jobs. The study concluded that the South African Oceans Economy could increase its GDP contribution to between R129 and R177 billion by 2033 and create 800 000 to 1 million jobs through interventions. Marine transport and manufacturing, tourism, offshore oil and gas and aquaculture were identified as the sectors with the highest growth potential.

Feasibility of Aquaculture

The success of an aquaculture venture is largely dependent on demand for its products and available markets. Local demand for bivalves and salmon is not currently met by local production: for example, South Africa imports some 5 000 tons of salmon that could be substituted with local produce.

BASIC ASSESSMENT REPORT

Oysters produced in South Africa are of high quality and peak production occurs in winter when the northern hemisphere experiences peak summer oyster mortalities, providing South Africa with a local and international advantage.

Sea-based aquaculture is not as capital expensive as land-based aquaculture and has a significantly faster return on investment, and thus provides an opportunity for the development of Small Medium and Micro Enterprises (SMME's) within the sector and in downstream services. Sea-based mussel and oyster farms are considered to become financially viable at production above 100 tons per annum, and reach optimal viability above 500 and 300 tons per annum, respectively. Sea-based finfish farms are considered to become financially viable at production of 1 000 tons per annum. These financially viable production volumes are lower than those required for land-based culture.

Opportunities arising from Aquaculture

With the steady decline in fish stocks around the world, coastal jobs in the fishing sector are being lost and alternative employment opportunities such as aquaculture are becoming increasingly important. During the Operation Phakisa Lab for the Oceans Economy in July 2014, the Aquaculture Lab aspired to grow sector revenue from R0.67 billion to R3 billion, production by 20 000 tons and jobs from 2 227 to 15 000 by 2019, and ensure inclusive growth of the sector.

Realising the full potential of the aquaculture industry in Saldanha Bay can contribute towards alleviating poverty and enhancing food security. Bivalve culture employs a high percentage of relatively unskilled labour and can therefore provide alternative employment in a community such as Saldanha that experiences rising unemployment rates, in addition to upskilling and transferring skills to people in the community.

Motivation for an ADZ approach

Key challenges identified in realising the full potential of aquaculture in Saldanha Bay are the lack of an enabling regulatory environment, short duration of leases and relatively high start-up costs for operators, including the need to conduct EIAs. The Operation Phakisa Aquaculture Lab has prioritised this matter in order to attract investment into aquaculture in Saldanha Bay.

Existing projects are not able to expand and new projects are not able to produce more than 50 tons per annum without Environmental Authorisation. The undertaking of a bay-wide EIA for aquaculture in Saldanha Bay is considered critical to create an enabling environment for aquaculture in Saldanha Bay and to address cumulative impacts of aquaculture on the bay. It also reduces the risk and cost for individual operators and contributes to the provision of long-term leases in the bay.

An ADZ approach is further considered critical to achieve an integrated, holistic and sustainable management of aquaculture in Saldanha Bay. Sustainable aquaculture is achieved when the environmental, social and economic aspects of a project are adequately addressed and integrated.

Aquaculture requires good water quality and any negative impacts on the environment of Saldanha Bay will directly affect the growth of produce and underlying viability of the operations. Water quality therefore needs to be carefully monitored and managed. In Saldanha Bay, DAFF is conducting ongoing environmental monitoring to assess the impact of the mussel and oyster rafts on the seabed and the food safety of the mussels and oysters. Mussels are extensively used as biological indicators of pollution, as they accumulate contaminants in their tissue.

Shellfish and seaweed culture do not require the addition of feed for production, but can lead to depletion of natural nutrients and primary production. Finfish culture requires the use of feed which, if managed incorrectly, can cause eutrophication of a water body and algal blooms, with associated negative impacts on the cage culture of finfish. This can be mitigated by selecting sites with appropriate flushing and depth and applying the principle of Integrated Multi-Trophic Aquaculture (IMTA), which aims to recapture portions of nutrient waste lost from fish species as nutritional inputs for shellfish or seaweed culture. The simultaneous culture of various species in the bay, specifically finfish, shellfish and seaweed, can thus positively impact one another and reduce environmental impacts. The DAFF therefore supports the use of multiple species in the Saldanha Bay, which can be more effectively achieved and managed in an ADZ. The DAFF also has a vested interest in ensuring that adequate monitoring is implemented on a continuous basis to ensure that:

- a) External pollution does not negatively impact the aquaculture within the bay;
- b) The carrying capacity of the bay as a whole is not exceeded and that different species cultures do not negatively impact each other;

BASIC ASSESSMENT REPORT

- c) The community in the area receives the maximum socio-economic benefit of the development; and
- d) The regulatory environment creates an enabling environment for current and new investment into aquaculture in the bay.

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
Saldanha Bay currently supports a number of aquaculture operations, and Transnet National Ports Authority (TNPA) has allocated additional areas for aquaculture that are not yet farmed, but will be integrated into the ADZ. Research has determined that the carrying capacity of Saldanha Bay can support additional aquaculture production (see Section A 1 a)).			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
<p>The Western Cape PSDF (WCPSDF) (2014) identifies economic growth as a primary objective (Page 59). To this end, the PSDF focuses on opening-up opportunities in the Provincial space-economy, using public investment strategically to leverage private and community investments in urban and rural markets. A component of this strategy includes investing in new regional economic infrastructure to unlock the potential of the emerging Saldanha Bay/Vredenburg regional economic nodes (Page 59).</p> <p>In facilitating the establishment of an ADZ, the DAFF aims to encourage investment, create incentives for industry development, provide marine aquaculture services, manage the risks associated with aquaculture and provide skills development and employment for coastal communities.</p>			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
N/A as the proposed ADZ is sea-based. ADZ areas were identified in consultation with Transnet, and areas required for existing and likely future operation of / activities at the Port of Saldanha are thus already excluded.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
<p>The Saldanha Bay Local Municipality IDP (2015-2016) includes the objective of growing and developing four labour intensive sectors in Saldanha, including aquaculture (Page 87).</p> <p>The Saldanha Bay SDF (February 2011) states that due to low rainfall and inadequate water resources, the potential for intensive agricultural production in Saldanha Bay is limited. The area's livestock farming potential is also low due to the poor carrying capacity of the indigenous vegetation. The SDF therefore promotes the growth of alternative agricultural sectors such as agro-industry and aquaculture industry (Page 148).</p>			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
The proposed bulk power infrastructure falls within the boundaries of the Port of Saldanha, administered by TNPA. TNPA has already allocated aquaculture leases in the Bay, which will be integrated into the ADZ.			

BASIC ASSESSMENT REPORT

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)

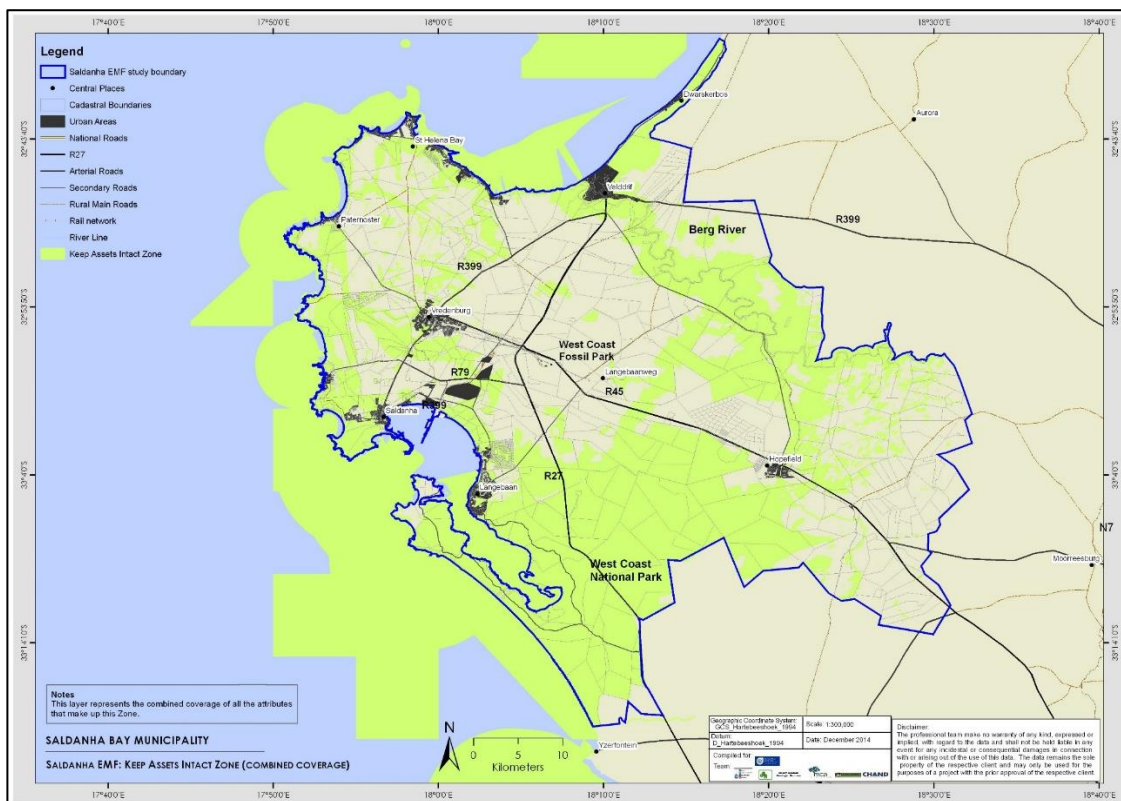
YES	NO
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Please explain

An EMF has not yet been formally adopted for the Saldanha Bay Local Municipality.

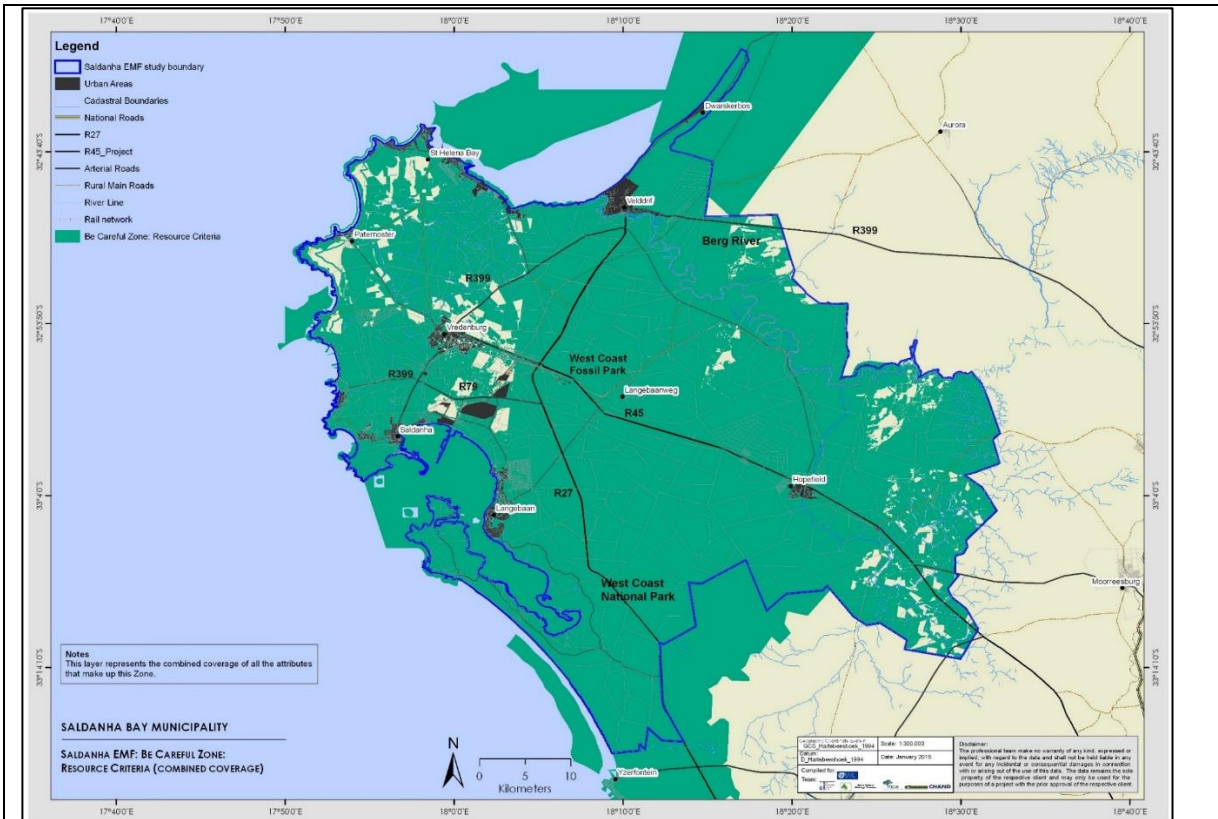
In the draft EMF (dated February 2013), *Small Bay, Big Bay and Outer Bay did not* fall within the “Zone 1 - Keep Assets Intact”, where aquaculture is listed as an *activity that would generally be deemed unacceptable*. Big Bay and Outer Bay *did* form part of “Zone 2 – Be Careful” identified in the *draft* EMF, where aquaculture is listed as an *activity that could be considered for public interest reasons but are likely to have significant negative impacts (scale dependent)* in Zone 2.

In the final EMF (dated February 2015), Outer Bay falls both within “Zone 1 - Keep Assets Intact”, on the basis of the Endangered benthic ecosystem status of that area, and “Zone 2 – Develop with Care”. Small Bay and Big Bay also both fall within Zone 2 (as does most of the region).



Saldanha Bay EMF – Zone 1: Keep Assets Intact

BASIC ASSESSMENT REPORT



Saldanha Bay EMF – Zone 2: Develop with Care (Valued Resources)

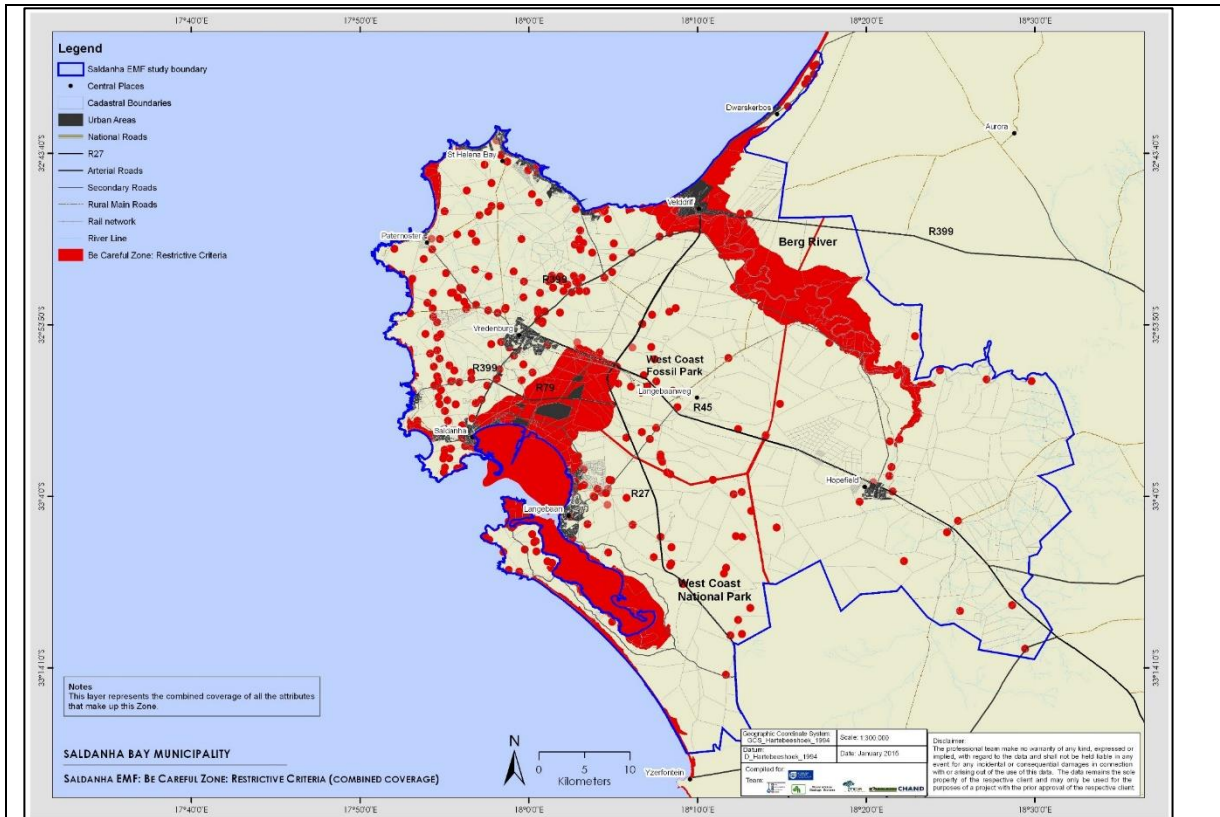
Aquaculture is listed as an activity that would generally be deemed unacceptable in Zone 1 and an activity that is likely to have significant negative impacts (scale dependent) in Zone 2.

Nevertheless, Small Bay and “Big Bay” (which in the EMF includes both Big Bay and Outer Bay as per the terminology used in this BAR) are considered ‘irreplaceable’ for marine aquaculture production, as South Africa’s entire mussel production, as a large percentage of oyster production, occurs within Saldanha Bay. Marine aquaculture projects and associated job creation are identified as an opportunity for benefit in the EMF.

While no unintended introduction of, or increase in, alien invasive organisms is identified as a desired outcome in “Big Bay”, this specifically excludes (i.e. does not refer to) approved marine-based aquaculture. Potential mitigation measures listed in the EMF for aquaculture in Small Bay and “Big Bay” include 1) rigorous management and monitoring of pollution risks by, e.g. rotating of rafts and 2) implementation of measures to minimise escape of non-indigenous species.

Small Bay and Big Bay (as per BAR terminology) also fall within “Zone 3 - Be Careful: Restrictive Criteria”, where aquaculture is identified as an activity that could be considered only in existing transformed areas (note that it is more difficult to define transformed areas in a marine context as opposed to a terrestrial context).

BASIC ASSESSMENT REPORT



Saldanha Bay EMF – Zone 3: Develop with Care (Restrictive Criteria)

The implications of the EMF for aquaculture in Saldanha Bay are thus not entirely clear and partly contradictory. It appears clear that the current presence and current and future importance and potential of aquaculture in Saldanha Bay is provided for in the EMF. Aquaculture must be well managed, and greatest care must be applied to activities in Outer Bay.

<p>(f) Any other Plans (e.g. Guide Plan)</p>	YES	NO	Please explain
<p>No other plans of key relevance were identified.</p>			
<p>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</p>	YES	NO	Please explain
<p>The Saldanha Bay SDF (February 2011) promotes the expansion of agricultural sectors such as agro-industry and aquaculture industry (Page 148).</p>			
<p>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	YES	NO	Please explain
<p>Saldanha Bay Municipality experiences high unemployment and poverty, hence a high need for employment and income generation. Economic development has thus been identified as a need and objective for the Saldanha Bay Local Municipality. The project aims to create incentives for the expansion of the aquaculture industry in Saldanha Bay and provide employment and skills development for coastal communities.</p>			

BASIC ASSESSMENT REPORT

<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES	NO	Please explain
<p>The proposed ADZ will not require additional services from the municipality and will not compromise municipal infrastructure planning. No electricity will be required for the proposed ADZ. Expansion of aquaculture in Saldanha Bay may, however, at some stage require improved management of or additional resources for the mooring, landing and storing of vessels and produce. Similarly, some organic and inorganic waste from aquaculture may have to be disposed of at landfills.</p>			
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</p>	YES	NO	Please explain ✓
<p>The proposed ADZ activities considered as part of this scope will not require any additional infrastructure from the municipality and not compromise municipal infrastructure planning. No electricity will be required.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO	Please explain
<p>The ADZ is proposed within the framework of Operation Phakisa Oceans Economy, a presidential initiative launched in 2014 to unlock the economic potential of South Africa's oceans through innovative programmes that bring together many stakeholders to plan major economic projects. Aquaculture was identified as a key priority of Operation Phakisa, as it is considered a sustainable strategy to contribute to job creation and South African Gross Domestic Product.</p> <p>The expansion of aquaculture is also promoted in terms of other national policy documents, such as the South African Government's Nine-Point Plan announced at the 2015 State of the Nation Address and the Agricultural Policy Action Plan (APAP) 2015 – 2019.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	YES	NO	Please explain
<p>Saldanha Bay currently supports a number of viable aquaculture operations, and TNPA has allocated additional areas for aquaculture that are not yet farmed, but will be integrated into the ADZ. DAFF has determined that the carrying capacity of Saldanha Bay can support additional aquaculture production. Due to the shelter afforded by Saldanha Bay, the Bay is one of very few suitable coastal environments in South Africa that can support marine aquaculture.</p> <p>Portions of Saldanha Bay are also utilised by other stakeholders for a range of uses, including operations of the Port of Saldanha and associated industrial activities, water sports (sailing, paddling, kayaking, diving) and associated businesses and tourism facilities, military activities, commercial fishing vessels and Marine Protected Areas.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	YES	NO	Please explain
<p>According to NEMA, the "best practicable environmental option" means the option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term. In determining the best practicable environmental option, adequate consideration must also be given to opportunity costs.</p>			

BASIC ASSESSMENT REPORT

<p>Saldanha Bay currently supports a number of viable aquaculture operations. Research has determined that the Bay can support additional production, and in principle aquaculture is thus deemed to be a viable use of Saldanha Bay.</p> <p>As noted in Item 8 above, there are also a number of other users in Saldanha Bay, and aquaculture development may not constitute the best practicable environmental option in all portions of the bay due to an overlap of uses. The implementation of proposed mitigation measures is expected to mitigate impacts on other users to acceptable levels. This is discussed in more detail in Section 2.3 of the impact assessment presented in Appendix F of the BAR.</p>			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>The impact assessment has indicated that the project may have significant benefits in terms of investment and employment, as well as impacts in terms of marine ecology and overlay with other users of the Bay. The assessment has indicated that the implementation of mitigation measures may reduce the negative impacts to acceptable levels.</p> <p>The impact assessment is provided in Section D of this report and discussed in more detail in Section 2.3 of the impact assessment presented in Appendix F of the BAR.</p>			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>N/A as Saldanha Bay already supports a number of aquaculture operations. These will be incorporated into the ADZ. Management measures stipulated for the ADZ will also apply to existing operations and improve / formalise certain aspects of current management.</p>			
12. Will any person's rights be negatively affected by the proposed activity/ies?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>Saldanha Bay is administered by TNPA, and potential ADZ areas have been identified in consultation with TNPA to prevent impacts on existing and future Port operations. As noted in Item 8 above, there are also a number of other users in Saldanha Bay, and aquaculture development may affect some of these uses (though not rights). The implementation of proposed mitigation measures is expected to mitigate impacts on other users to acceptable levels. This is discussed in more detail in Section 2.3 of the impact assessment presented in Appendix F of the BAR.</p>			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>N/A as the proposed ADZ is sea-based.</p>			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Please explain
<p>N/A. The ADZ is proposed within the framework of Operation Phakisa.</p>			
15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>The project aims to encourage investor and consumer confidence, create incentives for aquaculture industry development, provide marine aquaculture services, manage the risks associated with aquaculture, and provide skills development and employment for coastal communities.</p> <p>Also refer to the impact assessment provided in Section D and Appendix F of this report.</p>			

BASIC ASSESSMENT REPORT

16. Any other need and desirability considerations related to the proposed activity?	Please explain
N/A	
17. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The National Development Plan aims to eliminate poverty and reduce inequality by 2030 by drawing on the energies of South Africa's people, growing an inclusive economy, building capabilities, enhancing the capacity of the state and promoting leadership and partnerships throughout society (Page 14).</p> <p>According to the National Development Plan, South Africa has to do more to enhance competitiveness in areas of comparative advantage that can draw more people into work. By improving the skills base and increasing competitiveness, the economy can diversify, offsetting the distorting effects of elevated commodity prices on the rand (Page 21).</p> <p>The project forms part of a presidential initiative to unlock the potential of the oceans to create employment and income in coastal communities, and specifically aims to create incentives for development of the aquaculture industry in Saldanha Bay, which has historically already provided skills development and employment in the area. As such, the project forms part of a government initiative and aims to further the objectives of the National Development Plan in terms of economic development.</p>	
18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.	
<p>The general objectives of IEM as set out in Section 23 (2) of NEMA include measures taken to:</p> <ul style="list-style-type: none"> • Promote the integration of the principles of environmental management into the making of all decisions which may have a significant effect on the environment; • Identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximising benefits; • Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them; • Ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment; • Ensure the consideration of environmental attributes in management and decision making which may have a significant effect on the environment; and • Identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management. <p>These objectives are taken into account in the BA process. Potential impacts have been identified, measures for mitigation are presented and a public participation process is conducted as part of the BA process. The findings are presented in this BAR and are compliant with the objectives as set out in Section 23 of NEMA.</p>	

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

Environmental and socio-economic factors are considered and weighed up, to ensure that the development is sustainable.

The potential impacts of the development are identified, assessed and evaluated using SRK's standard impact assessment methodology in order to determine the significance of each positive and negative impact. The significance of the impacts is described and assessed in Section D and (in more detail) in Appendix F of the BAR.

Mitigation measures are recommended in the BAR to prevent, minimise (and optimise) impacts and to secure stakeholders' environmental rights. An EMPr has been drafted, to ensure that potential environmental pollution and degradation is minimised, if not prevented.

The needs and interests of stakeholders are taken into account through a thorough public participation process conducted prior to and during the BA process. Opportunities for public participation by all stakeholders are provided for in the BA process.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act 107 of 1998 (NEMA)	NEMA is the key legislation governing environmental management in South Africa. Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities which may not commence without an EA issued by the competent authority, in this case, the Department of Environmental Affairs (DEA).	DEA	1998
NEMA EIA Regulations, 2014 (Government Notice (GN) R982, which came into effect on 8 December 2014), promulgated in terms of NEMA	The EIA Regulations, 2014 govern the process, methodologies and requirements for the undertaking of EIAs in support of applications for EA. The EIA Regulations are accompanied by Listing Notices (LN) 1-3 that list activities that require EA. The Regulations lay out two alternative authorisation processes. SRK has determined that the proposed project triggers activities listed in terms of LN 1 and LN 3 of the EIA Regulations, 2014, requiring a BA.	DEA	2014
Environmental Impact Assessment Guideline for Aquaculture in South Africa	The objective of the guideline is to assist stakeholders in the aquaculture sector in complying	DEA	2013

BASIC ASSESSMENT REPORT

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	with environmental legislation governing the development of aquaculture activities and to provide a basic background to integrated, responsible and sustainable environmental management practices.		
National Environmental Management: Biodiversity Act 10 of 2004 (NEM:BA)	NEM:BA involves the management and conservation of biological diversity as well as the use of indigenous biological resources, including fish and shellfish, sustainably. NEM:BA was consulted as the proposed aquaculture activities include alien or invasive species.	DEA and CapeNature	2004
National Environmental Management: Biodiversity Act 10 of 2004 (NEM:BA): Alien and Invasive Species (AIS) Regulations, 2014	The AIS Regulations in terms of NEM:BA list four categories of invasive species and the control/management of each. Both non-indigenous bivalve species proposed for production, the Pacific Oyster (<i>Crassostrea gigas</i>) and the Mediterranean Mussel (<i>Mytilus galloprovincialis</i>) are listed under Category 2 of the AIS Regulations, requiring a permit for production in terms of NEM:BA. However, these species are exempt from requiring a permit in Saldanha Bay. The two non-indigenous finfish species proposed for production, Atlantic Salmon (<i>Salmo salar</i>) and Rainbow Trout (<i>Oncorhynchus mykiss</i>) are excluded from the AIS Regulations and therefore do not require a permit.	DEA and CapeNature	2014
National Environmental Management: Integrated Coastal Management Act 24 of 2008 (NEM:ICMA)	NEM:ICMA aims to ensure that development and the use of natural resources within coastal waters is socially and economically justifiable and ecologically sustainable.	DEA	2008
National Environmental Management: Protected Areas Act 57 of 2003 (NEM:PAA)	NEM:PAA was enacted to regulate the system of protected areas in South Africa and to provide for their management. Any commercial activity undertaken in a protected area requires the written authorisation of the management authority (in this case SANParks). The proposed ADZ borders on three Marine Protected Areas (MPAs) in Saldanha Bay.	DEA	2003

BASIC ASSESSMENT REPORT

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Heritage Resources Act 25 of 1999 (NHRA)	Section 38 of the NHRA requires that any person who intends to undertake certain categories of development must notify the relevant heritage agencies and furnish details of the location, nature and extent of the proposed development. Section 38 also makes provision for the assessment of heritage impacts as part of an EIA process.	South African Heritage Resources Agency (SAHRA)	1999
Marine Living Resources Act 18 of 1998 (MLRA)	The MLRA governs the sustainable utilisation of marine living resources, including MPAs. The proposed ADZ will border on three MPAs, and therefore may have an impact on the ecology of these MPAs.	DAFF	1998
Integrated Environmental Management Guidelines	These guidelines documents serve as reference for conducting EIA processes in South Africa.	DEA	2014
National Development Plan for 2030	The NDP aims to eliminate poverty and reduce inequality by 2030 by drawing on the energies of South Africa's people, growing an inclusive economy, building capabilities, enhancing the capacity of the state and promoting leadership and partnerships throughout society.	National Planning Commission	
National Aquaculture Policy Framework (NAPF)	One of the objectives of the NAPF is to promote good governance for the aquaculture sector which will enable the industry to develop to its full potential within a supportive regulatory framework. The NAPF cites the lack of 'ready to invest' sites zoned for aquaculture (ADZs) as one of the most significant impediments to rapid growth and investment (Page 30).	DAFF	2013
Western Cape Provincial Spatial Development Framework (March 2014)	The WCPSDF aims to improve economic growth, including investment in regional economic infrastructure to unlock the potential of the emerging Saldanha Bay / Vredenburg regional economic nodes.	Provincial Government of the Western Cape (PGWC)	2014
Saldanha Bay Integrated Development Plan (IDP)	The Saldanha Bay IDP identifies aquaculture as one of four labour intensive sectors which are	Saldanha Bay Municipality	2015

BASIC ASSESSMENT REPORT

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
(2012-2017) Revision 3	expected to experience growth and development.		
Saldanha Bay Spatial Development Framework (February 2011)	The Saldanha Bay SDF states that due to low rainfall, and inadequate water resources, the potential for intensive agricultural production in Saldanha Bay is limited. The area's livestock farming potential is also low due to the poor carrying capacity of the indigenous vegetation. The SDF therefore promotes the growth of agricultural sectors such as the agro-industry and the aquaculture industry.	Saldanha Bay Municipality	2011

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	NO

If YES, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

n/a

Where will the construction solid waste be disposed of (describe)?

n/a

Will the activity produce solid waste during its operational phase?

YES	NO
N/A m ³	

If YES, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

<p>Waste associated with shellfish farming in Saldanha Bay relates primarily to the harvesting and handling of shellfish during harvesting, and is washed directly overboard of the raft or harvesting vessel; this consists primarily of:</p> <ul style="list-style-type: none"> - Fouling organisms; - Broken and undersize mussels; and - Any silt washed off shellfish during harvesting. <p>Waste associated with finfish farming in Saldanha Bay relates primarily to the:</p> <ul style="list-style-type: none"> - Excess feed and faeces expelled by fish; these are discussed in Section D2 of the Project Description provided in Section A 1 a) of the BAR; - Cleaning of fouling organisms from cages and nets; and - Removal of dead fish from cages.

BASIC ASSESSMENT REPORT

It is expected that fish mortality will be low and will be provided to fishmeal plants for processing (as per the specification in the Molapong BAR).

Waste that may be disposed to landfill includes possibly fouling organisms (if nets are cleaned onshore, which is encouraged) and shell grit. Some waste, such as shell grit, could also be used for alternative uses such as driveway gravel, gardening and for chicken farming. These options should be explored prior to making use of landfill facilities.

Waste volumes depend on production volumes as well as rate of fouling, which will vary over time.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

(Limited) Waste generated on land will be disposed at the Saldanha Bay Municipal landfill. SRK is awaiting confirmation from the Municipality.

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

The majority of the waste associated with shellfish farming consists of organic material that will be disposed into Saldanha Bay.

It is expected that (limited) fish mortality will be provided to fishmeal plants for processing (as per the specification in the Molapong BAR).

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	NO
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If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
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If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
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If YES, what estimated quantity will be produced per month?

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	NO
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If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO
-----	----

If YES, provide the particulars of the facility:

Facility name:		
Contact person:		
Postal address:		
Postal code:		
Telephone:	Cell:	
E-mail:	Fax:	

BASIC ASSESSMENT REPORT

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

--

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	NO
YES	NO

If YES, is it controlled by any legislation of any sphere of government?

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

N/A

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	NO
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If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?

YES	NO
YES	NO

If YES, is it controlled by any legislation of any sphere of government?

Describe the noise in terms of type and level:

N/A

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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n/a

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

litres	
YES	NO

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

13. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

Sea-based aquaculture has no specific energy requirements (other than fuel for boats).

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

n/a

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A):

- Paragraphs 1 - 6 below must be completed for each alternative.

- Has a specialist been consulted to assist with the completion of this section?

YES	NO
-----	----

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Western Cape
District Municipality	West Coast District Municipality
Local Municipality	Saldanha Bay Local Municipality
Ward Number(s)	n/a
Farm name and number	Saldanha Bay (sea-based aquaculture) The application does not include land parcels.
Portion number	n/a
SG Code	n/a

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

<p>The municipal zoning scheme is not applicable.</p> <p>Saldanha Bay is utilised in a number of ways, including the Port of Saldanha and associated industrial activities, aquaculture and water sports.</p> <p>Certain areas in the Bay are currently designated for shipping and aquaculture.</p>

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

YES	NO
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BASIC ASSESSMENT REPORT

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 — 1:20	1:20 — 1:15	1:15 — 1:10	1:10 — 1:7,5	1:7,5 — 1:5	Steeper than 1:5
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Alternative S2 (if any):

Flat	1:50 — 1:20	1:20 — 1:15	1:15 — 1:10	1:10 — 1:7,5	1:7,5 — 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 — 1:20	1:20 — 1:15	1:15 — 1:10	1:10 — 1:7,5	1:7,5 — 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline	<input type="checkbox"/>	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	2.6 Plain	<input type="checkbox"/>	2.9 Seafront	<input type="checkbox"/>
2.10 At sea	<input checked="" type="checkbox"/>				

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative S1:		Alternative S2 (if any):		Alternative S3 (if any):	
	YES	NO	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the

BASIC ASSESSMENT REPORT

project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUND COVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld in good condition^E	Natural veld with scattered aliens^E	Natural veld with heavy alien infestation^E	Veld dominated by alien species^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The Langebaan Lagoon is located adjacent, and connected, to Saldanha Bay. The Langebaan Lagoon forms part of the West Coast National Park and is a RAMSAR site. *Key characteristics, notably relating to water quality, are provided below. Additional detail is provided in the Marine Ecology Study (Appendix D2).*

Tides and Currents - Existing knowledge of bay-lagoon dynamics (e.g. Monteiro and Largier) indicates the division into two distinctly different ecosystems (bay and lagoon) and the decoupling of their biogeochemistry. The Saldanha Bay–Langebaan system is divided into two ecologically distinct ecosystems as a result of the interaction between basin geomorphology and the dynamics of the density driven exchange between the bay and the adjacent coastal ocean. The boundary between the two systems is demarcated by the 5m isobaths, as this corresponds to the depth of the top of the thermocline. Consequently, those parts of the system less than 5 m deep (which include Langebaan Lagoon) are not exposed to cold nitrate rich waters. Water exchange between the bay and the lagoon is therefore dominated by active tidal pumping of largely warm oligotrophic surface waters through the narrow channels connecting the two systems.

The tidal currents are generally weak, however strong tidal flows are observed at the entrance to the lagoon, particularly during spring tides. During tidal exchange, it is estimated that approximately half

of the lagoon water passes through the Lagoon entrance channels into Saldanha Bay (Shannon & Stander 1977) and velocities of up to 1.0 m/s are observed in the two channels connecting Big Bay and Langebaan Lagoon (Krug 1999).

Dissolved oxygen - Small Bay experiences regular oxygen deficits during the late summer and winter months, whilst Big Bay experiences less frequent and lower magnitude oxygen deficits (Atkinson et al. 2006). The oxygen deficit in Small Bay is largely attributed to reduced flushing rates (due to the causeway and ore jetty construction) and discharges of organic rich effluents from fish processing factories (Monteiro et al. 1990; Clark et al. 2015).

Dissolved trace metals - For the monitored sites along the shore in Small Bay, the results show that for the 10 years prior to 2011, concentrations of Lead in mussels have consistently been above guideline limits for foodstuff, while Cadmium concentrations frequently, and Zinc concentrations occasionally, exceed these limits. Concentrations of Copper are, however, well below specified levels (Clark et al. 2015). No clear trends over time are evident for any of the trace metals.

In contrast to the nearshore mussels, trace metal concentrations in farmed mussels away from the shore are much lower and mostly meet guideline values for foodstuff for human consumption. This may be linked to higher growth rates of farmed mussels, and the fact that the cultured mussels are feeding on phytoplankton blooms in freshly upwelled water that has only recently been advected into the Bay from outside (Clark et al. 2011).

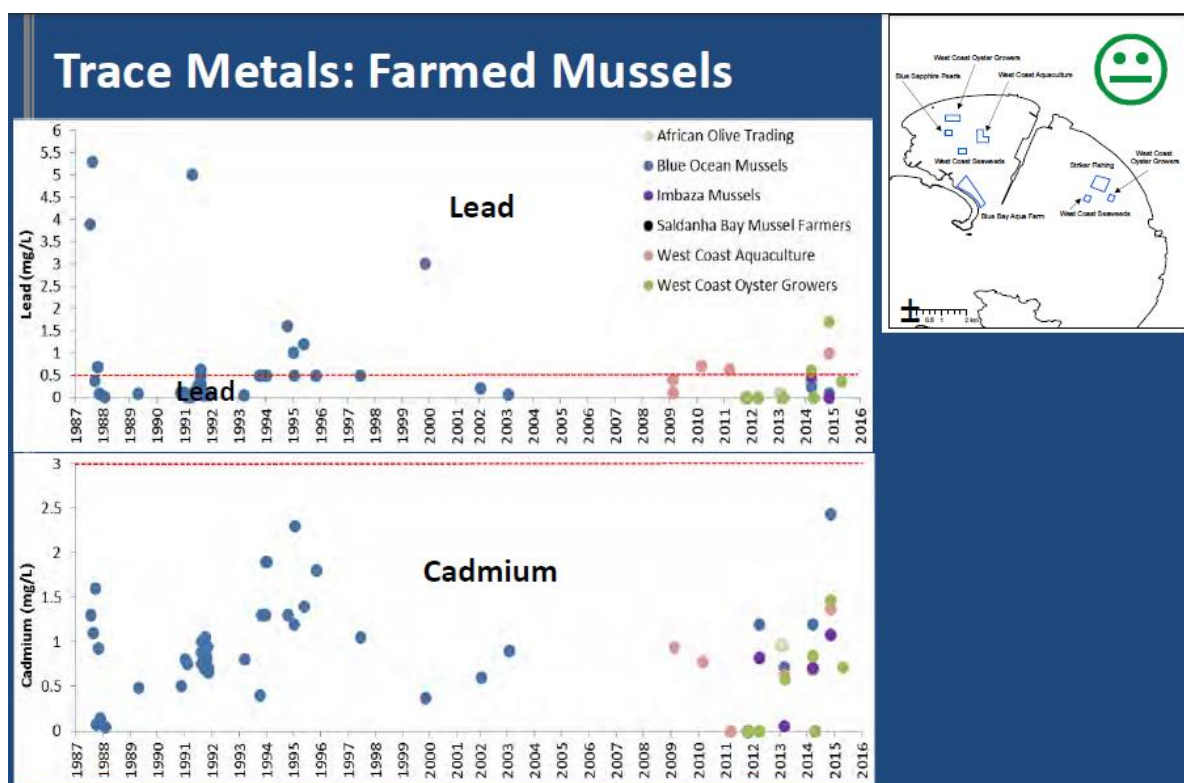


Figure A: Trace metals in farmed mussels

Source: State of the Bay Report 2016 Presentation

Microbial contamination - Clark (2015) reports that regular monitoring of microbiological indicators at 20 stations in the Bay (10 in Small Bay, 5 in Big Bay and 5 in Langebaan Lagoon) indicate that the historical chronic problems with faecal coliform pollution have improved considerably in recent years.

Sediment - The percentage of mud particles increased after the development of the causeway and ore jetty. Mud content has shown a progressive decline since then at most sites monitored, although several deeper and more sheltered sites within Small Bay and Big Bay still have elevated mud fractions (Clark et al. 2015), with the most significantly affected sites being adjacent to the Ore Terminal, in the Yacht Club basin and below the mussel rafts. Higher proportions of mud, relative to sand or gravel, can lead to higher organic loading and trace metal contamination.

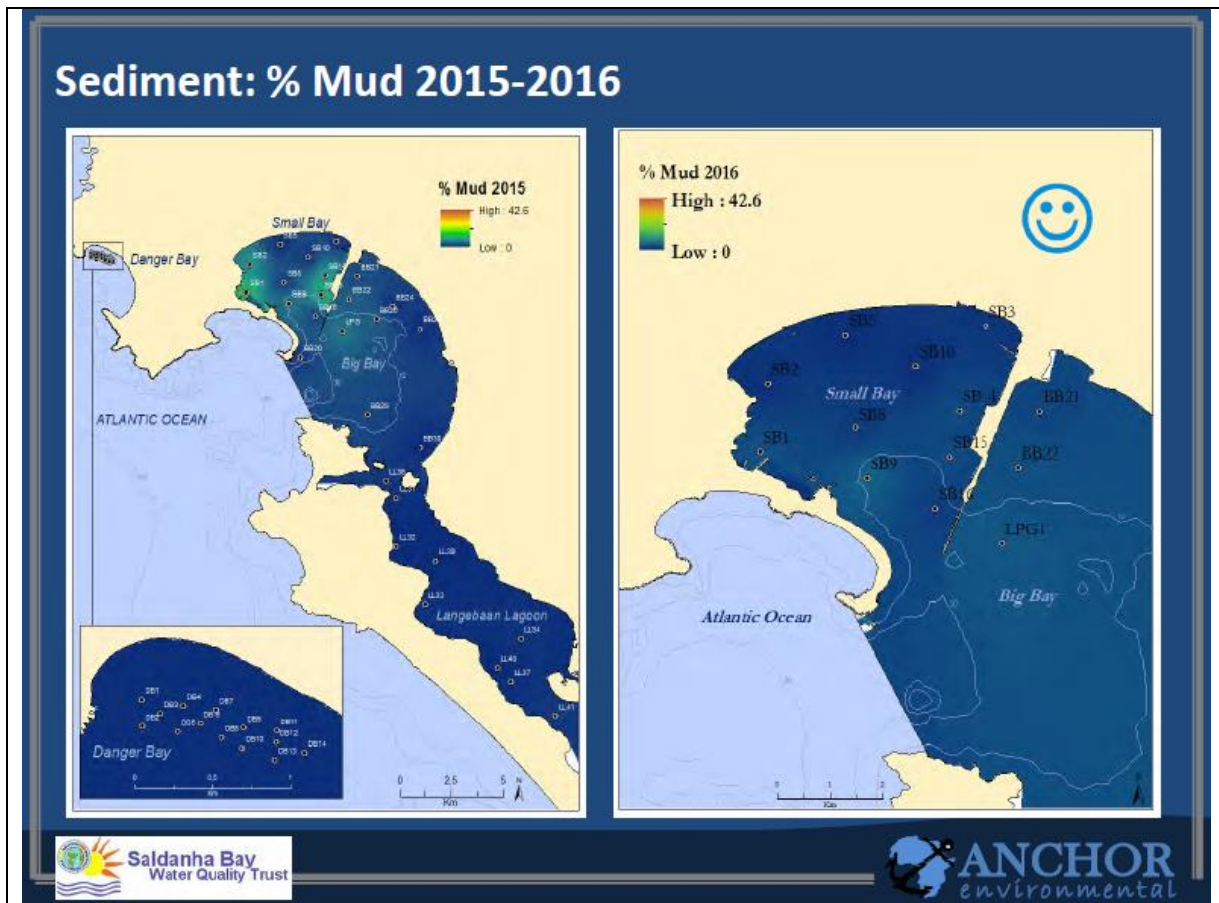


Figure B: Sediment composition

Source: State of the Bay Report 2016 Presentation

Organic Content - Clark et al. (2015) reported an overall decline in Total Organic Carbon (TOC) and Total Organic Nitrogen (TON) levels at most sites despite the slight increases during 2015, except near the Yacht Club basin and the Ore Terminal where elevated levels have persisted in the sediments since 2008. The most likely origin of the TOC and TON is associated with waste discharge from the fish factories and faecal waste from the mussel rafts, sewage effluent and waste water runoff. Accumulation of organic waste, especially in sheltered areas with limited water flushing, can lead to anoxic conditions and can negatively impact the marine environment, as evident from the species composition and abundance of the benthic communities inhabiting the sediments in the affected areas.

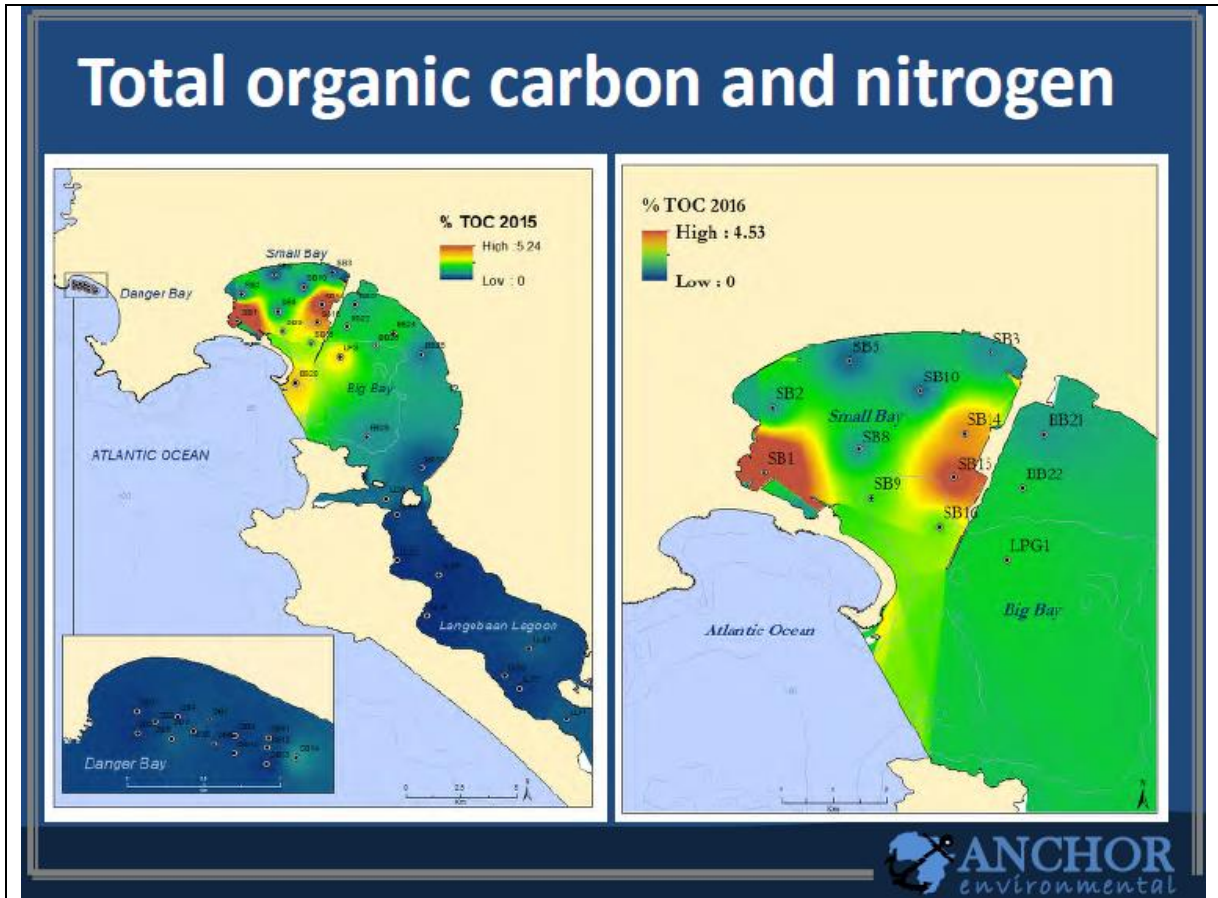


Figure C: Total Organic Carbon

Source: State of the Bay Report 2016 Presentation

Trace metals - *On average, the concentrations of all metals were highest in Small Bay, lower in Big Bay and below detection limits in Langebaan lagoon (Clark et al. 2015). Data collected in 2015 indicated that contaminants have returned to levels well within safety thresholds, as fine sediments along with the associated contaminants released during various dredging events have either been flushed out of the bay or have been reburied. Exceptions to this were observed at a few sites in Small Bay where thresholds were exceeded in 2015. Key areas of concern regarding trace metal pollution include the Yacht Club Basin, where cadmium and copper exceeded recommended thresholds, and adjacent to the Multi-purpose terminal, where levels of cadmium and lead were in excess of internationally accepted guidelines. Recent increases in concentrations of manganese around the ore-terminal have also been noted (Clark et al. 2014, 2015).*

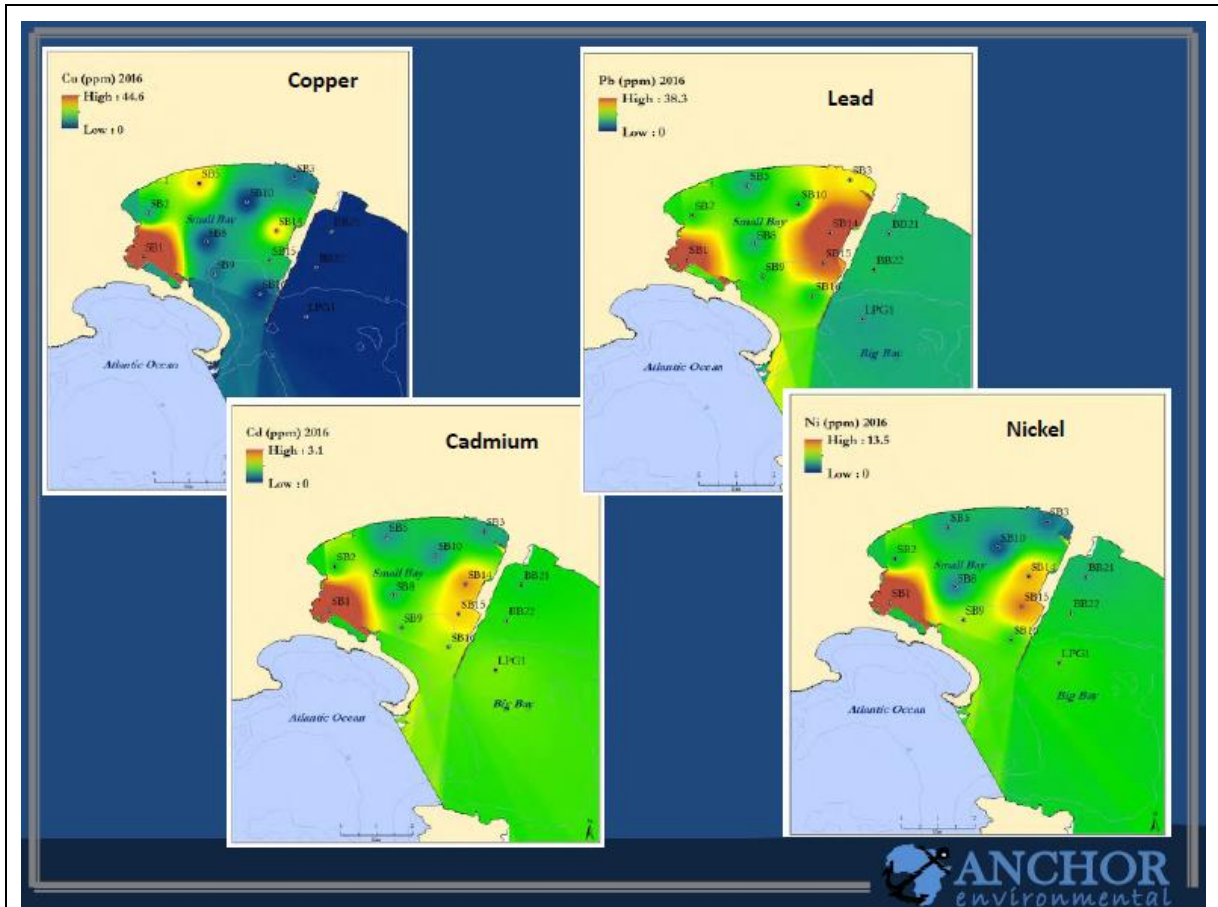


Figure D: Metals

Source: State of the Bay Report 2016 Presentation

The 2016 State of the Bay Report concludes that “developments in Saldanha Bay and Langebaan Lagoon during the past thirty years have inevitably impacted on the environment. Most parameters investigated in this study suggest a considerable degree of negative impact having occurring over the last few decades. Long term decreases in populations of fish (e.g. white stumpnose) and many bird species in Saldanha Bay and Langebaan Lagoon are of particular concern. These most likely reflect long term changes in exploitation levels (fish) and habitat quality (sediment and water quality, and also increasing levels of disturbance) and also in important forage species (e.g. benthic macrofauna). Recent improvements in some of these underlying indicators (e.g. sediment quality and macrofauna abundance and composition) are very encouraging, though, and will hopefully translate into improvements in the higher order taxa as well. There remains considerable work to be done in maintain and restoring the health of the Bay, especially in respect of the large volumes of effluent that are discharged to the Bay, very little of which is compliant with the existing effluent quality standards. A holistic approach in monitoring and assessing the overall health status of the Bay is essential, and regular (in some cases increased) monitoring of all parameters reported on here is strongly recommended.”

BASIC ASSESSMENT REPORT

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station ^H
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential ^A	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant ^A	Nature conservation area
Medium industrial ^{AN}	Train station or shunting yard ^N	Mountain, koppie or ridge
Heavy industrial ^{AN} √	Railway line ^N	Museum
Power station	Major road (4 lanes or more) ^N	Historical building
Office/consulting room	Airport ^N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam ^A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)
<p>Aquaculture – portions of Saldanha Bay are currently used for aquaculture, notably in Small Bay and, to a lesser degree, in Big Bay and Outer Bay, predominantly for mussel and oyster farming.</p>		

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

n/a

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

Heavy industrial activity in Saldanha Bay relates primarily to the activities at the Port of Saldanha, which includes export of iron ore, import of oil and gas and shipment of other bulk cargo:

- The project could **impact on the industrial activities** at the Port of Saldanha if:
 - Aquaculture structures restrict shipping / turning lanes, either through encroachment of such lanes or if structures come loose and drift into shipping lanes;
 - ➔ During the project definition undertaken by CapMarine, ADZ areas were carefully selected in consultation with TNPA to avoid shipping lanes. Aquaculture structures must comply with international standards to ensure they remain in place and do not drift into shipping lanes;
 - Aquaculture structures restrict the planned expansion of the Port of Saldanha in future, such as the proposed Liquid Petroleum Gas (LPG) and Liquid Natural Gas (LNG) developments in Big Bay and the Mossgas Jetty in Small Bay;
 - ➔ During the project definition undertaken by CapMarine, ADZ areas were carefully selected in consultation with TNPA, to avoid areas earmarked for future expansion of Port activities;
- Industrial activities could **impact on the project** if:

BASIC ASSESSMENT REPORT

- Vessels leave the allocated shipping lanes and enter aquaculture areas, damaging structures and resulting in production losses;
 - ➔ Good shipping traffic management is required by TNPA to minimise such occurrences;
- Water pollution from industrial activities impacts the quality of aquaculture produce. Possible sources of pollution include release of ship effluent / contaminated ballast water in the Bay, runoff of contaminated stormwater from the Port or adjacent industrial area, spill of products such as iron ore during loading or from the jetty or mobilisation of contaminated sediments during dredging for port maintenance or expansion;
 - ➔ Water quality in Saldanha Bay is regularly tested. In the event of increased pollution, the source thereof must be identified and managed to avoid negative impacts on the quality and marketability of aquaculture produce.

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

n/a

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO
Core area of a protected area?	YES	NO
Buffer area of a protected area?	YES	NO
Planned expansion area of an existing protected area?	YES	NO
Existing offset area associated with a previous Environmental Authorisation?	YES	NO
Buffer area of the SKA?	YES	NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	YES	NO
	Uncertain	

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

A recognised heritage specialist was commissioned to undertake a desktop study of the proposed ADZ area within Saldanha Bay.

The specialist notes that the proposed project will have little impact on the known maritime cultural landscape other than shipwreck sites, and will not impact on historic or archaeological terrestrial sites. However, the development may affect unknown cultural remnants of utilisation of marine resources, especially in the Outer Bay – North and Big Bay – South development areas. The specialist notes that historically, these areas were the focus of fishing, sealing and whaling activities, and undocumented archaeological debris such as anchors or other flotsam and jetsam

may lie on the sea floor. The placement of concrete anchor blocks on the sea floor may result in archaeological remains being covered or damaged. However, impact on potential archaeological material will be low, and it is likely that the remnants of fishing, sealing and whaling activities are ephemeral.

There is potential that an extensive Pleistocene landscape exists below the current seabed in Saldanha Bay. The landscape may contain fossils, as observed at the West Coast Fossil Park, or the remains of human activities. This landscape will not be affected by the placement of concrete mooring blocks, as evidenced by observations of the impact of mooring blocks on the seabed in Ilha de Mozambique, where comparable environmental conditions exist. While water currents resulted in some scouring of the seabed around mooring blocks, scour was shallow and negligible. The specialist states, with relative certainty, that the Pleistocene layer will not be impacted by the concrete block anchor arrays, as it is understood that no pylons will be sunk into the sea bed.

The specialist described 23 known shipwrecks in Saldanha Bay, of which 4 are older than 60 years and potentially lie within proposed ADZ areas:

- One wreck potentially lies in Big Bay North: Dauphin;
- One wreck potentially lies in Big Bay South: Luna; and
- Two wrecks potentially lie in Outer Bay South: Hamlet, Merestein.

However, the specialist considers the potential impact of the ADZ on shipwrecks to be low.

Will any building or structure older than 60 years be affected in any way?

YES	NO
YES	NO

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

The Heritage Impact Assessment has been submitted to SAHRA. It is understood that a permit will only be required if heritage remains, notably wrecks, are impacted by e.g. moorings. It is recommended that diver surveys are conducted prior to the placement of moorings, and that heritage remains are avoided.

8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

Approximately 70% of the population in the Saldanha Bay Municipality (SBM) (68 500 people) is of working age (between 15 and 64 years old), of which 45 000 actively participated in the labour market in 2011 (Census 2011). An estimated 34 359 people (76% of the population active in the labour market) were employed, while 10 470 (24%) were unemployed in 2011. The unemployment rate of 23.4% in 2011 was the highest in the West Coast District. Saldanha Bay's labour force represents 27.1% of the West Coast District labour force. Amongst the various population groups, employment rates are lower for Black African and Coloureds than Whites, while a larger proportion of the White and Coloured population is not economically active (see Table 7).

Employment figures in the SBM almost exactly mirror those of the Western Cape (see Table 7). Most employed people in the SBM work in the formal sector (Census 2011).

BASIC ASSESSMENT REPORT

Table 7: Employment in the SBM (people aged 15 to 64 years) in 2011

Status	Black African		Coloured		White		Other		Total	% SBM	% W. Cape
	Count	%	Count	%	Count	%	Count	%			
Employed	8 374	46%	17 665	48%	7 685	62%	635	52%	34 359	50%	50%
Unemployed	3 886	21%	5 957	16%	489	4%	137	11%	10 470	15%	14%
Discouraged	1 014	6%	774	2%	96	1%	25	2%	1 909	3%	3%
Not active	4 981	27%	12 672	34%	4 096	33%	420	35%	22 168	32%	33%

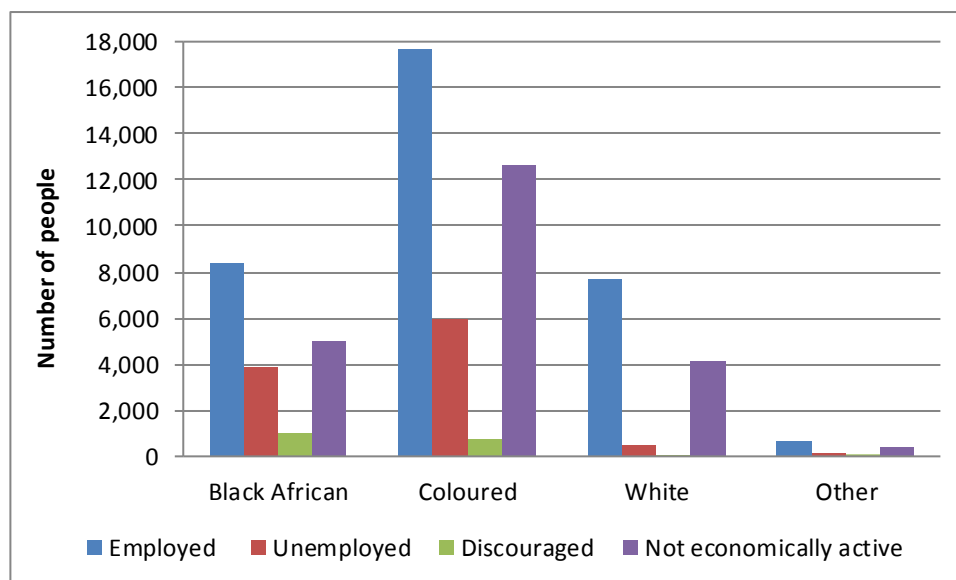


Figure 3: Employment in the SBM (people aged 15 to 64 years) in 2011

Source: Census 2011

The Finance, insurance, real estate and business services sector employed the most people (6 487) in 2011, followed by Wholesale and retail trade, catering and accommodation (3 976), Agriculture, forestry and fishing (2 972) and Manufacturing (2 470). The Transport, storage and communication sector employed the least people (1 170), followed by Construction (1 184).

The Agriculture (2 190) and Manufacturing (4 860) sectors in Saldanha Bay suffered net job losses between 2000 and 2013. The Services sector, on the other hand, displayed robust growth in skilled jobs in the same timeframe.

Approximately 40 347 people (41% of the SBM population) reported that they earned no income in 2011. Approximately 30 618 people (52% of income earners) earned less than R3 200 per month, 15 882 people (27% of income earners) earned between R3 200 and R25 600 per month and 1 588 people (3% of income earners) earned more than R25 600 per month⁶ (Census 2011).

In 2010, rural based municipalities such as Cederberg (43%), Berggrivier (34%) and Matzikama (32%) recorded alarming levels of poverty. SBM has consistently recorded low poverty rates relative to its neighbouring municipalities at around 22 - 23% for the 2001 - 2010 periods. Saldanha Bay's poverty rate is better than that of the West Coast District (30%), but slightly lower than that of the Western Cape Province (22%) (Saldanha Bay IDP 2015-2016).

Economic profile of local municipality:

The West Coast District's regional economy grew by 3.2% per annum in real terms over the period 2000 to 2013, while its workforce contracted on balance at a rate of 0.9% per annum. While this growth is below that of the Western Cape, which grew by 3.9% per annum on average, the District hosts two of the Province's 10 fastest growing non-metro municipalities, i.e. SBM and Swartland.

⁶ Monthly incomes were not specified for 10 756 people in the survey.

BASIC ASSESSMENT REPORT

The principal sectors contributing to the GDP of the SBM are manufacturing (30%), transport (16%), services (15%), trade (13%), finance (12%), agriculture (7%) and construction (5%). Ward 5, incorporating the back-of-port area, contributed the most to the municipal GDP. Agriculture is typically the primary contributor to the GDP in rural wards. Key sectors are briefly described below.

- Industry / manufacturing: The development of the Port of Saldanha for iron ore export spurred major additional industrial growth in the area, including the establishment of the ArcelorMittal steel plant and the Tronox smelter. Further industrial development, e.g. through the increase of port capacity and the establishment of an IDZ, is being promoted;
- Agriculture: Crops grown in the SBM include wheat, canola, rooibos tea, fruit, grapes and vegetables. Animal products include poultry, fresh milk and dairy products, beef, mutton, lamb and pork. Due to increased mechanisation, the sector is becoming less important for employment generation;
- Fishing: One of the historically most important economic activities, fishing activities represented in SBM includes deep-sea fishing, line fishing, lobster trapping and aquaculture. The latter takes place both in Saldanha Bay and St. Helena Bay. Fish is processed locally in various fishmeal, fish canning and other fish processing plants located primarily in St. Helena Bay and Saldanha;
- Tourism / services: The SBM is a well-known and popular tourist destination and the sector plays an increasingly important role in the economy; and
- Mining: Several mining activities have established near Saldanha and Langebaan and include mining of construction materials such as lime scales and sand.

The local economy is diversifying from being dependent on fishing and agriculture, to including manufacturing and tourism as major economic sectors. Employment in the agricultural, manufacturing, construction and trade sectors has decreased, with 9 000 jobs lost in those sectors between 1995 and 2010, especially in the agricultural sector. Employment in the other sectors - particularly in the finance, transport and service sectors, which are now the largest employers in the area - has increased since 1995, with approximately 13 300 new jobs added by 2010.

The slow growth of the West Coast District's manufacturing sector is explained to a large extent by the recessionary slump and only partial recoveries in key industries (metals and engineering, non-metal minerals, food and beverages and wood products) and the SBM seems to be at the centre of the impact.

The development of the IDZ in Saldanha Bay is expected to boost the fortunes of the local manufacturing sector, which could give rise to linkages with the more buoyant Swartland and Bergvriër manufacturing sectors and stimulate supporting services activity as well (Saldanha Bay IDP 2015-2016).

The two key settlements on the shores of Saldanha Bay, Saldanha and Langebaan have distinct characters. Saldanha is characterised by more industrial development, driven by increased development of the Port of Saldanha, Industrial Development Zone and the expected concurrent growth of the Saldanha - Vredenburg industrial corridor.

Langebaan, on the other hand, fulfils an important role as a recognized holiday and tourist destination. A larger number of permanent residents also settle in Langebaan, increasing the need for the provision of a greater variety of economic opportunities for the local residents (Saldanha Bay SDF 2011). Adequate provision should thus be made to consolidate and expand its important local and regional tourism role and in so doing provide an increased range of economic opportunities.

Level of education:

Approximately 26% of the population had primary school education or less, 33% had some high school education but did not finish, 19% finished high school, 5% had an NTC qualification, diploma or certificate and 2% had a university degree (Census 2011).

Education levels in the SBM are largely comparable to those in the Western Cape Province (Saldanha Bay IDP 2015-2016).

BASIC ASSESSMENT REPORT

The Social Impact Assessment undertaken for the proposed construction of the AfriSam cement plant, limestone and clay quarries in Saldanha notes that: "Information from stakeholders consulted during the SIA suggests that school attendance and drop-out rates are more significant than what the statistics show; it was identified as a major social problem in the local study area. One reason provided for high drop-out rates is that education is not provided in the children's mother tongue, rendering it frustrating and futile. Truancy as a result of drug and alcohol dependency also poses a severe problem to quality education in the municipal area." (Digby Wells, 2012).

The report further states that: "Indications are that there are many bricklayers, welders, plumbers, electricians, panel beaters and mechanics in the local study area, but few have received formal training in the skill they possess. Conversely, there are some formally trained individuals who have acquired a skill but do not have work experience using their skill." (Digby Wells, 2012).

b) Socio-economic value of the activity

<p>What is the expected capital value of the activity on completion?</p>	<p>Capital investment may possibly amount to some R260 million for shellfish and R150 million for finfish farm development in the whole ADZ; however, farms will be developed in phases, based on ongoing monitoring, and might not reach full potential – as such, investment may be substantially lower. See Section 2.2.2.1 in App F.</p>					
<p>What is the expected yearly income that will be generated by or as a result of the activity?</p>	<p>Yearly revenue may possibly reach some R300 million for shellfish and R400 million for finfish if the whole ADZ is fully developed. However, farms will be developed in phases, based on ongoing monitoring, and might not reach full potential. Moreover, revenue depends on market prices and demand – as such, revenue is difficult to predict. See Section 2.2.3.1 in App F.</p>					
<p>Will the activity contribute to service infrastructure? Is the activity a public amenity?</p>	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">YES</td> <td style="width: 50%; text-align: center;">NO</td> </tr> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO	YES	NO	<p>The development and construction phases will result in very few employment opportunities.</p>
YES	NO					
YES	NO					
<p>How many new employment opportunities will be created in the development and construction phase of the activity/ies? What is the expected value of the employment opportunities during the development and construction phase? What percentage of this will accrue to previously disadvantaged individuals?</p>	<p>The development and construction phases will result in very few employment opportunities.</p>					
<p>How many permanent new employment opportunities will be created during the operational phase of the activity?</p>	<p>Full production of shellfish may generate some 780 additional jobs, of which ~75% (585 staff) are likely to be unskilled / semi-skilled.</p> <p>Production of the initial 5 000 tons of finfish may generate 15 additional jobs.</p> <p>However, farms will be developed in phases, based on ongoing monitoring, and might not reach full potential – as such, investment may be substantially lower. See Section 2.2.3.2 of Appendix F.</p>					

BASIC ASSESSMENT REPORT

What is the expected current value of the employment opportunities during the first 10 years?

N/A

What percentage of this will accrue to previously disadvantaged individuals?

It is expected that a high percentage of employees will be previously disadvantaged individuals.

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

- a) **Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNA)	

- b) **Indicate and describe the habitat condition on site**

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	%	Saldanha Bay has been transformed most notably during the construction of the Port of Saldanha in the 1970s, through the construction of the iron ore jetty and Marcus Island causeway, which altered the circulation and conditions in the Bay. Approximately 150 ha of Saldanha Bay (or 2% of the total Bay area) are currently utilised for aquaculture and could thus be deemed 'transformed'. However, due to the nature of the activity, structures can be easily removed
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	
Degraded (includes areas	%	

BASIC ASSESSMENT REPORT

heavily invaded by alien plants)		and the natural state of these areas largely re-instated.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	%	Marine Protected Areas are located around Jutten and Malgas Island as well as on the mouth of the Langebaan lagoon.

c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened							
		YES	NO	UNSURE	YES	NO	YES	NO

- d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

N/A as the application is for sea-based aquaculture and does not include land-based facilities.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Weslander	
Date published	9 June 2016	
Site notice position	Latitude	Longitude
TNPA offices	32°59'50.22"S	17°59'39.14"E
Langebaan Public Library	33°05'27.36"S	18°02'01.07"E
Langebaan Municipal Offices	33°05'26.93"S	18°01'58.69"E
Club Mykonos boat repair yard	33°02'45.37"S	18°02'29.75"E
Saldanha Bay library	33° 0'24.71"S	17°56'32.11"E
Vredenburg Municipal Offices	32°54'23.26"S	17°59'19.46"E
DAFF office at Pepper Bay	33° 0'57.80"S	17°56'52.27"E
Date placed	13 – 17 June 2016	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Pre-application stakeholder engagement was undertaken to raise public and authority awareness of the proposed project early on. Pre-application stakeholder engagement included the:

- Notification of stakeholders in terms of Section 41 (2) (b) of GN R982 of 2014 on 9 June 2016;
- Release of a Background Information Document (BID) on 9 June 2016 to more than 100 public and authority stakeholders;
- Placement of an advertisement in one local newspaper (Weslander) in English and Afrikaans on 9 June 2016;
- Placement of notice boards at a number of sites around Saldanha Bay in the week of 13 June 2016;
- Focus group meetings with key (technical) stakeholders to provide input into the project definition:
 - Transnet National Ports Authority: 17 May 2016; and
 - Technical stakeholder workshop: 20 July 2016; and
- Distribution of the project definition summary to all registered stakeholders on 5 August 2016.

Stakeholders and the public were invited to register on the stakeholder database for the project, in order to be informed of the release of the draft BAR for comment.

Post-application public participation includes:

- Notification of registered stakeholders when the draft BAR is released for comment;
- Public open day to enable stakeholders to interact with the EAP and project team and discuss their questions; and
- Notification of registered stakeholders of DEA's decision.

The BAR will be released for a second public comment period prior to submission to DEA if substantial changes are required.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

The full database of registered stakeholders is provided in Appendix E5.

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Frank Pronk	Councillor- Ward 5	frank.pronk@sbm.gov.za
Don Ryan	Councillor- Ward 3	ryan.don@saldanhabay.co.za
Stephanus T Vries	Councillor- Ward 4	sfvries@gmail.com
Andre Kruger	Councillor- Saldanha Bay Local Municipality	info@wowlangebaan.co.za
Jimmy Walsh	Saldanha Bay Water Quality Trust	hilltopcottage@salnet.co.za

BASIC ASSESSMENT REPORT

Quenton Brink	Transnet National Ports Authority (TNPA) (adjacent land owner)	quenton.brink@transnet.net
Berneace Nel	Protea Hotel Saldanha Bay (adjacent land owner)	gm@sbph.co.za
Valason Pillay	South African National Defence Force (adjacent land owner)	valasonpillay@yahoo.com
Trevor Dyer	Saldanha Bay Yacht Club	Trevor.dyer@robdyersurgical.co.za
Sue Tonin	Bivalve Shellfish Farmers Association of South Africa	sue@saldanhabayoysters.co.za
Jaco Kotze	Chairperson Langebaan Ratepayers and Residents Association (LRRRA)	info@langebaanratepayers.co.za

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
<u>Stakeholder engagement was insufficient.</u>	<p><u>The EIA process is governed by the EIA Regulations, 2014, which also prescribe public participation requirements. SRK has complied with and exceeded these requirements for this process. Stakeholder engagement activities are described in detail in Section C and Appendix E of the BAR. Activities exceeding the prescribed requirements include:</u></p> <ul style="list-style-type: none"> • <u>Two pre-application stakeholder engagement rounds – on the Background Information Document (BID) and Project Definition Summary (the latter presented the “pre-mitigation” ADZ area, prior to assessment);</u> • <u>Four meetings with stakeholder representatives / organisations: South African Sailing, Saldanha Bay Water Quality Forum Trust and Club Mykonos;</u> • <u>Public Open Day in Langebaan on 23 February 2017; and</u> • <u>Extension of the BAR comment period from 10 March 2017 to 31 March 2017 in response to a stakeholder request.</u> <p><u>Some 1 166 stakeholders are registered on the project database, and 185 people attended the public open day – there is thus</u></p>

BASIC ASSESSMENT REPORT

Summary of main issues raised by I&APs	Summary of response from EAP
	<p><i>significant awareness of the project.</i></p>
<p><i>The ADZ occupies too much of Saldanha Bay, and will have impacts on water quality.</i></p>	<p><i>Based on the results of the impact assessments and comments received on the Project Definition summary, SRK recommends that the originally proposed new ADZ areas (this excludes areas already allocated) are reduced as follows:</i></p> <ul style="list-style-type: none"> <i>• Big Bay South area is reduced by 100% (i.e. not developed) due to a number of socio-economic (user conflict) and ecological (proximity to the Langebaan Lagoon) concerns;</i> <i>• Big Bay North area is reduced by 43%, largely to incorporate a 1 km buffer to residential areas at Club Mykonos and Paradise Beach;</i> <i>• Outer Bay North area is reduced by 40% to incorporate a 500 m - 1 km buffer to the Malgas Island MPA; and</i> <i>• Outer Bay South area is reduced by 73% to avoid all areas between Jutten Island and the coast.</i> <p><i>In the post-mitigation scenario, the proposed ADZ area has thus reduced by 70% from 1 404 ha in the pre-mitigation scenario to 420 ha.</i></p> <p><i>The total ADZ, including areas for which leases are currently held (not all of which are farmed) would be 884 ha in the post-mitigation scenario. This equates to approximately 10% of Saldanha Bay (Small, Big and Outer Bay).</i></p> <p><i>In addition, SRK recommends phased implementation of the ADZ over several years, with parallel monitoring, and expansion (within approved spatial and production limits) only if supported by monitoring results. As such, the ADZ will not "fill up" for a number of years, and some areas may never be taken up if they are not considered viable by individual operators or if monitoring indicates that the bay cannot sustain additional phases of the ADZ.</i></p> <p><i>Most of the aquaculture farming in the ADZ will comprise of shellfish farming, as only 29% of the total ADZ is deemed potentially suitable for fish farming, of which some areas might not be viable. More than 91% of potentially suitable finfish farming areas are located in Outer Bay.</i></p> <p><i>Mitigation measures applicable to the ADZ will also apply to existing aquaculture operations, which would be incorporated into the ADZ. It is also understood that the ADZ proposal has resulted in the relocation of a proposed finfish farm that is independently applying for Environmental Authorisation from an area that would fall into Big Bay South to an area that would fall within Big Bay North. As such, the ADZ can also play a consolidating role to minimise unstructured development of aquaculture facilities across the Bay.</i></p>
<p><i>How will the ADZ be managed and monitored?</i></p>	<p><i>The ADZ and monitoring will be managed through a management committee comprising DAFF, DEA, DEA&DP and Transnet National Port Authorities (TNPA). In this way, environmental authorities (DEA and DEA&DP) are actively engaged in the operation of the ADZ.</i></p> <p><i>The EMPr proposes a structure that will also ensure that public stakeholders will have timely access to information pertaining to the ADZ, including farm proposals and monitoring, through the</i></p>

BASIC ASSESSMENT REPORT

Summary of main issues raised by I&APs	Summary of response from EAP
	<p><u>Consultative Forum.</u></p> <p><u>The EMPr requires that a suitably qualified specialist is appointed to compile a comprehensive Sampling Plan to ensure that the correct parameters are sampled at the correct locations and appropriate trigger values are determined for the Saldanha Bay / Langebaan Lagoon system. A framework for the Sampling Plan, including the type of parameters, sampling locations and sampling aspects is provided in EMPr Section 7</u></p> <p><u>There are two levels where monitoring should lead to action if required:</u></p> <ol style="list-style-type: none"> <u>1) SRK recommends phased implementation of the ADZ over several years, with simultaneous monitoring. Expansion into the next phase (within approved spatial and production limits) must only be undertaken if monitoring (of water column, seabed, marine fauna etc.) indicates that expansion can be ecologically sustained. This must be decided within the ADZ Management Committee, which also comprises DEA and DEA&DP; and</u> <u>2) The EMPr also makes provision for corrective action in the event that monitoring indicates problems, such as stopping the activity that is causing the issue, further investigation and instructions to operators.</u> <p><u>Aquaculture infrastructure is not permanent, and any adverse impacts can be addressed by ceasing farming and removing the infrastructure, which will allow the ecosystem to recover.</u></p>
<p><u>Fish farming is not desirable in Saldanha Bay; concerns include viability, pollution and introduction of aliens.</u></p>	<p><u>Most of the aquaculture farming in the ADZ will comprise of shellfish farming, as only 29% of the total ADZ is deemed potentially suitable for fish farming, of which some areas might not be viable (individual operators will determine the viability of an area for specific species and farming methods). In addition, shellfish farming is well established in the area and is less capital intensive to set up than finfish farming. More than 91% of potentially suitable finfish farming areas are located in Outer Bay.</u></p> <p><u>However, fish farming has been trialed in Saldanha Bay for some time, independently of the proposed ADZ, and two separate independent EIA processes are currently underway for fish farming activities in Saldanha Bay. If both the independent applications and the ADZ were authorized, these fish farms will likely operate under the umbrella of the ADZ management, monitoring and production limits.</u></p> <p><u>The potential impacts of fish farming are discussed in detail in the marine ecology study (BAR Appendix D2) and summarized in 2.1 of the BAR Appendix F, including impacts on the seabed and water quality from fallouts from the farm and use of therapeutants (finfish only), on other marine fauna through entanglement in or attraction by farms, introduction of invasive species or diseases and genetic interaction with wild population in the event of escapes (finfish only). Most of these impacts apply to both shellfish and finfish farming, although some are potentially more significant for finfish.</u></p> <p><u>Diseases are a particular risk with high density stocking; due to the limited available space and production limits proposed for the Saldanha Bay ADZ, overall stocking densities are expected to be relatively low compared to other areas in the world.</u></p>

BASIC ASSESSMENT REPORT

Summary of main issues raised by I&APs	Summary of response from EAP
	<p><u>DAFF advises that the risk of diseases import is reduced for alien species due to import requirements, such as health certificates of brood stock. Provided general biosecurity standards are adhered to, combined with the physiological transition of the stock from a freshwater environment to a marine environment, the risk of transmission of disease from cultured to wild stock is regarded as low.</u></p> <p><u>Most the diseases known from introduced salmonids in South Africa to date are opportunistic pathogens with a broad host range originating from wild indigenous fish reservoirs. Fish lice are often host specific, and South Africa does not have indigenous salmonid populations that could serve as an infection source. It is therefore deemed unlikely that salmon lice will present as much of a problem in Saldanha as in other areas of the world where salmonids are indigenous.</u></p> <p><u>SRK notes that the specialist study conducted by Anchor Environmental for the Southern Cross fish farm EIA considered disease transmission to wild stocks a potentially high impact. Anchor Environmental notes that, due to the reasons listed above, this may not be as a result of salmon lice, but potentially an as yet undiscovered local or introduced pathogen / parasite that could cause similar problems.</u></p> <p><u>As such, there appears to be uncertainty associated with the potential for and risk of disease transfer to and from farmed fish. This supports the proposed gradual phasing in of fish farming in the ADZ, coupled with careful monitoring of pathogens and potential of transfer to wild fish to inform the AMC's decision on implementation of the next phase.</u></p> <p><u>As there are no native salmonids in Saldanha Bay, genetic interaction with endemic species is highly unlikely.</u></p>
<p><u>Potential impacts of the ADZ should have been modelled.</u></p>	<p><u>Currents and water flow are dynamic and variable in the Saldanha Bay / Langebaan Lagoon system, and are described in Section 3.2.2 of the marine ecology study (BAR Appendix D2).</u></p> <p><u>Modelling was considered during the BA process to determine the possible distribution and deposition of wastes from the aquaculture farms. However, the two approaches that were considered (discussed below) each had a number of limitations and modelling was not deemed appropriate:</u></p> <ol style="list-style-type: none"> <u>1. A calibrated coupled wave and three-dimensional hydrodynamic model of the Saldanha Bay-Langebaan Lagoon System to provide a simulated time series and statistics of bed shear stresses that can be used to assess the likelihood and extent of accumulation of organic wastes in the mariculture areas and identify areas where there is a propensity for the accumulation of mariculture wastes (particulates): However, this approach cannot quantify likely "footprints" of organic wastes surrounding mariculture areas / provide a quantitative assessment of the accumulation of mariculture waste at any particular site. It can only indicate sites where such accumulations of particulate wastes are likely to occur should they reach such sites. The extent of distribution of wastes dissolved in the water column can also not be clearly assessed, and estimates will have high uncertainty associated with them;</u>

BASIC ASSESSMENT REPORT

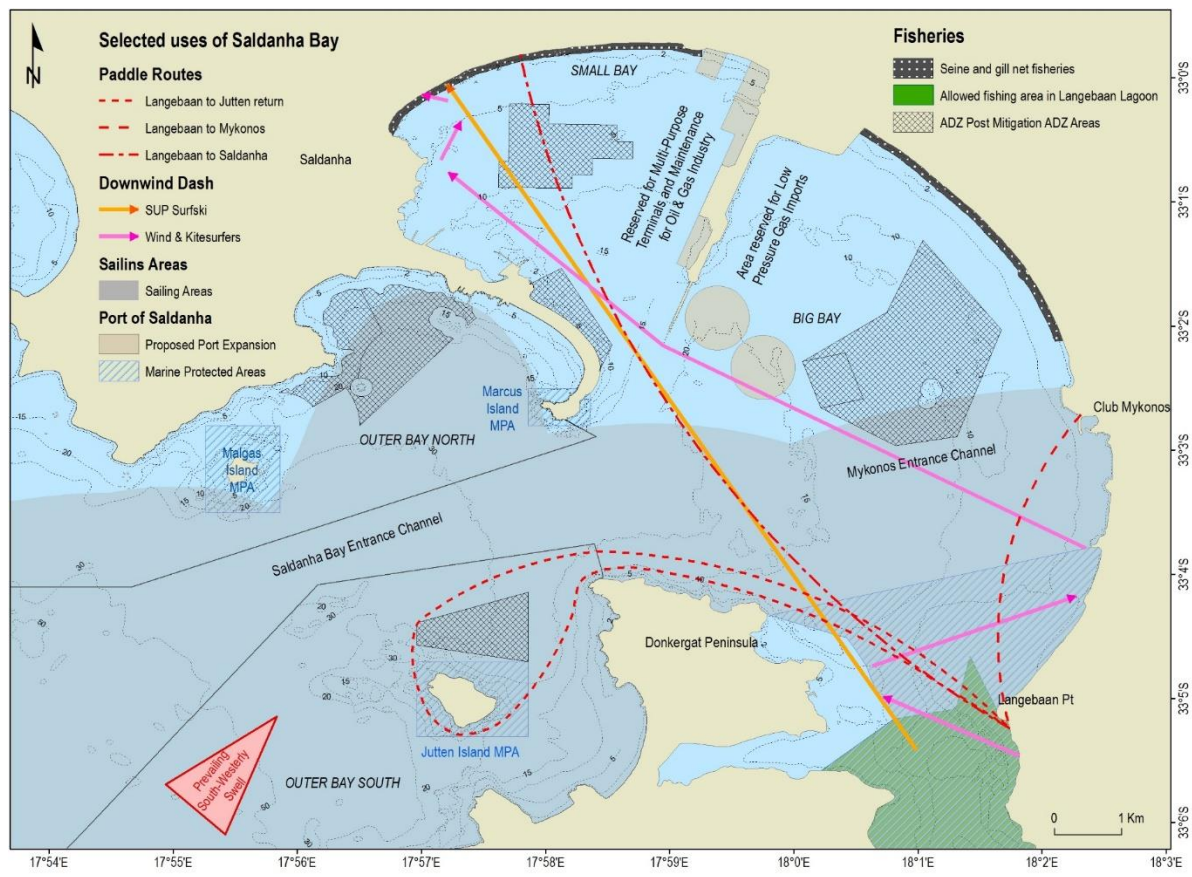
Summary of main issues raised by I&APs	Summary of response from EAP
	<p><i>and</i></p> <p>2. <u>Assess one or more specific scenarios associated with the dissolved and particulate wastes from mariculture operations, modelling a full year of wastes from mariculture operations at the envisaged scale of ADZ mariculture operations: Model outputs would include footprints of plumes of dissolved wastes and predictions of initial deposition and redistribution of various particulate organic wastes. However, dissolved and particulate waste loading from the mariculture areas will need to be accurately specified and provided to the modelling team, thresholds of concern in the receiving environment will need to be identified for use in the analysis.</u></p> <p><u>The key problems with a modelling approach at this stage are that:</u></p> <p>A) <u>The ADZ makes allowance for a range of species and types of aquaculture, and the precise type of species, production volumes, favoured locations, required inputs etc are thus not known at this stage;</u></p> <p>B) <u>As such, waste from aquaculture (faeces, feed etc) at any one time and location cannot be predicted with great confidence; and</u></p> <p>C) <u>The flushing, tidal exchange, depth and seabed conditions are very variable within the Bay; as preferred locations for specific types of aquaculture within the ADZ are not currently known, it is very difficult to model the impact with much certainty.</u></p> <p><u>It was concluded that modelling would not deliver results with sufficient confidence. Instead, it was decided to implement buffers around particularly sensitive areas, most notably MPAs.</u></p> <p><u>Phased implementation of the ADZ, informed by simultaneous monitoring, is proposed to address precisely this issue of impact on water quality (and seabed characteristics).</u></p> <p><u>In addition, DAFF specialists note that existing knowledge of bay-lagoon dynamics (e.g. Monteiro and Largier) does inform the risk posed by aquaculture to Langebaan Lagoon. The division into two distinctly different ecosystems (bay and lagoon) and the decoupling of their biogeochemistry is established. The Saldanha Bay-Langebaan system is divided into two ecologically distinct ecosystems as a result of the interaction between basin geomorphology and the dynamics of the density driven exchange between the bay and the adjacent coastal ocean. The boundary between the two systems is demarcated by the 5m isobaths, as this corresponds to the depth of the top of the thermocline. Consequently, those parts of the system less than 5 m deep (which include Langebaan Lagoon) are not exposed to cold nitrate rich waters. Water exchange between the bay and the lagoon is therefore dominated by active tidal pumping of largely warm oligotrophic surface waters through the narrow channels connecting the two systems. Limitation of exchange between the two systems to surface water will ensure minimal impact on Langebaan Lagoon in the event of possible enrichment of bay bottom waters as a consequence of aquaculture.</u></p> <p><u>The EMPr requires that a suitably qualified specialist is appointed to compile a comprehensive Sampling Plan to ensure that the correct parameters are sampled at the correct locations and appropriate</u></p>

BASIC ASSESSMENT REPORT

Summary of main issues raised by I&APs	Summary of response from EAP
	<p><u>trigger values are determined for the Saldanha Bay / Langebaan Lagoon system (see EMPr Section 7).</u></p>
<p><u>How many jobs will be created, and who will benefit from those?</u></p>	<p><u>One of the key objectives of the ADZ is to facilitate the employment of local community members, many of which have lost work opportunities in the fishing industry. Job creation at the ADZ is considered to be potentially significant, as explained in Section 2.2.3.2 of BAR Appendix F. At full development (within the shellfish and finfish production volume limits stipulated in the BAR), it is estimated that the proposed ADZ could support some 855 additional direct jobs, most of which are generated by bivalve farming (which is more labour intensive than finfish farming). This excludes additional indirect employment at off-site contractors, service providers and processing facilities. A gradual ramp-up of aquaculture in Saldanha Bay is recommended; as such employment would also gradually increase over at least 3-5 years.</u></p> <p><u>Direct as well as many indirect jobs will be located at or near Saldanha Bay, as aquaculture often requires long working hours and swift response to changing conditions and - by implication - a workforce that lives nearby. Unlike many other jobs in the agricultural and fishing sectors, employment at aquaculture farms is expected to be generally year-round, providing a regular income for workers.</u></p> <p><u>DAFF further elaborates that operators require a lease from TNPA and must achieve a minimum BBBEE level to do so. Any project will also need to meet the requirement of the DAFF in terms of the Marine Right, which can only be obtained by a South African citizen or a company where the majority shareholders are South African citizens.</u></p> <p><u>Any operators interested in aquaculture can apply to register as part of Operation Phakisa; one of the application criteria includes level of equity and transformation. In addition, applicants can apply for funding from either the DAFF (Comprehensive Agricultural Support Programme) and or the Department of Trade and Industry (Aquaculture Development and Enhancement Programme), amongst other funds. Aquaculture Rights are different to fishing rights and are not allocated according to quotas. The DAFF also provides various types of support for new operations, specifically technical advice and mentorship. Job creation is not expected to be at the expense of employment in the local tourism and watersports industry, as explained below.</u></p>
<p>Certain portions of the ADZ conflict with military and watersports areas in Saldanha Bay, particularly in Big Bay South and Outer Bay South, restricting access, increasing the risk of accidents and affecting competitions and events.</p>	<p><u>The potential conflict of the original ADZ with watersports users was discussed with South African Sailing. Comments submitted by various other watersports users on the Project Definition summary, including maps of routes / areas used within Saldanha by different types of watersports, were also considered.</u></p> <p><u>Based on those discussions, SRK believes that the recommended exclusion of the Big Bay South Area and majority of the Outer Bay South area will effectively address the originally identified user conflict and provide watersports and events with continued access to currently used areas of the bay. The subsequent amendment of the Big Bay North area to include the Molapong application area has further reduced the south-western portion of the Big Bay North area (see Footnote 8) and hence potential interaction with watersports.</u></p>

BASIC ASSESSMENT REPORT

Summary of main issues raised by I&APs	Summary of response from EAP
	<p><u>No aquaculture structures will be located in Langebaan Lagoon, where much of the training that also attracts visitors to the area takes place, at all.</u></p> <p><u>As such, SRK does not anticipate a significant reduction in watersports opportunities, visitors and associated tourism businesses as a result of the project.</u></p> <p><u>In addition, phased implementation of the ADZ over several years is recommended. As such, the ADZ will not "fill up" for a number of years, if ever, as some areas may never be taken up if they are not considered viable by individual operators. No aquaculture structures will be placed in ADZ areas unless a lease and permit have been granted to an operator for a specific portion of the ADZ and the area is actively farmed. If farming activities should cease for any reason in a specific lease area, rafts, cages and long lines will need to be removed as per the decommissioning requirements in the EMPr.</u></p> <p><u>Importantly, poor demarcation of and drifting equipment from existing aquaculture areas have been widely cited as current hazards to watersports. Mitigation measures have been proposed for the ADZ to address these issues, such as proper demarcation of areas, at sea and on maps, and equipment, so that loose items can be traced to the owner. These mitigation measures would also apply to existing aquaculture areas that are to be incorporated into the ADZ, and this should thus also improve the appearance of existing aquaculture areas, which constitutes a benefit.</u></p>



Recommended post-mitigation ADZ areas relative to other use areas (watersports, sailing, fishing, Port of Saldanha)

BASIC ASSESSMENT REPORT

Summary of main issues raised by I&APs	Summary of response from EAP
<p><u>Visual impacts will affect tourism and property values.</u></p>	<p><u>Aquaculture structures have been present in and part of the landscape of Saldanha Bay for many years, mostly in Small Bay, but also in Big Bay and, intermittently, in Outer Bay. No expansions of aquaculture areas are proposed in Small Bay.</u></p> <p><u>The additional visual impacts of the ADZ are deemed Very Low to Medium if recommended mitigation measures (which should become part of the authorisation conditions) are implemented: most importantly that:</u></p> <p><u>1) The equipment visible on the surface is of standard appearance: and</u></p> <p><u>2) A 1 km buffer to residential areas at Club Mykonos and Paradise Beach is implemented (this is explained in Section 2.3 in BAR Appendix F and Appendix D3).</u></p> <p><u>The 1 km buffer at Club Mykonos / Paradise Beach will also greatly assist with the accessibility of the area from the water. The subsequent amendment of the Big Bay North area to include the Molapong application area has further increased the distance between the ADZ area and the shore (see Footnote 8).</u></p> <p><u>Note that the visual impact assessment considered the larger pre-mitigation aquaculture areas, and visual impacts considering the smaller post-mitigation scenario (some of which was excluded for reasons other than visual impact, such as Big Bay South and Outer Bay South) are likely to be lower than assessed.</u></p> <p><u>Importantly, these mitigation measures would also apply to existing aquaculture areas that are to be incorporated into the ADZ, and this should thus also improve the appearance of existing aquaculture areas, which constitutes some benefit.</u></p>
<p><u>Other areas should be considered as alternatives.</u></p>	<p><u>DAFF advises that South Africa has a very exposed coastline and a limited number of sheltered bays that allow for sea based aquaculture. Saldanha Bay has been producing shellfish since the 1980s and large portions of the bay were, and continue to be, zoned for aquaculture. Saldanha Bay is a prime existing site for aquaculture due to the sheltered conditions and high primary productivity. The area is responsible for around 50% of current marine aquaculture production in South Africa.</u></p> <p><u>Since the launch of Operation Phakisa Oceans Economy in October 2014, the number of registered Operation Phakisa aquaculture projects in Saldanha Bay has increased from four to fifteen due to the economic potential of salmon, oysters and mussels culture and progress achieved in unlocking water space and leases for aquaculture through Operation Phakisa.</u></p> <p><u>No projects have registered or expressed interest in equivalent new seawater lease areas that would require an Environmental Authorisation in other parts of South Africa, and from this perspective there is no (demand for) alternative sites.</u></p> <p><u>A feasibility study conducted for DAFF in 2016 identified Saldanha Bay as the primary site available for mussel and oyster culture in South Africa.</u></p> <p><u>When read together, a financial feasibility study commissioned by DAFF (2016) and a national Strategic Environmental Assessment (SEA) for finfish culture (2012) identified Saldanha Bay as the only area suitable for cage-based salmon production in South Africa based on environmental conditions, specifically temperature and sea conditions. The experimental salmon and trout cage farming</u></p>

BASIC ASSESSMENT REPORT

Summary of main issues raised by I&APs	Summary of response from EAP
	<p><u>currently underway in Saldanha Bay (independently from the ADZ) has yielded promising results to date, with industry indicating their interest in further investment and commercialisation of the operation.</u></p> <p><u>The west coast north of Saldanha Bay does not provide appropriate cage culture opportunities due to the frequency and intensity of Harmful Algal Blooms in the area and the exposed shoreline. The south and east coasts of South Africa are not suitable for salmon production due to the warmer sea temperatures, which exceed 20°C.</u></p> <p><u>St Helena Bay, specifically, is unsuitable for both finfish and shellfish culture due to the frequency and intensity of Harmful Algal Blooms that affect the animals and food safety of the products. Saldanha Bay is less susceptible to HAB's owing due to the hydrodynamics of the bay (Montiero and Langier 1999, Probyn et al 2000; Joyce et al. 2004, Hutchings et al. 2012).</u></p> <p><u>Additional detail is provided in BAR Section A Activity Information / 1. Feasible and Reasonable Alternatives / a) Site alternatives.</u></p>

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

A detailed comments and response report is provided in Final BAR Appendix E10.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Please note that many additional authority stakeholders are included in the project database provided in BAR Appendix E8.

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Environmental Affairs: Oceans and Coasts	Reuben Molale	021 819 245 0		rmolale@environment.gov.za	PO Box 52126, Cape Town, 8001
Department of Water Affairs	Nelisa Ndobeni	021 941 614 0	021 950 722 4	NdobeniN2@dwa.gov.za	Private Bag x16, Sanlamhof

BASIC ASSESSMENT REPORT

Department of Public Works	Ossie Lamb	021 402 221 5		ossie.lamb@dpw.gov.za	
Department of Environmental Affairs & Development Planning	Adri la Meyer	021 483 288 7	021 483 301 6	adri.lameyer@westerncape.gov.za	Private Bag X9086, Cape Town
Department of Agriculture	Ferdie Endeman			ferdiee@elsenburg.com	
Dept of Economic Development and Tourism	Lakay, Mark	021 483 471 7	021 483 489 2	mark.lakay@pgwc.gov.za	PO Box 979, Cape Town
Transnet National Ports Authority	Quenton Brink	022 703 548 1		quenton.brink@transnet.net	
SANParks	Marne van der Westhuizen			marne.vanderwesthuizen@sanparks.org	
CapeNature	Duffell-Canham, Alana	021 866 800 0	021 866 152 3	aduffell-canham@capenature.co.za	P/Bag X5014 Stellenbosch
West Coast District Municipality	Prins, Henry	022 433 840 1	022 713 595 2	hfrins@wcdm.co.za	PO Box 242 Moorreesburg
Saldanha Bay Local Municipality	Scheepers, Louis	022 701 700 0	022 715 151 8	louis.scheepers@sbm.gov.za	Private Bag X12 Vredenburg

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the

BASIC ASSESSMENT REPORT

requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as Appendix E5.

The list of registered I&APs is provided in Appendix E8.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

Copies of comments received on the draft BAR are provided in Appendix E11. Copies of petitions received are provided in Appendix E12. Notes of meetings held during the BA Phase are included in Appendix E13.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Activity	Impact summary	Significance	Proposed mitigation
Layout Alternative 1 ("Full Big Bay South Alternative")			
	Direct impacts: Construction Phase:		
	Crushing of biota in sediments during placement of mooring infrastructure	Low (-ve) without and with mitigation	<ul style="list-style-type: none"> Avoid potentially sensitive and valuable habitats such as conservation areas (Malgas Island, Jutten Island, Langebaan Lagoon MPAs), biogenic habitats (e.g. kelp beds) and reefs (e.g. Lynch Blinder, North Bay Blinder). Ensure mooring systems are well designed to prevent / limit movement of anchors and chains over the sea floor.
	Investment in the economy	Low (+ve) without and with mitigation	<ul style="list-style-type: none"> Procure goods and services from local, provincial or South African suppliers as far as possible, with an emphasis on Black Economic Empowerment (BEE) suppliers where possible.
	Increased employment, income and skills development	Very Low (+ve) without and with mitigation	<ul style="list-style-type: none"> Procure goods and services from local, provincial or South African suppliers as far as possible, with an emphasis on BEE suppliers where possible.
	Destruction, damage or alteration of heritage material or sites.	Low (-ve) without mitigation and	<ul style="list-style-type: none"> Do not place mooring blocks within 200 m of the Merestein site (33.087355°

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
		Very Low (-ve) with mitigation	S, 17.955044° E). <ul style="list-style-type: none"> • Undertake diver surveys prior to placing anchors / moorings, and do not place mooring blocks on visible shipwreck features (above the seabed). • Contact archaeologists should shipwreck material be identified to agree on any interventions required. • Provide the location and nature of any identified maritime and underwater cultural heritage resources to a maritime archaeologist and SAHRA for inclusion on their shipwreck database. • If a shipwreck site or part thereof has been disturbed, obtain a permit from SAHRA prior to continuing with activities.
	<u>Operations Phase:</u>		
	Modification of seabed characteristics by shellfish farming	Medium (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Select sites favouring well-flushed, deep and productive areas (Big Bay North, Outer Bay North, Outer Bay South) and avoid potentially sensitive and valuable habitats such as conservation areas (Malgas Island, Jutten Island, Langebaan Lagoon MPAs), biogenic habitats (e.g. kelp beds) and reefs (e.g. Lynch Blinder, North Bay Blinder). (Note: raft density within each farm, production levels per farm or the number of precincts within the agreed ADZ will also influence the level of mitigation deemed appropriate). • Leave mooring anchors or blocks in place when undertaking structure maintenance or fallowing sites to avoid repetitive impacts of the same activity at each site. • Avoid high density culture (overcrowding). The recommended density is one raft of 800 droppers per ha; 11 longlines of 832

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	Modification of seabed characteristics by finfish farming	High (-ve) without mitigation and Medium (-ve) with mitigation	<p>droppers per ha.</p> <ul style="list-style-type: none"> • Implement recommended monitoring in seabed properties at farming sites and compile annual monitoring reports. <ul style="list-style-type: none"> • Select sites avoiding potentially sensitive and valuable habitats such as conservation areas (Malgas Island, Jutten Island, Langebaan Lagoon MPAs), biogenic habitats (e.g. kelp beds, seabird breeding and foraging areas) and reefs (e.g. Lynch Blinder, North Bay Blinder). • Select suitably deep sites that allow cages to be suspended at least 5 m above the seabed. • Implement buffers and a phased-in development of finfish farms. • Ensure that finfish cages do not occupy more than 30% of the total area allocated for finfish farming at any one time, both within individual licence areas and overall within the portions of the ADZ identified for finfish culture. • Manage stocking densities at levels to ensure that environment health is maintained, as determined by the environmental sampling and monitoring programme (see EMPr). • Monitor and manage feeding regimes to minimise feed wastage and chemical usage. Use high digestibility, high energy and low phosphorus feeds, species and system-specific feeds and maximize food conversion ratios (and minimize waste). • Rotate cages within a production area to allow recovery of benthos. • Limit annual increases in finfish production to no more than 1 000 t, and

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>only if monitoring results indicate that environment health has been maintained and impacts remain manageable, up to 5 000 tpa ungraded production.</p> <ul style="list-style-type: none"> • Only exceed finfish production of 5 000 tpa (after at least 5 years) to a maximum of 10 000 tpa if a precautionary approach is applied, involving strict and intensified monitoring programmes and adherence to environmental quality standards. Should standards or precautionary limits be approached or exceeded, the sampling and monitoring plans must include a response procedure that leads to appropriate downward adjustment of fish production. • Adopt the (relevant aspects of) MOM (Modelling-Outgrowing-Monitoring) management system (or similar) to monitor infaunal and epifaunal macrobenthic communities at farming sites.
	Modification of water column characteristics	Medium (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Select sites avoiding potentially sensitive and valuable habitats such as conservation areas (Malgas Island, Jutten Island, Langebaan Lagoon MPAs), biogenic habitats (e.g. kelp beds, seabird breeding and foraging areas) and reefs (e.g. Lynch Blinder, North Bay blinder). • Select sites favouring well-flushed, deep and productive areas (Big Bay North, Outer Bay North, Outer Bay South). • Implement buffers and a phased-in expansion of shellfish and finfish farms. • Manage stocking densities at levels to ensure that

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>environment health is maintained, as determined by the environmental sampling and monitoring programme (see EMPr).</p> <ul style="list-style-type: none"> • Undertake ongoing, detailed water quality monitoring; including baseline surveys at control and impact sites, and decrease the ADZ carrying capacity should the environmental quality indicator be exceeded outside of the accepted sacrificial footprint. • Monitor and manage feeding regimes to minimise feed wastage and chemical usage. Use high digestibility, high energy and low phosphorus feeds, species and system-specific feeds and maximize food conversion ratios (and minimize waste). • Limit annual increases in finfish production to no more than 1 000 t, and only if monitoring results indicate that environment health has been maintained and impacts remain manageable, up to 5 000 tpa ungraded production. • Only exceed finfish production of 5 000 tpa (after at least 5 years) to a maximum of 10 000 tpa if a precautionary approach is applied, involving strict and intensified monitoring programmes and adherence to environmental quality standards. Should standards or precautionary limits be approached or exceeded, the sampling and monitoring plans must include a response procedure that leads to appropriate downward adjustment of fish production. • Monitor for copper leachate from antifouling

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			paint.
	Creation of habitat	Medium (+ve) without and with mitigation	<ul style="list-style-type: none"> • None
	Alteration of behaviour and entanglement of seabirds and marine fauna from shellfish farming	Medium (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Implement buffer zones at MPAs. • Minimise the potential for litter entering the marine environment (particularly plastic wastes). • Keep a log of all cetaceans, seabirds and predators recorded in the vicinity of fish farms, including behavioural observations. These data should be periodically compiled and analysed by experts.
	Alteration of behaviour and entanglement of seabirds and marine fauna from finfish farming	High (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Implement buffer zones at MPAs. • Minimise the potential for litter entering the marine environment (particularly plastic wastes). • Remove any injured or dead fish from cages promptly. • Do not release any blood and/or offal (organic waste) from finfish into the bay. • Keep a log of all cetaceans, seabirds and predators recorded in the vicinity of fish farms, including behavioural observations. These data should be periodically compiled and analysed by experts. • Use predator exclusion nets as necessary. Enclose nets at the bottom to minimise entanglement, keep nets taut, use mesh sizes of < 6 cm and keep nets well maintained (e.g. repair holes). • Develop disentanglement protocols in collaboration with DAFF, DEA and the SA Whale Disentanglement Network and establish a rapid response unit to deal with entanglements.

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	Introduction of alien invasive species or spread of fouling pests	Very High (-ve) without mitigation and Medium (-ve) with mitigation	<ul style="list-style-type: none"> • Ensure that a high level of biosecurity management and planning is in place to limit the introduction of pests to be able to respond quickly and effectively should biosecurity risks be identified. • Undertake routine surveillance on and around marine farm structures and associated vessels and infrastructure for indications of non-native fouling species. • Maintain effective antifouling coatings and regularly inspect farm structures and farm vessels for pests. • Clean structures and hulls regularly to ensure eradication of pests before they become established. • If spat import cannot be avoided, only use spat from biosecure certified hatcheries. • Ensure that veterinarian protocols to eliminate any pests, parasites and diseases are strictly adhered to.
	Transmission of diseases to wild populations	High (-ve) without mitigation and Very Low (-ve) with mitigation ⁷	<ul style="list-style-type: none"> • Ensure that a high level of biosecurity management and planning is in place to limit the introduction of pests and diseases and to be able to respond quickly and effectively should biosecurity risks be identified. • If spat import cannot be avoided, only use spat from biosecure certified hatcheries and/or quarantine facilities. • Ensure that veterinarian protocols to eliminate any pests, parasites and diseases are strictly

⁷ *SRK notes that the specialist study conducted by Anchor Environmental for the Southern Cross fish farm EIA considered disease transmission to wild stocks a potentially high impact, potentially due to an as yet undiscovered local or introduced pathogen/parasite, indicating some uncertainty associated with the potential for and risk of disease transfer to and from farmed fish. This supports the proposed gradual phasing in of fish farming in the ADZ, coupled with careful monitoring of pathogens and potential of transfer to wild fish to inform the AMC's decision on implementation of the next phase.*

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			adhered to. <ul style="list-style-type: none"> • Discourage the use of chemicals in disease management. Use only prescribed veterinary chemicals.
	Risk of genetic interaction with wild populations by shellfish farming	Medium (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Ensure good physical and biological containment to limit the effects of escaped stocks.
	Risk of genetic interaction with wild populations by finfish farming	High (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Implement suitable management and planning measures to limit the possibility of genetic interactions. • Implement the “Genetic Best Practice Management Guidelines for Marine Finfish Hatcheries” developed by DAFF and ensure adequate genetic monitoring of brood stock rotation. • Implement annual genetic monitoring between wild caught and farmed fish to monitor for any significant differences. • Use appropriate spawning regimes in the hatchery to maintain genetic diversity in the offspring. • Use all female or triploid salmonids in the farms. • Use robust, well-maintained containment systems. • Maintain cage integrity through regular maintenance and replacement. • Ensure appropriate training of staff. • Develop and implement recovery procedures should escapes occur.
	Pollution by therapeutants and trace contaminants	Medium (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Use only approved veterinary chemicals and antifoulants. • Reduce levels of nutritional therapeutants and trace contaminants in feed, using only the lowest effective doses. • Use the most efficient drug delivery mechanisms that minimise the

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>concentrations of biologically active ingredients entering the environment.</p> <ul style="list-style-type: none"> • Establish and adhere to guidelines around the use of anti-fouling products in the mariculture industry. • Do not apply antifoulants on site and use environmentally friendly alternatives where effective.
	Contribution to the economy	Medium (+ve) without and with mitigation	<ul style="list-style-type: none"> • Procure goods and services from local, provincial or South African suppliers as far as possible, with an emphasis on BEE suppliers where possible. • Procure ancillary services for goods purchased overseas, such as installation, customisation and maintenance, from South African companies as far as possible.
	Increased employment, income and skills development	Medium (+ve) without and with mitigation	<ul style="list-style-type: none"> • Utilise local labour (Saldanha Bay Municipality) as much as possible. Where non-local specialist staff is required, implement a training programme to upskill local labour to assume these positions over a period of 5 years. • Collect monthly data on staff numbers, composition and origin and report these at least annually to the respective authorities (e.g. DAFF).
	Possible reduction in water sport activities and associated decline in tourism and business activities	High (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Avoid placing aquaculture structures in the Big Bay South precinct to allow continued access by watersports crafts. • Avoid placing aquaculture structures in the section between Jutten Island and Dongergat Peninsula in the Outer Bay South precinct to allow continued access by watersports crafts. • Invite the general public to register as stakeholders on a stakeholder database

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>maintained by the ADZ Management Committee (AMC). Provide regular updates to all registered stakeholders on activities in the ADZ.</p> <ul style="list-style-type: none"> • Provide at least 2 months' notice to registered stakeholders before installation of new farms commences. Provide detail on the proposed farm type and location. • Ensure that all active aquaculture farms are accurately marked on all navigational charts. • Ensure that the outer boundaries of all active aquaculture areas are accurately marked day and night using markers compliant with South African Marine Safety Authority (SAMSA) regulations. • Monitor markers to ensure they are always fully functional.
	Possible restrictions to military activities	High (-ve) without mitigation and Low (-ve) with mitigation	<ul style="list-style-type: none"> • Avoid placing aquaculture structures in the Big Bay South precinct to allow continued access by watersports crafts. • Avoid placing aquaculture structures in the section between Jutten Island and Donkergat Peninsula in the Outer Bay South precinct to allow continued access by watersports crafts. • Invite the general public to register as stakeholders on a stakeholder database maintained by the AMC. Provide regular updates to all registered stakeholders on activities in the ADZ. • Provide at least 2 months' notice to registered stakeholders before installation of new farms commences. Provide detail on the proposed farm type and location. • Ensure that all active aquaculture farms are accurately marked on all

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			navigational charts. <ul style="list-style-type: none"> • Ensure that the outside boundaries of all active aquaculture areas are accurately marked day and night using markers compliant with SAMSA regulations. • Monitor that markers are fully functional.
	Pressures on resources and infrastructure due to an influx of people	Very Low (-ve) without and with mitigation	<ul style="list-style-type: none"> • Implement a local recruitment policy, to discourage an uncoordinated influx of outside workers.
	Altered sense of place and visual intrusion from the proposed development	High (-ve) without mitigation and Medium (-ve) with mitigation	<ul style="list-style-type: none"> • 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. • Ensure project components are of a similar style and scale 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. • Incorporate a 1 km buffer from residents along the eastern shoreline in the design of the Big Bay North precinct.
	Altered sense of place and visual quality caused by light pollution at night	Low (-ve) without mitigation and Very Low (-ve) with mitigation	<ul style="list-style-type: none"> • 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

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			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. <ul style="list-style-type: none"> If the Ports Authority requires flashing lights, ensure the lights flash simultaneously.
	Indirect impacts: Construction Phase:		
	No indirect impacts were identified.		
	Operational Phase:		
	No indirect impacts were identified.		
	Cumulative impacts: Construction Phase:		
	No cumulative impacts were identified.		
	Operational Phase:		
	Cumulative Impacts on Marine Ecology of Saldanha Bay	Low (-ve) to Medium (-ve)	See proposed mitigation measures for direct impacts above.
	Cumulative Impacts on Watersports Uses of Saldanha Bay	Low (-ve)	
	Cumulative Impacts on Visual Quality of Saldanha Bay	Medium (-ve)	
	Cumulative Impacts on Employment in the Saldanha Bay Region	High (+ve)	
No-go option			
	Direct impacts: This implies that the ecological conditions of Saldanha Bay will not be impacted and the current status quo will be maintained. The No Go alternative thus has no impact on the ecological characteristics of the area.	Insignificant	None
	Indirect impacts: No indirect impacts were identified.		
	Cumulative impacts: No cumulative impacts were identified.		
Layout Alternative 2 ("Reduced Big Bay South Alternative")			
The following negative impacts are marginally lower for Layout Alternative 2:			
<ul style="list-style-type: none"> Modification of seabed characteristics by shellfish farming 			

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
	<ul style="list-style-type: none"> - Possible reduction in watersport activities and associated decline in tourism - Altered sense of place and visual intrusion visual intrusion from the proposed development - Altered sense of place and visual quality caused by light pollution at night <p>However, the reduction in impacts is very low, as the area excluded from the Reduced Big Bay South Alternative was not identified for finfish farming; as such any impacts related to finfish farming are not reduced as a result of implementing Alternative 2. Similarly, since it is assumed that the shellfish production volume calculated based on carrying capacity estimates could also be achieved in a smaller area at higher densities, provided that environmental and shellfish growth characteristics remain acceptable, most impacts related to shellfish farming are also not affected by implementing Layout Alternative 2.</p> <p>Layout Alternative 2 therefore has identical impact ratings to those of Layout Alternative 1. Moreover, the recommendation to avoid the Big Bay South precinct entirely in mitigation of socio-economic impacts eliminates the difference between Layout Alternatives 1 and 2. (see Appendix F).</p>		

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative)

Layout Alternative 1 related to the "Full Big Bay South Alternative". Please note that the recommendation to avoid the Big Bay South precinct entirely in mitigation of socio-economic impacts eliminates the difference between Layout Alternatives 1 and 2. The environmental impact statement presented below relates to the recommended post-mitigation scenario.

The authorisation of an Aquaculture Development Zone (ADZ) in Saldanha Bay aims to create incentives for the further development of aquaculture in Saldanha Bay, thereby creating jobs, providing skills development and contributing to the economy under the umbrella of the Operation Phakisa initiative. Aquaculture is well-established in Saldanha Bay, and the bay is one of very few sheltered waterbodies off the South African coast that are deemed suitable for marine-based aquaculture.

The potential project impacts are summarised in Table 9.

Table 8: Summary of potential impacts of the proposed project

Impact	Description	Pre-mitigation impact	Post-mitigation impact
Construction Phase			
Biological	Crushing of biota in sediments during placement of mooring infrastructure	Low (-)	Low (-)
Socio-economic	Investment in the economy	Low (+)	Low (+)
	Increased employment, income and skills development	Very low (+)	Very low (+)
Cultural-historical	Destruction, damage or alteration of heritage material or sites	Low (-)	Very low (-)

BASIC ASSESSMENT REPORT

Operation Phase				
Biological	Modification of seabed characteristics by:			
	- Shellfish farming	Medium (-)	Low (-)	
	- Finfish farming	High (-)	Medium (-)	
	Modification of water column characteristics		Medium (-)	Low (-)
	Creation of habitat		Medium (+)	Medium (+)
	Alteration of behaviour and entanglement of seabirds and marine fauna:			
	- Shellfish farming	Medium (-)	Low (-)	
	- Finfish farming	High (-)	Low (-)	
	Risk of introduction of alien invasive species or spread of fouling pests		Very high (-)	Medium (-)
	Transmission of diseases to wild populations		High (-)	Very low (-)
	Risk of genetic interaction with wild populations:			
	- Shellfish farming	Medium (-)	Low (-)	
	- Finfish farming	High (-)	Low (-)	
	Contamination by therapeutants and trace contaminants from finfish farming		Medium (-)	Low (-)
	Socio-economic	Contribution to the economy		Medium (+)*
Increased employment, income and skills development		Medium (+)*	Medium (+)*	
Possible reduction in water sport activities and associated decline in tourism and business activities		High (-)	Low (-)	
Possible restrictions to military activities		High (-)	Low (-)	
Pressures on resources and infrastructure due to an influx of people		Very low (-)	Very low (-)	
Visual	Altered sense of place and visual intrusion from the proposed development		High (-)	Medium (-)
	Altered sense of place and visual quality caused by light pollution at night		Low (-)	Very low (-)

* High (+) if full production is ecologically sustainable.

The most significant potential negative impacts of the project (after mitigation) are related to marine ecology and visual aspects. Most notably, expanding shellfish aquaculture in Saldanha Bay, and introducing finfish aquaculture, is likely to:

- Modify seabed characteristics by deposition of fish waste (faeces and excess feed);
- Increase the risk of introducing alien invasive species or spread of fouling pests through the importation of seed stock and provision of aquaculture structures on which fouling organisms establish; and
- Alter the sense of place and present a visual intrusion as a result of the aquaculture structures that will be visible on the water surface.

The above impacts are rated as having Medium (negative) residual significance. It is recommended that additional aquaculture production of shellfish and finfish in Saldanha Bay is gradually phased in, based on environmental monitoring, to avoid unacceptable impacts on the bay. While total shellfish and finfish production volumes have been stipulated for the ADZ, these may not be achieved if environmental monitoring during early implementation phases indicates that impacts exceed acceptable thresholds with regards to marine ecology, such as water and sediment quality.

While other post-mitigation negative impacts related to marine ecology, socio-economic activities and the visual environment are rated as having Low or Very Low (negative) residual significance, implementation of mitigation measures is critical to achieve these ratings, including:

- Avoiding areas that are ecologically sensitive or significantly interfere with other uses in the bay;
- Implementing good biosecurity measures to prevent the introduction of alien invasive species

and minimise the risk of diseases and genetic interaction with wild fish population;

- Utilising aquaculture equipment and methods that are suitable for the conditions in the respective precincts, notably maximum wave and swell heights; and
- Implementing good housekeeping at all times.

Implementation of mitigation measures and phasing in of aquaculture expansion is deemed to effectively mitigate negative impacts of the ADZ. It is recommended that an ADZ Management Committee (AMC), comprised of DAFF, DEA, DEA&DP and TNPA, is established to coordinate and supervise activities, environmental monitoring and environmental compliance of operators in the ADZ. Management measures will also apply to and improve management at existing aquaculture farms in Saldanha Bay. It is further proposed that a Consultative Forum, comprised of other relevant government departments and local organisations, is established to review environmental monitoring data, advise on management and recommend measures.

Benefits of the project relate to development of the aquaculture industry in Saldanha Bay and the resultant contribution to the economy, increased employment (particularly at a low-skill level), income generation and skills development.

SRK believes that sufficient information is available for DEA to take a decision regarding the authorisation of the development. The BA has identified essential mitigation measures that will mitigate the impacts associated with this project to within acceptable limits.

In conclusion SRK is of the opinion that on purely 'environmental' grounds (i.e. the project's potential socio-economic and biophysical implications) **Alternative 1 with the recommendations stipulated above and below**, should be approved.

The implementation of Layout Alternative 1 without implementation of the recommendations stipulated above and below is not preferred, as it is deemed to result in unacceptable impacts.

Alternative B

*Layout Alternative 2 related to the "Reduced Big Bay South Alternative". Please note that **the recommendation to avoid the Big Bay South precinct entirely in mitigation of socio-economic impacts eliminates the difference between Layout Alternatives 1 and 2.** The implementation of Layout Alternative 2 without implementation of the recommendations stipulated above and below is not preferred, as it is deemed to result in unacceptable impacts.*

Alternative C



No-go alternative (compulsory)

The No-go alternative implies that the ADZ will not be established.

This implies that the current biophysical conditions of Saldanha Bay and socio-economic characteristics of the surrounding area will not change as a result of the ADZ. Aquaculture will continue in areas that are currently operational in Small Bay and in isolated areas in Outer Bay and Big Bay, and may expand into areas authorised through separate EIA processes. However, such expansion, particularly for shellfish farms, may take longer, resulting in the generation of fewer jobs than is possible with the ADZ. Farms of small-scale producers may not be able to expand to reach optimal production levels and become financially unviable.

There is a possibility that future development will take place in Big Bay related to the Oil and Gas industry and iron ore export operations. The No-Go alternative does not result in impacts or benefits relative to the current situation.

The AMC will not be established, and the environmental management and monitoring of existing aquaculture operations in Saldanha Bay will not be further coordinated.

Operation Phakisa objectives to increase production and employment in the aquaculture industry will not be implemented in Saldanha Bay.

SRK is of the opinion that the No-go alternative is less preferred.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	NO
-----	----

If “NO”, indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

The key recommendations for the implementation of the ADZ relate to the layout / extent of the ADZ and the phasing in of aquaculture expansion; these are listed below. A wide range of other mitigation measures are listed in the impact assessment (Section D1 and Appendix F) and the EMP; those should also form part of the authorization.

Layout / extent of the ADZ

It is recommended that a number of areas initially identified for inclusion in the ADZ are avoided in mitigation of marine ecology, socio-economic, visual and heritage impacts, thereby reducing the ADZ. These areas are shown in blue and orange shading in Figure 4 below and include the following:

- Big Bay North: 100 m-wide buffer around reefs and blinders and 1 km buffer from residents along the eastern shoreline (to mitigate marine ecology and visual impacts). This reduces the precinct by 43%;
- Big Bay South: entire precinct (to mitigate marine ecology and socio-economic impacts). This reduces the precinct by 100% (i.e. it is not developed);
- Outer Bay North: 1 000 m buffer for finfish and 500 m buffer for shellfish around the Malgas Island MPA and 100 m-wide buffer around reefs and blinders (to mitigate marine ecology impacts). This reduces the precinct by 40%; and
- Outer Bay South: 250 m-wide buffer around Jutten Island MPA (aligned with the island) and the entire channel between Jutten Island and Donkergat Peninsula (to mitigate marine ecology, socio-economic and heritage impacts). This reduces the precinct by 73%.

In the post-mitigation scenario, the new proposed ADZ area has thus reduced by 70% from 1 404 ha in the pre-mitigation scenario to 420 ha. The total ADZ, including areas for which leases are currently held (not all of which are farmed) would be 884 ha in the post-mitigation scenario. This equates to approximately 10% of Saldanha Bay (Small, Big and Outer Bay).

In addition, it is recommended to amend the Big Bay North area so that the Molapong application area can be integrated without increasing the total size of the area (please see Footnote 8 in this regard).

BASIC ASSESSMENT REPORT

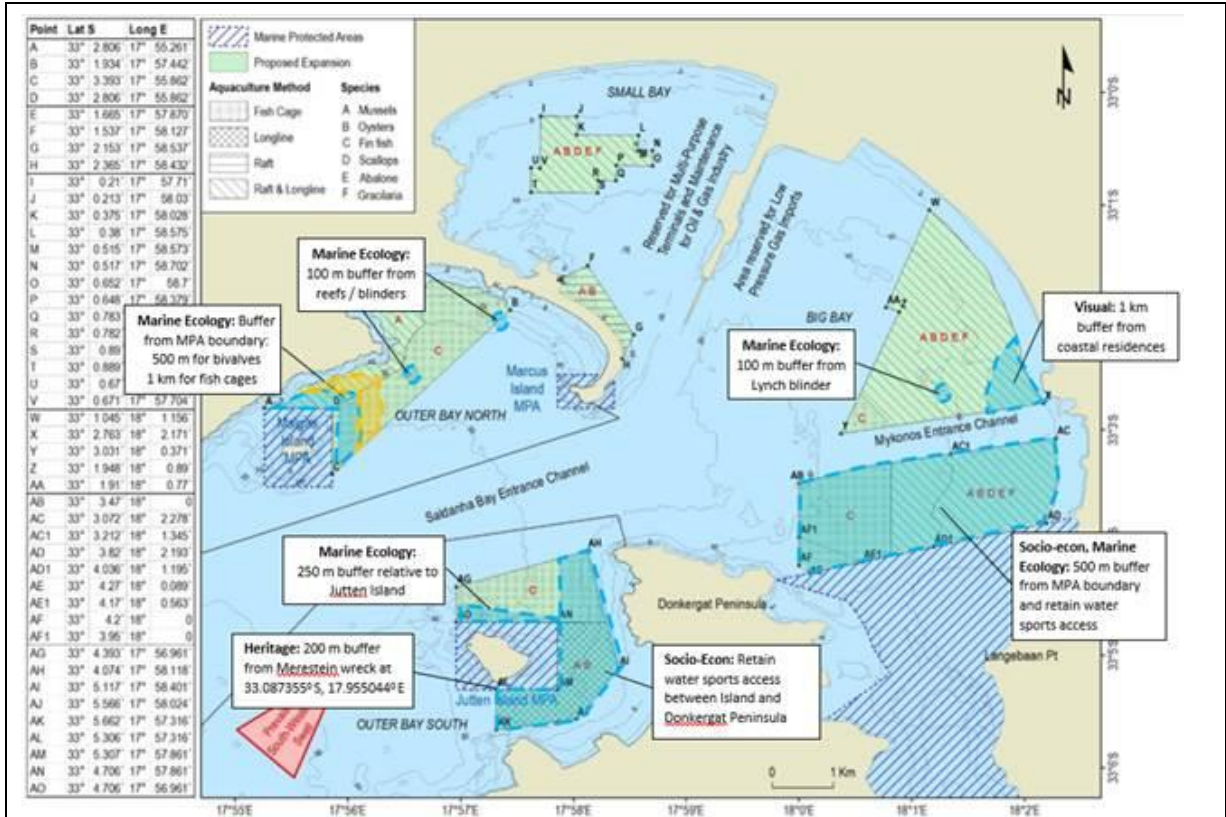


Figure 4: Areas to avoid in mitigation of impacts

The post-mitigation areas are provided in Tables 9 and 10 and Figure 5 below.

Table 9: Post-mitigation ADZ area (ha)

Area	Currently allocated	Currently farmed	New areas	Total future
Small Bay	163	125	-	163
Big Bay North	254	25	155	409
Outer Bay North	37	1	179	216
Outer Bay South	10	-	86	96
Total	464	151	420	884

Table 10: Post-mitigation bivalve and finfish ADZ areas (ha)

Area	Total ADZ area	Bivalves	Finfish
Small Bay	163	163	-
Big Bay North	409	367	42
Outer Bay North	216	76	140
Outer Bay South	96	-	96
Total	884	606	278

BASIC ASSESSMENT REPORT

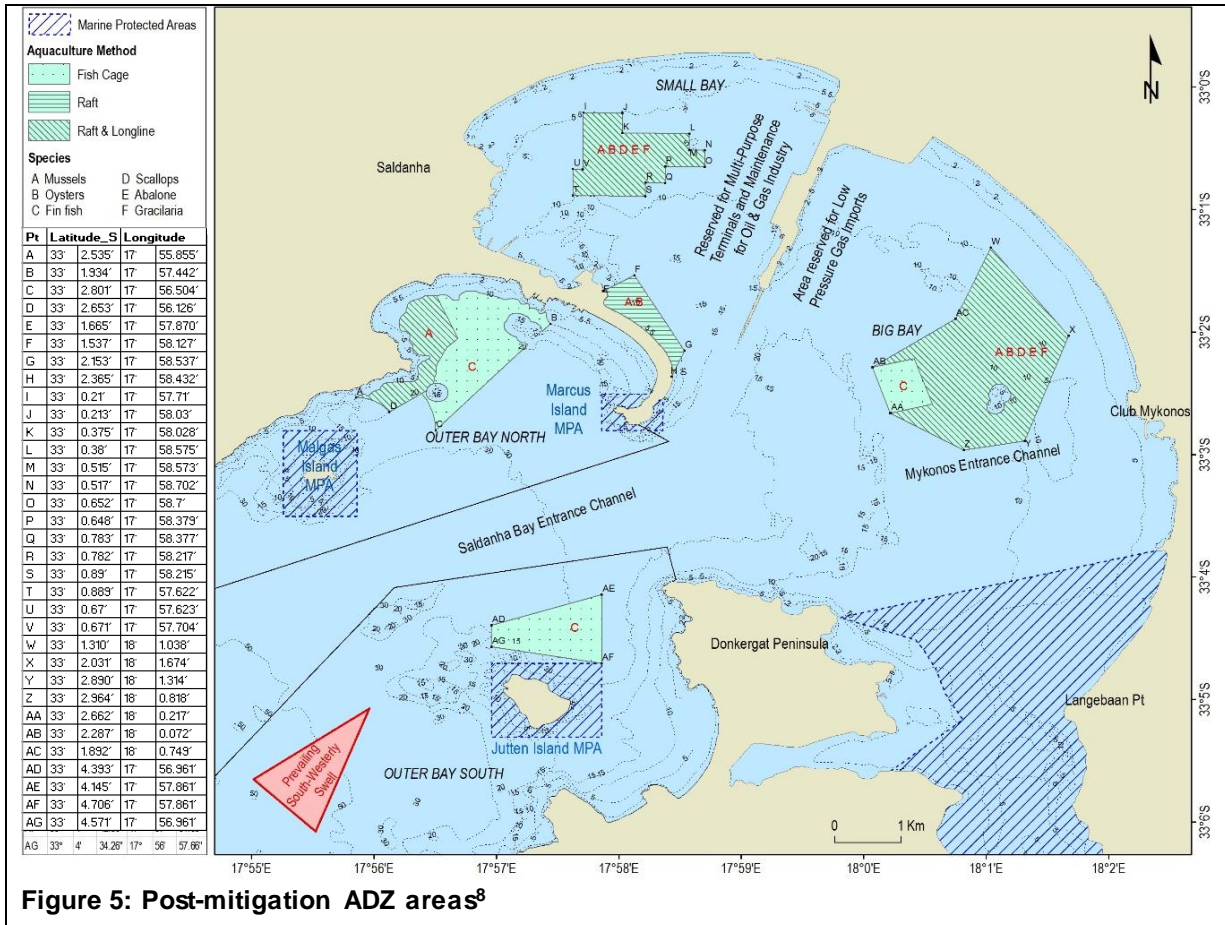


Figure 5: Post-mitigation ADZ areas⁸

⁸ Molapong is engaged in a parallel BA process to obtain Environmental Authorisation for two sites, one of which is located in Big Bay. The application site was moved from an initial position in Big Bay South to an area in the northern portion of Big Bay in response to stakeholder concerns raised through the ADZ BA process to aquaculture in Big Bay South.

The currently proposed site by Molapong is located just west of the Big Bay North ADZ area (see map below), in an area that was initially considered suitable for aquaculture by CapMarine but subsequently excluded on request of TNPA. However, subsequent to the initial engagement with TNPA for the ADZ, TNPA has issued a lease for the site to Molapong.

To ensure that the Molapong site is properly integrated into the ADZ, and does not add to the overall ADZ footprint, the Big Bay North ADZ area has been amended on request of DAFF to include the Molapong site. In exchange, other portions of the Big Bay North area have been excluded to ensure that the total area remains of the same size (409 ha) (see map below). Nearshore areas as well as the south-western portion of the originally proposed Big Bay North area were excluded, resulting in a larger distance to the coast and further reduction of potential interference with watersports.



BASIC ASSESSMENT REPORT

Phasing in of aquaculture expansion

It is recommended that a phased approach for the expansion of aquaculture in the ADZ is implemented, notably:

- Limit annual ungraded **shellfish** production to 10 000 t for the first two years, increasing thereafter annually by 5 000 tpa only if monitoring results indicate that environment health has been maintained and impacts remain manageable, to a maximum of 27 600 tpa ungraded production; and
- Limit annual increases in **finfish** production to 1 000 t, and only if monitoring results indicate that environment health has been maintained and impacts remain manageable, up to 5 000 tpa. Split the allowable annual increase in production between Big Bay and Outer Bay.
- Finfish production beyond 5 000 tpa should only be pursued if:
 - Ecological monitoring indicates that production of 5 000 tpa has no adverse ecological effects, and there is adequate information to permit further expansion in fish production;
 - Intensified monitoring is applied (a detailed monitoring plan to be implemented) and that expanded production can only occur by following a more precautionary ramp up approach; and
 - In the ramp up period, and for any production beyond five years, a further period of strict monitoring and environmental quality standards is introduced. Should standards or precautionary limits be approached or exceeded, sampling and monitoring plans must include a response procedure that leads to appropriate downward adjustments of fish production.

Environmental monitoring must be implemented to inform management and expansion of operations as part of the phased approach.

An AMC must be constituted to oversee, facilitate, manage and monitor aquaculture operations in the ADZ.

Is an EMPr attached?

YES

NO

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Sue Reuther

NAME OF EAP

SRK Consulting - Certified Electronic Signature

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18 May 2017

SIGNATURE OF EAP

DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information

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