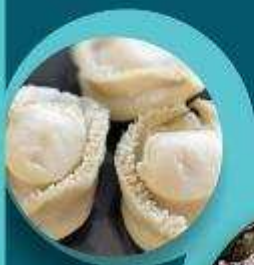


APPENDIX B

Consultation Process



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1 INTRODUCTION

1.1 Brief overview of consultation

A comprehensive consultation process formed the foundation for this SEA. The SEA process was governed by a Project Steering Committee (PSC) consisting of key national and provincial authorities relevant to marine and freshwater aquaculture development in South Africa. The process was also informed by an Expert Reference Group (ERG) consisting of key stakeholders with a focussed interest in marine and freshwater aquaculture research and development. The ERG consisted of provincial and local authorities, research institutions, academia, active NGOs and most importantly the marine and freshwater aquaculture industry.

In addition, during the initial phases of the SEA when determining key technical and environmental siting criteria and identify impacts, focus group meetings were conducted at key centres around the country in order to engage with local and provincial stakeholders. The purpose of the focus group meetings was also to introduce the SEA process to relevant aquaculture stakeholders and source information on aquaculture operations and current regulation within the nine provinces, as well as to verify mapping of existing aquaculture facilities and check that all relevant environmental, social and economic issues faced by the aquaculture sector were identified and noted.

Further, a dedicated SEA website where stakeholders could engage with any uploaded information, was created and maintained during the course of the SEA process. The SEA has been presented at two international and one national conferences, and more than 25 stakeholder workshops. The SEA was also advertised in several national-based newspapers as well as on the websites of the national DEA, DAFF and CSIR at the time. A background information document (BID) was also developed to introduce the SEA to the public and inform stakeholders of the SEA objectives, process and envisaged outcomes, as well as to invite stakeholders to participate in the SEA.

1.2 Methods adopted for consultation with stakeholders

The stakeholder consultation process undertaken for this SEA aimed at providing any interested and affected party (I&APs) the opportunity to engage with the process. For this purpose, various means of communication were used to engage with stakeholders and inform the public of the opportunities for stakeholder engagement. These methods include:

- Focus Group Meetings at key centres in South Africa;
- Various Authority, Key Stakeholder and Sector Specific Meetings;
- Distribution of emails;
- Publication of articles and newspaper advertisements;
- Publication of a project website; and
- Publication of written documents made available on the website.

1.2.1 Project Email Account

A dedicated project email account (aquasea@csir.co.za) was created at the inception phase of the SEA in May 2016. The email account allowed the Project Team to communicate with stakeholders throughout the SEA process through a dedicated platform. This assisted in facilitating the

management of comments received from stakeholders and ensured consistency, as well as to provide stakeholders with the opportunity to register as an I&AP or share inquiries.

1.2.2 Project Website

A project website was also launched at the inception of the SEA process in May 2016. The project website was created as a platform for the exchange of information and data between the SEA project team and all stakeholders including government officials, local communities, industry representatives, and anyone else interested in marine and freshwater aquaculture development in South Africa. It also enabled the team to gather information, concerns and comments from stakeholders.

The project website is accessible at: <https://aquasea.csir.co.za/>. The website enabled stakeholders to register on the SEA database and also send comments to the SEA Project Team via an online form (<https://aquasea.csir.co.za/stakeholder-portal/>). The home page of the project website is illustrated in Section 3 of this Appendix.

During 2017 and 2018, the SEA Project team launched a country-wide rapid citizen science survey for Nile tilapia in South African watercourses. The South African public was invited to participate via an online survey that was also made available on the SEA project website: <https://aquasea.csir.co.za/nile-tilapia-mapping/>.

1.2.3 Stakeholder Database

The Stakeholder Database was maintained and updated throughout the SEA Process. A total of 610 stakeholders were included on the Marine and Freshwater Aquaculture SEA Stakeholder Database via the above methods of consultation. A copy of the Stakeholder Database is included in Section 11 of this Appendix.

2 BACKGROUND INFORMATION DOCUMENT

BACKGROUND INFORMATION DOCUMENT

Strategic Environmental Assessment for Aquaculture Development in South Africa

September 2016

Vision for aquaculture development in South Africa

Aquaculture includes the breeding, rearing and harvesting of plants and animals in salt or fresh water. It is the fastest growing food production sector in the world, with the global aquaculture industry producing approximately 67 million tonnes per annum (mtpa) of fish from freshwater (42 mtpa) and marine (25 mtpa) sources (FAO, 2014). An additional 50 million tonnes of fish is required to feed the world population by 2030 and it is anticipated that worldwide this production will come mainly from aquaculture.

In South Africa, aquaculture is still in the developmental stage and has the potential to grow and contribute towards job creation, food security and improving the inclusivity of the sector. Aquaculture has the potential of reducing the fishing

pressure on wild fisheries stocks.

Operation Phakisa was launched by the South African national government in 2014, with the aim of implementing priority economic and social programmes and projects better, faster and more effectively. One of the key sectors within Operation Phakisa is the promotion of the Oceans Economy. Oil and Gas, Marine Manufacturing and Transport, Marine Protection and Governance, and Aquaculture were chosen as initial focal areas for the Oceans Economy.

South Africa's aquaculture industry currently consists of a limited range of marine and freshwater species of plants and animals. The industry provides approximately 6000 tonnes per annum (2012, including seaweed), which is less than 1% of South Africa's total marine wild catch which is in the order of 700 000 tonnes per annum.



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BACKGROUND INFORMATION DOCUMENT

It is the vision of the South African government to promote and grow the domestic aquaculture sector in a manner that contributes to food and nutritional security, creates sustainable jobs, fosters economic development, stimulates rural development and supports livelihoods, attracts investment, safeguards the environment and creates opportunities for SMMEs and wealth-generation (Operation Phakisa and DAFF National Aquaculture Strategic Framework).

Current challenges facing aquaculture

The aquaculture sector in South Africa is in its infancy with an estimated 200 marine and freshwater facilities in operation, most of which produce less than 50 tonnes per annum.

One of the challenges facing aquaculture is the over regulation of the sector. There are over 13 different licences required by a potential developer before being able to operate. These permits and licenses are required from a number of different government departments and are currently issued in a cascading manner which extends the permitting period unnecessarily. In this complicated and uncertain regulatory environment, potential aquaculture developers find it difficult to attract investment.

Other challenges include that production is focused on a few high-value species, scarcity of freshwater and a harsh marine environment, difficulty in accessing project funding, limited pool of skills and support services, unpredictability associated with climate change, vast difference between winter and summer temperatures, challenges with access to land and sea space, and perceived competition with the tourism and conservation sectors.

As the growth in aquaculture is desirable for a number of reasons, these challenges where possible must be addressed. In particular, the environmental legislative framework is one of the areas in need of improvement. A Strategic Environmental Assessment (SEA) was therefore identified to assist streamline and integrate the current regulatory framework and thereby facilitate the sustainable growth of the industry.

This led to the national Department of Environmental Affairs (DEA) in collaboration with the Department of Agriculture, Forestry and Fisheries (DAFF) commissioning the Council for Scientific and Industrial Research (CSIR) to undertake an SEA for the development of aquaculture in South Africa. The SEA

commenced in 2016 and is being conducted over approximately 18 months to be completed towards the end of 2017.

Purpose of the SEA

The purpose of the SEA is to promote and support the growth of the aquaculture industry in South Africa through:

- (i) identifying suitable areas where environmentally sustainable aquaculture development can be prioritised and incentivised; and
- (ii) providing a streamlined and integrated management and regulatory framework to reduce compliance complexities and improve decision-making processes.

Scope of the SEA

The SEA is being conducted at a national scale and includes all nine provinces. The SEA will assess the identified environmental attributes, specific siting criteria and key impacts associated with both marine (salt water) and freshwater related activities of aquaculture planning, development and operations. The assessment will consider natural (offshore, inshore and inland) and "artificial" or land-based systems operating in cold/temperate and warm waters. Candidate species that will be considered during the assessment include abalone, mussels, oysters, prawns, seaweed, tilapia, trout and marine finfish (e.g. cob and salmon). The SEA process will also review existing legislation, including licensing/permitting and authorisational procedures currently governing marine and freshwater aquaculture on a national and provincial scale.

Approach to the SEA

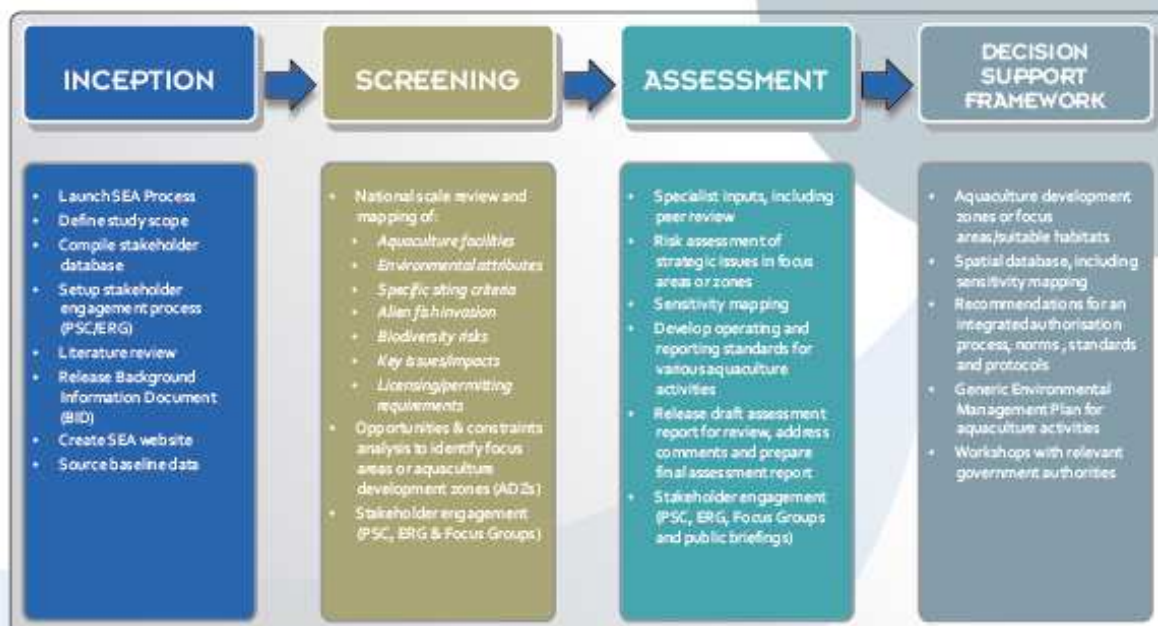
The approach to the SEA is underpinned by three key principles, namely:

- **Saliency:** It must identify and incorporate the important issues and key concerns/impacts;
- **Legitimacy:** It must be grounded in a transparent and participatory process and be mandated by the authorities responsible for decision-making on this topic;
- **Credibility:** It must be based on a recognised assessment methodology and include reputable experts and a peer review process.

The four overlapping phases and associated tasks in the SEA are shown in the figure below:



BACKGROUND INFORMATION DOCUMENT



Key outputs of the SEA

The key outputs will be refined during the course of the SEA and are expected to include:

- National scale mapping of existing aquaculture facilities and of the sensitivity of the receiving environment, in order to identify proposed focus areas or aquaculture development zones;
- Risk and benefit assessment for aquaculture species/types within the focus areas/zones, that provides associated management protocols for aquaculture development;
- Environmental compliance framework enabling a streamlined and integrated decision-making process to reduce (or limit) the need for permitting & authorisations, for example, through the application of norms, standards, reporting requirements and monitoring protocols; and
- Development of a generic Environmental Management Plan (EMP) for the management of aquaculture activities in South Africa.

Stakeholder engagement

The stakeholder engagement process includes a breadth of consultation mechanisms, from the Project Steering Committee (PSC), to the Expert Reference Group (ERG), focus group meetings and public briefings, as summarised below.

A **Project Steering Committee (PSC)** comprising of authorities with a legislated decision-making mandate for aquaculture development in SA has been convened. This group will act as a project management structure, ensuring that the assessment remains on scope, within timelines and budget; and to collaborate with the SEA team to ensure that the outcomes are effective in addressing the decision-making and regulatory needs identified.

PSC members include the Department of Environmental Affairs (DEA), the Department of Agriculture, Forestry and Fisheries (DAFF), the Department of Mineral Resources (DMR), the Department of Planning, Monitoring and



BACKGROUND INFORMATION DOCUMENT

Evaluation (DPME), the Department of Public Enterprises (DPE), the Department of Public Works (DPW), the Department of Rural Development and Land Reform (DRDLR), the Department of Science and Technology (DST), the Department of Trade and Industry (DTI), the Department of Water and Sanitation (DWS), the Transnet National Port Authority (TNPA), and representatives from the nine Provincial Governments.

An **Expert Reference Group (ERG)** has also been convened. This group consists of active NGOs, the aquaculture industry associations, spheres of government i.e. from national to local representation and experts from research institutions. The ERG will verify that the process proposed at the outset has been implemented in a fair and unbiased manner in that suitably experienced experts have been involved in the process, review structures have been designed and implemented in a credible manner, and queries/comments from the public have been adequately addressed.

Focus Group meetings are planned at centres around the country in order to engage with local stakeholders. These are planned at three stages of the SEA: initially in the inception phase to source information, verify mapping of existing facilities and check all relevant issues are identified; then in the screening phase to review the proposed focus areas/zones; and thirdly in the assessment phase to present the draft results.

Public briefing sessions are planned over five days in the main centres across the country where aquaculture occurs, to present the draft assessment report.

How can you be involved in this SEA?

- Register your interest as a stakeholder at <http://aquasea.csir.co.za/>
- Follow the progress of the SEA on the website and comment on draft findings
- Participate in public briefing sessions and through focus group meetings.

How to contact the SEA management team?

To register as a Stakeholder, please fill out the online registration form on the SEA Project Website at <http://aquasea.csir.co.za/stakeholder-portal/>

For enquiries please contact us via the Contact Us page on the SEA Project Website (<http://aquasea.csir.co.za/contact-us-2/>)

or contact us via

Email: aquasea@csir.co.za

Tel: 021 888 2482

Fax: 021 888 8693

Postal address:

Attention:
CSIR Environmental Management Services
P.O. Box 320
Stellenbosch 7600



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SEA Process

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SEARCH

AQUASEA LINKS

- Aquaculture Association of Southern Africa
- Aquaculture Stewardship Council
- CSIR Environmental Management Services
- Department of Agriculture, Forestry and Fisheries (DAFF): Aquaculture and Economic Development
- Department of Environmental Affairs
- Operation Phakisa: Aquaculture
- South African Institute for Aquatic Biodiversity
- South African National Biodiversity Institute
- World Aquaculture Conference 2017

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PSC members include the Department of Environmental Affairs (DEA), the Department of Agriculture, Forestry and Fisheries (DAFF), the Department of Mineral Resources (DMR), the Department of Planning, Monitoring and Evaluation (DPME), the Department of Public Enterprises (DPE), the Department of Public Works (DPW), the Department of Rural Development and Land Reform (DRDLR), the Department of Science and Technology (DST), the Department of Trade and Industry (DTI), the Department of Water and Sanitation (DWS), the Transnet National Port Authority (TNPA), and representatives from the nine Provincial Governments.

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Public briefing sessions are planned over five days in the main centres across the country where aquaculture occurs, to present the key findings from the SEA.

<https://aquasea.csir.co.za/sea-process/>

2/3

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Stakeholder Portal

All information provided during this registration process will be kept strictly confidential. No information will be distributed or used for purposes other than registration of persons as stakeholders and providing SEA related communications to Registered Stakeholders.

Name

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Resources

Document downloads

[National Aquaculture SEA – Background Information Document](#)

[Project Steering Committee Meeting #1_Presentation_7 Jun 2016](#)

[Expert Reference Group Meeting #1_Presentation_7 Jun 2016](#)

[Focus Group Meetings #1_Programme_30 Sep – 07 Oct 2016](#)

[Focus Group Meetings #1_Presentation_30 Sep – 7 Oct 2016](#)

[Focus Group Meeting #1_Notes_Stellenbosch_30 Sep 2016](#)

[Focus Group Meeting #1_Notes_Pretoria_03 Oct 2016](#)

[Focus Group Meeting #1_Notes_Nelspruit_04 Oct 2016](#)

[Focus Group Meeting #1_Notes_Pietermaritzburg_06 Oct 2016](#)

[Focus Group Meeting #1_Notes_Port Elizabeth_07 Oct 2016](#)

[Focus Group Meeting #1_Additional notes from stakeholders_30 Sep – 07 Oct 2016](#)

[Project Steering Committee Meeting #2_Presentation_22 Nov 2016](#)

[Expert Reference Group Meeting #2_Presentation_22 Nov 2016](#)

[Project Steering Committee Meeting #2_Notes 22 Nov 2016](#)

[Expert Reference Group Meeting #2_Notes 22 Nov 2016](#)

[ERG Workshop re Key siting criteria & species thresholds Notes_24 Jan 2017](#)

[ERG workshop_Key siting criteria & species thresholds Presentation_24 Jan 2017](#)

[DAFF CCAMP Workshop 14-16 Mar 2017](#)

[Phase 2_Screening Report with Appendices_07 Jul 2017](#)

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Contact Us

For general enquiries please contact us via the text box on this page.

For media enquiries please contact:

- Tendani Tsedu (CSIR Pretoria)

Strategic Communication & Stakeholder Relations

Tel: 012 841 3417 | Email: MTsedu@csir.co.za

- Albi Modise (DEA)

Chief Director: Communications

Tel: 012 310-3123 | Email: AModise@environment.gov.za

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- CSIR Environmental Management Services
- Department of Agriculture, Forestry and Fisheries (DAFF): Aquaculture and Economic Development
- Department of Environmental Affairs
- Operation Phakisa: Aquaculture
- South African Institute for Aquatic Biodiversity
- South African National Biodiversity Institute
- World Aquaculture Conference 2017

Your Name (required)

Your Email (required)

Subject

Your Message

4 + 3?

Send

4.2 The Sunday Independent



4.3 The Star



'Sasicubungulisisa isinqumo sethu'

Notification of Interest to be Part of a Process to Develop a Strategic Environmental Assessment to Facilitate the Development of the Aquaculture Industry in South Africa

Should you wish to contribute to the SEA process, you are requested to register your interest as a participating stakeholder. You are also requested to make an initial input by identifying issues which should be considered in the scope of the SEA. As a registered interested party you will be informed of the availability of draft documents for comment. The SEA is being conducted by the Council for Scientific and Industrial Research (CSIR) on behalf of DEA and the Department of Agriculture, Forestry and Fisheries (DAFF).

To register as a stakeholder, please fill out the online registration form on the SEA Project website at <http://aquasea.csir.co.za/stakeholder-portal/>. For enquiries, please use the Contact Us page on the SEA Project website (<http://aquasea.csir.co.za/contact-us-2/>) or send an e-mail to the following address: aquasea@csir.co.za

Aquaculture SEA Project website: <http://aquasea.csir.co.za>



ANTHONY YESOLEDNE

[illegible][illegible]

Uxolisile ngokuhlawulisa abaselethini

PHILIP JOLI

E.LUNG Ulishi odi tababata offitini okwawungile komadapa
 Ikodis le ngokuhlawulisa izigidi u-R25 Cuma zinole bingubo
 emadapa abanzi

Uttam Singh and Sungeeth Singh of IIT Guwahati led a group of students to take photographs of the 'Lantern Healer' at Glenwood and set up a temporary stall.

Ngiyazi ukuthi kuyiphutha ebodlenweni kokuthi i shi awu le i iqazi elibeni kungamaphoyisa kamapala kuphi a dikumele ab lawule abantu ngokwephila imithetho kamapala. Bedithi silungisa simo esingabawuleki. Abantu abafuni ukuba dala imigomo sibona ukuthi indisa engcono ukuba lawula kothwa ngokwe sikwenzi okhu, kusho uSingh.

Nga Mgqibelo abahlabali kufika bamashumi
alishumi awulawula u-R250 uma bonoke ibhumbane mawundini.




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5 DEA – SEA NOTIFICATION OF INTEREST

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Strategic Environmental Assessment (SEA) Notice



Agriculture, Forestry and Fisheries
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Introduction and background

Notification of Interest to be part of a process to develop a Strategic Environmental Assessment to facilitate the development of the Aquaculture Industry in South Africa

The Department of Environmental Affairs (DEA) hereby informs all interested stakeholders of its intention to conduct a Strategic Environmental Assessment (SEA) to facilitate sustainable aquaculture development by promoting responsible and integrated decision-making and by identifying suitable areas where aquaculture can be incentivised.

The SEA will cover all nine provinces and includes offshore and land-based aquaculture for both freshwater and salt water species. Aquaculture is one of the priority focus areas of Operation Phakisa, the national government initiative geared towards unlocking the economic potential of South Africa's oceans. The SEA will thus be a tool to support the implementation of Operation Phakisa.

Should you wish to contribute to the SEA process you are requested to register your interest as a participating stakeholder. You are also requested to make an initial input by identifying issues which should be considered in the scope of the SEA. As a registered interested party you will be informed of the availability of draft documents for comment. The SEA is being conducted by the Council for Scientific and Industrial Research (CSIR) on behalf of DEA and the Department of Agriculture, Forestry and Fisheries (DAFF).

To register as a Stakeholder, please fill out the online registration form on the SEA Project Website at:

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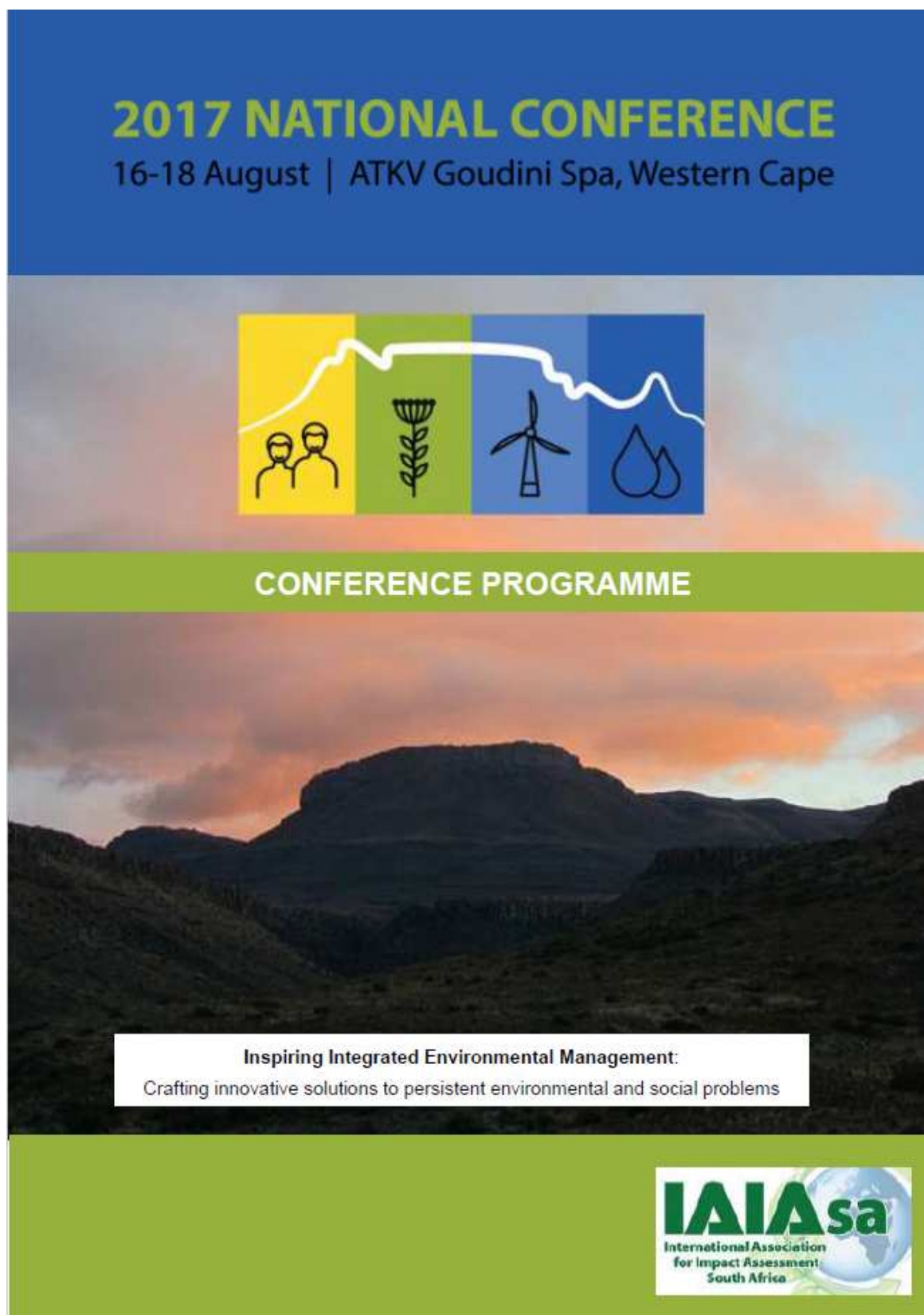
For enquiries please use the Contact Us page on the SEA Project Website (<http://aquasea.csir.co.za/contact-us-2/>) or send an email to the following address: aquasea@csir.co.za

Aquaculture SEA Project Website - <http://aquasea.csir.co.za>

<https://www.environment.gov.za/news/strategic-environmental-assessment-notice>

6 CONFERENCES

6.1 International Association for Impact Assessment – South Africa 2017



ASSESSMENT OF ENVIRONMENTAL SENSITIVITIES TO IMPROVE DECISION-MAKING IN STRATEGIC AREAS IDENTIFIED FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

Lizande Kellerman*, Luanita Snyman-van der Walt, Pat Morant,
Karabo Mashabela, and Paul Lochner

Environmental Management Services
Council for Scientific and Industrial Research
Stellenbosch, Western Cape 7600
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Globally aquaculture is becoming increasingly important due to the global demand for fishery products, and as the supply from capture fisheries have been decreasing in recent years it is anticipated that the shortfall in demand will come from fish farming. In South Africa, the aquaculture industry is still in its developmental stage in comparison to the global aquaculture community, however, it has the potential to grow and contribute towards job creation, food security, economic growth and export opportunities.

A national-scale Strategic Environmental Assessment (SEA) was commissioned by the South African Government in 2016 which aims to create a suitable enabling environment where sustainable aquaculture development can be promoted and incentivised. The SEA will aim to achieve its purpose in two ways; (i) to identify strategic aquaculture development areas using multi-layered spatial analysis of the receiving environment, and (ii) to provide the competent authorities with a streamlined and integrated management and regulatory framework to reduce compliance complexities and improve decision-making processes pertaining to these identified strategic areas for aquaculture.

Following a process using Geographical Information Systems (GIS) and stakeholder input strategic areas for optimal freshwater- and marine aquaculture development in South Africa were identified. Each of these identified areas served as study areas for further assessment during the SEA. Desktop-based specialist studies were conducted to investigate the strategic environmental issues and key impacts of aquaculture broadly relating to freshwater- and marine ecology, including water quality and quantity, ecosystem health, biodiversity risks and pathology; as well as heritage and visual aesthetics, carrying capacity, socio-economics and waste management.

The study areas were assessed to include a four tier environmental sensitivity mapping (i.e. low, medium, high and very high sensitivity) each with associated regulatory protocols, site specific assessment protocols and recommendations for required operating and reporting standards for various fish species and production systems. The standards for aquaculture are to inform whether an activity can be excluded from environmental authorisation in terms of the Environmental Impact Assessment Regulations, 2014; and in areas where exclusion is not appropriate due to high environmental sensitivity will identify the additional level of project specific assessment for authorisation to be undertaken.

Outputs from the specialist assessments are to assist in the development of a generic Environmental Management Plan (EMP) for the construction and operation of freshwater- and marine aquaculture facilities. It is important to note that although the SEA aims to reduce the existing regulatory burden and improve decision-making processes to unlock new aquaculture opportunities and attract investment within the strategic areas, aquaculture will not in any way be restricted or prohibited outside of the SEA study areas.

GIS ANALYSIS AND STAKEHOLDER INPUT TO IDENTIFY STRATEGIC AREAS FOR AQUACULTURE DEVELOPMENT

Luanita Snyman-Van der Walt*, Lizande Kellerman, Pat Morant, Karabo Mashabela and Paul Lochner
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A national Strategic Environmental Assessment (SEA) was commissioned by the South African Government in 2016 which aims to create an enabling environment where sustainable aquaculture development can be promoted for food security and job creation. As part of the Aquaculture SEA, a process – using Geographical Information Systems (GIS) and stakeholder input – was undertaken to identify strategic areas for optimal freshwater- and marine aquaculture development in South Africa. The identified areas served as study areas for further assessment in the SEA, which aims to ultimately i) facilitate the development of aquaculture in an environmentally responsible manner; ii) assist potential aquaculture developers in development siting; iii) maximise the sustainability of new aquaculture development; and iv) to stimulate the industry by reducing regulatory complexity and incentivising development within the identified optimal aquaculture areas.

The identification of the study areas constituted three main phases. First, spatially explicit key variables, which would act as the input for the spatial analysis, were identified and selected in a workshop setting with stakeholders. The variables constituted push- and pull factors which represent existing conditions, uses and users of the environment, as well as requirements of aquaculture facilities employing specific operational systems for breeding different species. Examples of push factors (i.e. where aquaculture would be less suitable) included dams allocated for domestic use in the freshwater environment, whilst extreme wave height was considered a push factor in the marine environment. Pull factors (i.e. where aquaculture would be most suitable) in the freshwater environment included perennial rivers of a certain condition, and distance to launch harbours in the marine environment. The identification and selection of variables were also accompanied by a weighting process, where stakeholders ranked the importance of variables. Secondly, the selected key variables were used as inputs for a weighted overlay spatial analysis using GIS software. The output consisted of a mosaic of “suitability” classes ranging from least suitable/restricted to most suitable. Lastly, the most suitable areas were extracted and refined in an iterative process with various stakeholders to produce strategic aquaculture areas.

Stakeholders engaged throughout the strategic aquaculture area identification process included relevant national and provincial authorities, conservation agencies, research institutions, and industry representatives.

GIS techniques have increasingly become a crucial tool for planning and managing natural resources, and have been implemented globally to identify suitable, sustainable and optimal areas for development using a range of environmental, economic, and social parameters. However, limitations which may constrain desired outputs often exist in terms of the availability, scale and type of input spatial data. Participation by multiple stakeholders in selecting and ranking the input variables, as well as verifying and refining the spatial analysis outputs, was an effective mechanism to ensure consideration of diverse views and values towards enhancing the accuracy and inclusiveness of the strategic aquaculture areas.



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**OPERATION
PHAKISA**
planning | implementation | growth



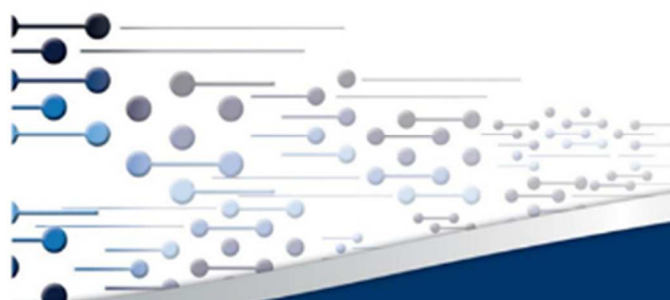
environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Progress on the Strategic Environmental Assessment for Aquaculture Development in South Africa

16 – 18 August 2017

Lizande Kellerman

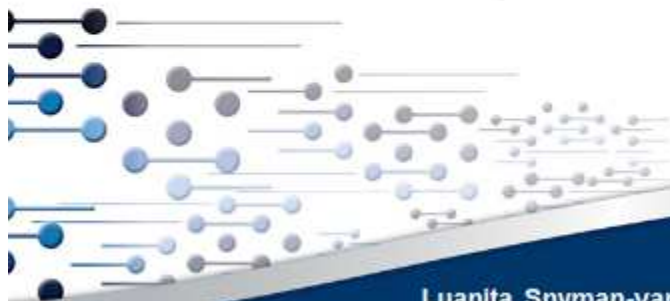


IAIA-SA Conference @ Goudini

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GIS ANALYSIS AND STAKEHOLDER INPUT TO IDENTIFY STRATEGIC AREAS FOR AQUACULTURE DEVELOPMENT

*National Strategic Environmental Assessment for Aquaculture
Development in South Africa*




Luanita Snyman-van der Walt

IAIA-SA 2017

Goudini, 16-18 August 2017

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6.2 World Aquaculture Conference 2017



**World Aquaculture
2017**


**Sustainable Aquaculture –
New Frontiers For Economic Growth**

June 26-30, 2017
Cape Town International Convention Centre
Cape Town, South Africa

The Annual International Conference & Exposition of
World Aquaculture Society

Hosted by
Aquaculture Association of Southern Africa
Department of Agriculture, Forestry and Fisheries,
Republic of South Africa

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& Management
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NATIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA – A SYNOPSIS OF THE CURRENT MARINE AND FRESHWATER AQUACULTURE ENVIRONMENT AND THE NEED TO PROMOTE SUSTAINABLE GROWTH AND INCENTIVISATION

Lizande Kellerman*, Luanita Snyman-van der Walt, Pat Morant,
Karabo Mashabela, and Paul Lochner

Environmental Management Services
Council for Scientific and Industrial Research
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Globally aquaculture is becoming increasingly important due to the global demand for fishery products, and as the supply from capture fisheries have been decreasing in recent years it is anticipated that the shortfall in demand will come from aquaculture. In South Africa, the aquaculture industry is still in its developmental stage in comparison to the global aquaculture community, however, it has the potential to grow and contribute towards job creation, food security, economic development and export opportunities.

To date, several factors have contributed to the suboptimal development of the marine and freshwater aquaculture sector in South Africa. Not only is this industry considered inherently overregulated but it also faces various environmental, economic, social and technical challenges. Some key challenges include the requirement for numerous regulatory authorisations, the production demand being focused on a few high-value species, scarcity of freshwater and a harsh marine environment, difficulty in accessing project funding, limited pool of skills and support services, unpredictability associated with climate change, extreme variance in seasonal temperatures, challenges with access to sufficient land and sea space, and perceived competition with the tourism and conservation sectors.

During 2016, a national-scale Strategic Environmental Assessment (SEA) was commissioned by the South African government addressing these challenges to create a suitable enabling environment where aquaculture development can be promoted and incentivised. The SEA will aim to achieve its purpose in two ways; (i) to identify optimal aquaculture development areas using multi-layered spatial analysis of the receiving environment, and (ii) to provide the competent authorities with a streamlined and integrated management and regulatory framework to reduce compliance complexities and improve decision-making processes pertaining to these identified optimal aquaculture areas. The SEA is being conducted over 18 months, concluding in December 2017, and includes both freshwater and marine aquaculture.

In this paper, the approach to the SEA is presented, with an emphasis on how the SEA will assess and scale the various aquaculture environments, the associated production systems employed, the priority species selected and the regulatory framework governing this sector.

NATIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA – GIS ANALYSIS FOR IDENTIFYING OPTIMAL AREAS FOR MARINE AND FRESHWATER AQUACULTURE DEVELOPMENT

Luanita Snyman-Van der Walt*, Lizande Kellerman, Pat Morant,
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Geographical information systems (GIS) have increasingly become a crucial tool for planning and managing natural resources, and have been implemented around the world for identifying suitable, sustainable and optimal areas for aquaculture development using a range of environmental, economic, and social parameters.

Some of the key challenges currently facing the still developing aquaculture industry in South Africa include amongst others a high-energy coastline with a limited number of naturally protected sites, limited access to sufficient land space and adequate freshwater resources, high water quality and temperature variations, user conflicts and an overregulated sector.

A national-scale Strategic Environmental Assessment (SEA) was commissioned by the South African government in 2016 to create an enabling environment where sustainable aquaculture development can be promoted contributing to food security and job creation.

As part of the Aquaculture SEA, optimal areas for aquaculture development in South Africa were identified in the marine and freshwater environments using GIS spatial analysis. Parameters considered included existing conditions, uses, and users of the environment, as well as the requirements of aquaculture facilities employing specific operational systems for breeding different species. Challenges included obtaining the necessary detailed information on existing aquaculture facilities and environmental parameters. Environmental data layers were often only available at different scales thus hampering analyses and interpretation.

Identification of optimal aquaculture areas, at a strategic level, aims to i) facilitate the development of aquaculture in an environmentally responsible manner; ii) assist potential aquaculture developers by acting as a high-level development siting tool; iii) maximise the sustainability of new aquaculture development; and iv) to stimulate the industry by reducing regulatory complexity and incentivising development within the identified optimal aquaculture areas.

CHALLENGES FACING A RURAL ENTREPRENEURIAL FARMER IN PLANNING AND DEVELOPING AN AQUAPONICS FACILITY IN SOUTH AFRICA: A CASE STUDY FROM THE EASTERN CAPE

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Freshwater aquaculture is considered the oldest fish farming sector in South Africa that, however small in comparison to global trends showed significant increase in production volumes the past two decades. As the current majority of freshwater finfish aquaculture is commercially produced, there is much opportunity for individuals from rural communities to become involved in subsistence and/or artisanal level aquaculture.

Several small, medium and micro-sized enterprises (SMMEs) wanting to invest in aquaculture have been identified by the National Department of Agriculture, Forestry and Fisheries (DAFF) to stimulate socio-economic growth in support of job creation and food security. However, the majority of these rural SMMEs do not have the financial means or skilled capabilities to comply with the numerous environmental authorisations governing the aquaculture sector in South Africa.

In 2014, the National Department of Environmental Affairs (DEA) has initiated the Special Needs and Skills Development (SNSD) programme, currently managed by the Council of Scientific and Industrial Research (CSIR). The programme aims to assist rural SMMEs by undertaking a Basic Assessment to obtain Environmental Authorisation (EA) to develop and legally operate an aquaculture facility.

This paper presents a case study from the Eastern Cape Province of South Africa, wherein the SNSD programme is assisting a community-based enterprise to obtain EA for the development of an aquaponics facility near Coffee Bay. This enterprise known as Intubayethu Aquaponics plans to establish an aquaponics facility producing vegetables and Nile tilapia in a self-contained system.

Challenges faced by this rural entrepreneur in obtaining their EA include *inter alia* the inability to produce a detailed project description, an adequate business plan and detailed technical designs of their proposed aquaponics system. Further complications arose from lack of sufficient funding, limited knowledge of the regulatory environmental requirements pertaining to aquaculture, and landowner conflict with the Ntubeni Tribal Authority. In addition to these challenges, the proposed facility is situated in a protected area which may not be deemed feasible by the authority. Based on the sensitivity of the proposed site, an alternative site will be included and assessed in the Basic Assessment. This paper will provide details on the process followed and the outcome thereof.

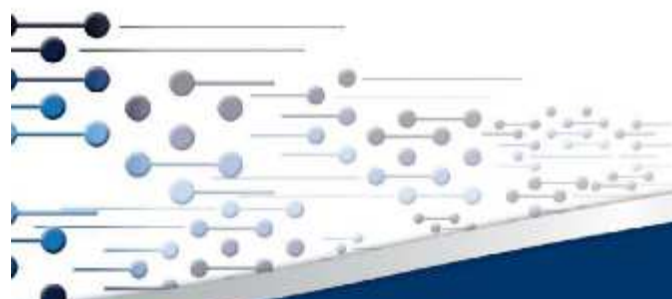


National Strategic Environmental Assessment for Aquaculture Development in South Africa

A Synopsis of the current Marine and Freshwater Aquaculture Environment and the need to promote Sustainable Growth and Incentivization

26-30 June 2017

Lizande Kellerman

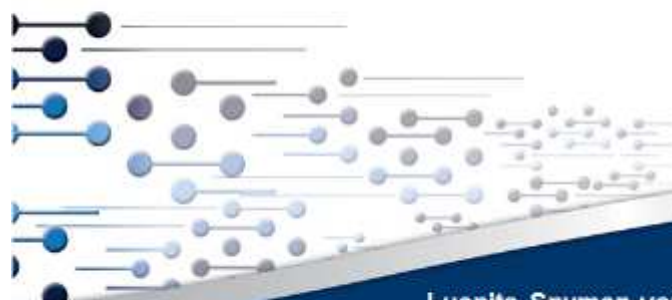


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World Aquaculture Conference @ ICC Cape Town

National Strategic Environmental Assessment for Aquaculture Development in South Africa

GIS analysis for identifying optimal areas for marine and freshwater aquaculture development



Luanita Snyman-van der Walt

World Aquaculture Conference 2017
Cape Town, 26-30 June 2017

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CHALLENGES FACING A RURAL ENTREPRENEURIAL FARMER IN PLANNING AND DEVELOPING AN AQUAPONICS FACILITY IN SOUTH AFRICA:

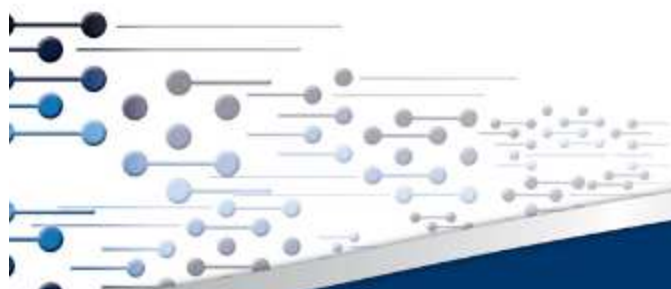
Two case studies of proposed Aquaponics facilities in the
Eastern Cape and North West provinces



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Presenter: Karabo Mashabela
Environmental Management Services



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6.3 International Association for Impact Assessment 2018





38th Annual Conference
16-19 May 2018
Durban International Convention Center
Durban, South Africa





What is IAIA?

The **International Association for Impact Assessment** is the leading global network of best practices of impact assessment for informed decision-making regarding policies, programs, plans, and projects.

Our members number over 5,000 from over 125 countries, with representation from industry, consultants, government, NGOs, and academia.

Our annual conference is the international forum for advancing innovation and communication of best practice to further the development of local, regional, and global capacity in impact assessment.

Why are IAIA conferences special?

IAIA is the only international, interdisciplinary conference dedicated to the art and science of impact assessment ... **the only one**. About 700 attendees from around the globe will come to hear from an exclusive mix of speakers representing many areas of expertise and interest. The conference is highly participatory, with numerous in-depth workshops, roundtables, Q&A sessions, forums, and concurrent sessions, meaning you can participate actively and present your work and ideas.

As a conference participant, you will have access to training, papers, publications, tools, techniques, and case studies.

As a sponsor, you will have an opportunity to support this conference with access to leading impact assessment professionals and their work.

Why should you attend IAIA18?

IAIA18 will provide opportunities for you to learn, to influence, and to make new connections. Some key benefits for professionals include:

- The opportunity to discuss new ideas and practice approaches with friends and colleagues.
- The opportunity to liaise with professionals in the private and public sectors as well as from financial institutions such as the World Bank, the International Finance Corporation, The Inter-American Development Bank, the African Development Bank, and others.
- The opportunity to present innovative solutions to the domestic and international community.
- The opportunity for learning and benchmarking best practices from around the world.
- The opportunity to present the new and innovative policies, programs, and projects being undertaken in your back yard such as carbon sequestration, monitoring programs, industry research and technology, public participation, land use planning, and regulatory reforms.

CONSULTATION PROCESS

APPENDIX B, Page 29

NATIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

Lizande Kellerman, Luanita Snyman-Van der Walt, Pat Morant, Karabo Mashabela and Paul Lochner

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International demand for fishery products has placed increasing importance on aquaculture development. The South African aquaculture industry, in the global context, is still in its infancy and has been hindered by various environmental, economic, social and technical uncertainties and challenges. However, it has the potential to grow into a sustainable and competitive sector that contributes to employment, economic development, food security and transformation.

To contribute towards the establishment of an enabling environment where responsible aquaculture development can be promoted and incentivised, the South African Government commissioned a Strategic Environmental Assessment (SEA). It aimed to achieve its purpose through (i) a literature review to gain an understanding of the key challenges facing the industry and impacts associated with various aquaculture activities, including different fish species and production systems, and environmental attributes required for optimal aquaculture; (ii) the identification of strategic aquaculture development areas using multi-layered spatial analysis of the receiving environment; (iii) an independent scientific assessment, by Multi-Author Teams, of the potential environmental, social and economic opportunities and risks of aquaculture development in the identified areas; and (iv) based on the assessment findings, the development of a Decision Support Framework (DSF) which recommends a streamlined and integrated management and regulatory framework. The ultimate purpose of the DSF is to assist emerging aquaculture proponents with selecting sites for their projects, reduce compliance complexities on the sector, and aid authorities in making decisions for sustainable and responsible development in the identified areas.



NATIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

18 May 2018

Lizande Kellerman, Luanita Snyman-van der Walt, Pat Morant, Karabo Mashabela and Paul Lochner



6.4 Aquaculture Association of Southern Africa Conference 2019

AQUACULTURE CONFERENCE 2019

8 – 14 September 2019 | Stellenbosch | South Africa







Online registration now open - www.aasa-aqua.co.za/conferences/

The organizers have received many interesting abstract submissions that will fall within the categories ranging from Breeding, Genetics & Genomics to New Species.

ABSTRACT SUBMISSION DEADLINE EXTENDED TO 30 APRIL 2019

We are pleased to confirm the following keynote speakers will be part of the Aquaculture Conference programme:

Dr. Sharif Sadek (Egypt) – Keynote address: *Regional overview of aquaculture and the role of the WAS African Chapter in regional aquaculture development.* Dr Sadek is the Interim President of the WAS African Chapter until a permanent Board is elected in line with Chapter bylaws at the Conference in September.

Dr. Kevan Main (USA) – Keynote address: *Global trends in Aquaculture development and future needs for ensuring more sustainable development and accelerated growth: Research, Technological & Policy requirements.* Dr Maine is the Associate Vice President for Research and Mote Marine Laboratory.

Dr. Nick Moody (Australia)- Keynote address: *Importance of biosecurity, validation of diagnostics and establishment of reference laboratories for the control of transboundary aquatic animal diseases.* Dr Moody is the Research Group Leader at the AAHL Fish Diseases Laboratory and is a Senior Research Scientist CSIRO at the Australian Animal Health Laboratory Geelong.

Prof. John Bolton (South Africa) – Keynote address: *The seaweed aquaculture revolution: species choice, integration, nutrition.* Prof Bolton is Emeritus Professor and Senior Research Scholar in the Department of Biological Sciences, University of Cape Town (South Africa). He has an international reputation for research into the aquaculture of seaweeds, and the integrated aquaculture of seaweeds with marine invertebrates.

Dr. Arjen Roem (The Netherlands) – Keynote address: *Balancing our business view as well as sharing latest developments in BAS design and diet development.* Dr Roem is the Marketing Director for Skretting Africa and has been involved at Skretting in research and technical positions in Norway, Europe, Asia and now Africa.

Copper Development Association sponsored session will include an abstract on their latest anti-fouling net products:

Online registration now open - www.aasa-aqua.co.za/conferences/

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Contact us for more information and assistance: deidre@iafrica.com
Website: www.aasa-aqua.co.za/site/conferences/

NATIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

Lizande Kellerman, Luanita Snyman-Van der Walt, Pat Morant[†], Karabo Mashabela and Paul Lochner

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International demand for fishery products has placed increasing importance on aquaculture development. The South African aquaculture industry, in the global context, is still in its infancy and has been hindered by various environmental, economic, social and technical challenges. It has the potential to grow into a sustainable and competitive sector that contributes to employment, economic development and food security. To create an enabling environment where responsible aquaculture can be promoted and incentivised, the South African government appointed the CSIR to conduct a Strategic Environmental Assessment (SEA) for aquaculture development. The SEA is being conducted on behalf of the national Department of Environmental Affairs (DEA) and the national Department of Agriculture, Forestry and Fisheries (DAFF). It aimed to achieve its purpose through i) a literature review understanding the key challenges facing the industry and impacts associated with various aquaculture activities and environmental attributes required for optimal aquaculture; ii) identification of strategic aquaculture development areas using multi-layered spatial analysis of the receiving environment; iii) independent scientific assessment, by Multi-Author Specialist Teams, of the potential environmental, social and economic opportunities and risks of aquaculture development in the identified areas; and iv) based on the assessment findings, the development of a Decision Support Framework (DSF) which recommends a streamlined and integrated management and regulatory framework aiming to assist emerging aquaculture proponents with selecting project sites, reduce sector-related compliance complexities and aid authorities in evidence-based decision-making. This paper provides an update on the findings from this national SEA for Freshwater and Marine Aquaculture in South Africa.

Lizande Kellerman is an environmental scientist at CSIR in Stellenbosch, Western Cape. She is the project manager for the SEA for Aquaculture development in South Africa.



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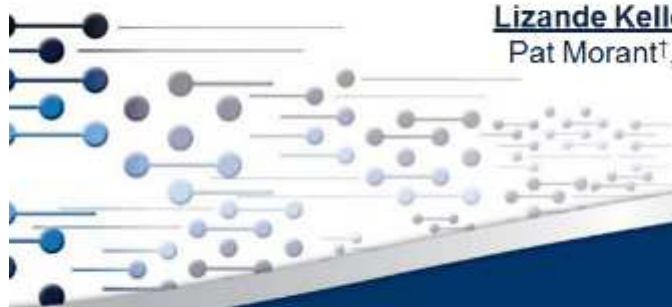


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NATIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

08 – 14 September 2019

Lizande Kellerman, Luanita Snyman-van der Walt,
Pat Morant[†], Karabo Mashabela and Paul Lochner



Aquaculture Association of Southern Africa @ Stellenbosch University

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23 August 2019

Dear AASA Members and Conference Delegates

POSTPONEMENT OF THE AASA CONFERENCE, STELLENBOSCH 9-13 SEPTEMBER 2019

It is with deep regret that the Aquaculture Association of Southern Africa announces the postponement of the AASA conference which was to have taken place next month. The AASA conference is held in collaboration with the Aquaculture section of Fisheries Branch of Department of Agriculture, Forestry and Fisheries, now incorporated into the Department of Environment, Forestry and Fisheries (DEFF). Due to the reorganisation of the South African Government Departments, it has necessitated that new partnership agreements be put in place to align with the new government structures. The Local Organising Committee, considering all aspects, including the limited time until the 9th of September 2019, has concluded it is not possible to hold a successful conference without this partnership in place.

AASA realises that this late announcement of postponement will greatly inconvenience those who have already registered and made arrangements to attend. On behalf of AASA and the organising committee, I offer my sincere apologies.

It is proposed that the event be postponed to 23-27 March 2020. The programme for next year will be expanded to be bigger and better and will include other key platforms being organised by DEFF, such as investment promotion.

Those who have paid registration fees can elect to attend the event next year at no extra charge or request a refund. The revised registration fees for the event will be adjusted upwards for inflation and will be announced in due course. Thus, those who have already paid are encouraged to leave their fees with AASA to avoid this increase. Those delegates whose abstracts were accepted for presentation will remain on the programme, unless they choose not to present in March.

Yours faithfully

Prof Peter Britz
AASA Chairman

PS. Information on the process to follow for a refund will be sent out to all delegates next week.

7 NILE TILAPIA CITIZEN SCIENCE SURVEY



Strategic Environmental Assessment for Aquaculture Development



environmental affairs
Department of Environmental Affairs
REPUBLIC OF SOUTH AFRICA



agriculture, forestry & fisheries
Department of Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



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You are here: [Home](#) > Nile tilapia mapping

Nile tilapia mapping

CSIR LAUNCHES RAPID CITIZEN SCIENCE SURVEY FOR NILE TILAPIA IN SOUTH AFRICAN WATERCOURSES

The Council for Scientific and Industrial Research (CSIR) is calling on South Africans to participate in a rapid citizen science survey to source knowledge on the distribution of Nile tilapia in South African watercourses.

This citizen science survey forms part of a national Strategic Environmental Assessment (SEA) for aquaculture development in South Africa. According to Lizande Kelleman, the CSIR Environmental Scientist coordinating this study, the SEA was commissioned by the National Departments of Environmental Affairs (DEA) and Agriculture, Forestry and Fisheries (DAFF). It forms part of Operation Phakisa and is aimed at promoting and supporting the sustainable growth of the aquaculture industry in South Africa. She adds that Nile tilapia is a candidate species being investigated in the SEA as a potential species to be incentivised for farming, but is also known to pose a risk to South Africa's indigenous fish species. The survey aims to provide a better understanding of the presence and distribution of Nile tilapia in South African watercourses and will also serve as initial input for a national-scale biodiversity initiative to be undertaken by DEA in collaboration with the South African National Biodiversity Institute (SANBI).

How can you contribute? Please complete the online submission form below to provide us with details of your Nile tilapia catches by 30 September 2017.



[More on Nile Tilapia](#)

Name and Surname *

Affiliation *

Catch Details: Province *

Nearest town *

Name of river/dam





Type of Tilapia *

GPS coordinates (Latitude)

SEARCH

AQUASEA LINKS

- Aquaculture Association of Southern Africa
- Aquaculture Stewardship Council
- CSIR Environmental Management Services
- Department of Agriculture, Forestry and Fisheries (DAFF): Aquaculture and Economic Development
- Department of Environmental Affairs
- Operation Phakisa: Aquaculture
- South African Institute for Aquatic Biodiversity
- South African National Biodiversity Institute
- World Aquaculture Conference 2017

GPS coordinates (Longitude)

Submit coordinates in one of the following formats: Degrees, Minutes, Seconds (DMS) e.g. S 25° 48' 55.4" ; E 30° 43' 56.3" OR Decimal Degrees (DD) e.g. Lat -33.85607 ; Long 18.537976

No of catches

Photo Upload

Choose file

Submit

* is a required field

Please send an email to aquasea@csir.co.za with Subject: Nile tilapia should you have any trouble completing this form.

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CSIR2017

Operation Phakisa - Oceans Economy



Introduction and background



Starting point



Critical areas to explore



Related events



Related multimedia



Related links or resources

CSIR launches rapid citizen science survey for Nile Tilapia in South African watercourses

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Please complete the online submission form the link below to provide us with details of your Nile tilapia catches by 30 September 2017.

» <http://aquasea.csir.co.za/nile-tilapia-mapping/>

<https://www.environment.gov.za/projectsprogrammes/operationphakisa/oceanseconomy> 11/09/2017



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RE: CSIR LAUNCHES RAPID CITIZEN SCIENCE SURVEY FOR NILE TILAPIA IN SOUTH AFRICAN WATERCOURSES

More on Nile tilapia

Oreochromis niloticus (Linnaeus 1758), commonly known as the Nile tilapia (English) or Nyl kurper (Afrikaans) is an endemic African freshwater fish that is native to the Nile River basin and river systems of West Africa and the south-western Middle East. Since its initial introduction into Lake Victoria in the 1950s, the Nile tilapia is currently one of the most widely distributed invasive fish and has become established and become naturalised in many tropical and sub-tropical environments in eastern and southern Africa. Nile tilapia is known as 'aquatic chicken' due to their high growth rates, adaptability to a wide range of environmental conditions and ability to grow and reproduce in captivity and feed on low trophic levels. Owing to its hardy nature, it has been widely introduced mainly for aquaculture, but also to augment capture fisheries, and for sport fishing.

Nile tilapia is regarded as the best growing fish species by the global aquaculture community and it has been the focus of much research and development over the past two decades. Nile tilapia is produced in everything from open ponds fertilized with manure to closed recirculating aquaculture systems (RAS). Production, varying from subsistence culture to high-tech aquaponics occurs in freshwater and in brackish to ocean salinities at optimal temperatures between 26°C and 30°C. However, South Africa's Highveld climatic conditions require the use of closed-tunnel systems to provide adequate warmth for this tropical species - this is not necessary in areas occurring at 1 000 meter above sea level, which experience warmer climatic conditions.

Nile tilapia exhibits a broad invasive potential over most of southern Africa that overlaps with the natural distribution range of the indigenous species such as Mozambique tilapia (*Oreochromis mossambicus*) (Mozambique tilapia [Eng], Blou kurper [Afr]). Introduction of the invasive *O. niloticus* into South African river systems that are still free of Nile tilapia is a cause of concern for the conservation of indigenous tilapia that are at risk of local extinction through hybridization and competition with Nile tilapia. Although closed RAS are regarded as the higher yielding and economically more viable production method in South Africa and pose less environmental risk, the risk of escape from open pond culture and non-biosecured RAS into unaffected river systems remains. There are no effective means of controlling this species once introduced; therefore mitigating efforts should focus on preventing its introduction to new freshwater habitats, especially those that serve as 'sanctuaries' for the indigenous *Oreochromis* species.

CSIR Contact person: Lizande Kellerman
Email: lkellerman@csir.co.za



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An example of invasive *Oreochromis niloticus* (Nile tilapia), which is known to have established in South African watercourses.

Photo: Prof Ben van der Waal



An example of indigenous *Oreochromis mossambicus* (Mozambique tilapia), which is under threat from Nile tilapia

Photo: Prof Ben van der Waal



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An example of *Oreochromis niloticus* x *mossambicus* (Hybrid)
Photo: Prof Ben van der Waal

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26 Mei 2017

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Help die WNNR om die verspreiding van die Nylkurper, 'n indringer-visspesie, te bepaal.

Die Nylkurper of -tilapia is 'n indringer-visspesie wat wyd in Suid-Afrika (SA) voorkom, en die Wetenskaplike en Nywerheidsnavorsingsraad (WNNR) wil, met die hulp van Suid-Afrikaners, die verspreiding van dié spesie in die land se damme en riviere bepaal.

<http://www.landbou.com/nuus/help-die-wnnr-met-nylkurper-opname/>

30/05/2017

Dié projek maak deel uit van die WNNR se strategiese omgewingsevalueringsprojek (SOE) vir die ontwikkeling van **akwakultuur** in SA, wat hy namens die Departemente van Tuis, Nuus, Die Weer, Bedrywe, Wild, Markte, Kundiges, Leefstyl, Nasie in Gesprek, Omgewingsake en Landbou, Bosbou en Visserye hanteer. Die projek vorm ook deel van Operasie Phakisa, sê me. Lizanne Kellerman, projekbestuurder.

Jy kan help

Die doel is om, met behulp van GPS-koördinate, 'n verspreidingskaart van bevestigde vangste of waarnemings van die vis op te stel, en dit met gebiede wat deur die SOE-proses uitgeken is as gepas vir nuwe **visboerdery-ontwikkeling**, te vergelyk.

“Die WNNR wil dus graag 'n beroep op Suid-Afrikaners doen om ons te help om inligting bymekaar te maak, in die vorm van GPS-koördinate, indien moontlik, sodat ons 'n beter begrip kan kry van waar die Nylkurper tans voorkom. Hierdie opname-inligting sal ook dien as 'n basisinset vir 'n nasionale biodiversiteitsinisiatief wat deur Departement van Omgewingsake in samewerking met die Suid-Afrikaanse nasionale biodiversiteitsinstituut onderneem gaan word,” sê Kellerman.

Die sperdatum om dié inligting in te samel is 30 September 2017. Klik **hier** om die vorm vir die projek in te vul.

* Wees die eerste van jou vriende wat hiervan hou

Hou hiervan Tweet
Nuusbrief E-posadres

Kommentaar

Een kommentaar op “Help die WNNR met Nylkurper-opname”



Peter Smith

This looks more like a crowd sourced project to show the widespread of Nile tilapia and use it to convince the environmental authorities that farming with them in affected areas will be ok, not a research project to help eradicate this invasive species.



Letters

Nile tilapia citizen science survey

The Council for Scientific and Industrial Research (CSIR) is calling on South Africans to participate in a rapid citizen science survey on the distribution of Nile tilapia in South African watercourses.

This citizen science survey forms part of a national strategic environmental assessment (SEA) for aquaculture development in South Africa. The SEA was commissioned by the Department of Environmental Affairs (DEA) and the Department of Agriculture, Forestry and Fisheries (DAFF). It forms part of Operation Phakisa and is aimed at promoting and supporting the sustainable growth of the aquaculture industry in South Africa.

Nile tilapia is a candidate species being investigated in the SEA as a potential species to be incentivised for farming, but is also known to pose a risk to South Africa's indigenous fish species. The survey aims to provide a better understanding of the presence and distribution of Nile tilapia in South African watercourses and will also serve as initial input for a national-scale biodiversity

initiative to be undertaken by the DEA in collaboration with the South African National Biodiversity Institute (SANBI).

MORE ABOUT NILE TILAPIA

Oreochromis niloticus (Linnaeus 1758), commonly known as the Nile tilapia, or *Nyl karper*, is an endemic African freshwater fish that is native to the Nile River basin and river systems of West Africa and the south-western Middle East.

Since its initial introduction into Lake Victoria in the 1950s, the Nile tilapia has become one of the most widely distributed invasive fish, and has become established and naturalised in many tropical and sub-tropical environments in eastern and southern Africa.

Nile tilapia is known as 'aquatic chicken' due to their rapid growth rate, adaptability to a wide range of environmental conditions, and ability to grow and reproduce in captivity and feed on low trophic levels.

Owing to its hardy nature, it has been widely introduced mainly for aquaculture, but also to



TOP: An example of indigenous *Oreochromis mossambicus* (Mozambique tilapia), which is under threat from Nile tilapia.

ABOVE: An example of *Oreochromis niloticus* x *mossambicus* (hybrid).
(PHOTOS: PROF. BEN VAN DER WAAL)

augment capture fisheries, and for use in sport fishing.

Nile tilapia is regarded as the best growing fish species by the global aquaculture community, and it has been the focus of much research and development over the past two decades. Nile tilapia is produced in everything from open ponds

fertilised with manure, to closed recirculating aquaculture systems (RAS).

Production, varying from subsistence culture to high-tech aquaponics, occurs in freshwater and in brackish to ocean salinities at optimal temperatures between 26°C and 30°C. However, South Africa's Highveld climatic



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ABOVE: An example of invasive *Oreochromis niloticus* (Nile tilapia), which is known to have established itself in South African watercourses.

conditions require the use of closed-tunnel systems to provide adequate warmth for this tropical species; this is not necessarily true of areas occurring at 1 000m above sea level, which experience warmer climatic conditions.

Nile tilapia exhibits a broad, invasive potential over most of southern Africa that overlaps with the natural distribution range of the indigenous species such as Mozambique tilapia, *Oreochromis mossambicus*, which is also known as Mozambique tilapia or *Bloubaai*. Introduction of the invasive *O. niloticus* into SA river systems that are still free of Nile tilapia is a cause of concern for the conservation of indigenous tilapia that are at risk of extinction locally through hybridisation and competition with Nile tilapia.

Although closed RAS are regarded as the higher yielding and economically more viable production method in South Africa and pose less environmental risk, the risk of escape from open pond culture and non-biosecured RAS into unaffected river

systems remains. There are no effective means of controlling this species once introduced, therefore mitigating efforts should focus on preventing its introduction to new freshwater habitats, especially those that serve as 'sanctuaries' for the indigenous *Oreochromis* species.

Lizande Kellerman, environmental scientist, CSIR

• Visit the Aquaculture SEA Project website (aquasen.csir.co.za/nile-tilapia-mapping/) and complete the online submission form providing us with details of your Nile tilapia catches. This online survey needs to be completed by 30 September 2017.

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AUGUST 2017

NILE TILAPIA citizen science survey

CSIR launches rapid citizen science survey for Nile tilapia in South African watercourses

Lizande Kellerman

The Council for Scientific and Industrial Research (CSIR) is calling on South Africans to participate in a rapid citizen science survey to source knowledge on the distribution of Nile tilapia in South African watercourses.

This citizen science survey forms part of a national strategic environmental assessment (SEA) for aquaculture development in South Africa. According to Lizande Kellerman, the CSIR's environmental scientist who is coordinating this study, the SEA was commissioned by the Department of Environmental Affairs (DEA) and the Department Agriculture, Forestry and Fisheries (DAFF). It forms part of Operation Phakisa, and is aimed at promoting and supporting the sustainable growth of the aquaculture industry in South Africa.

She adds that the Nile tilapia is a candidate species that is being investigated in the SEA as a potential species to be incentivised for farming, but is also known to pose a risk to South Africa's indigenous fish species.

The survey aims to provide a better understanding of the presence and distribution of Nile tilapia in South African watercourses, and will serve as initial input for a national-scale biodiversity initiative to be undertaken by DEA in collaboration with the South African National Biodiversity Institute (SANBI).

More on Nile tilapia

Oreochromis niloticus (Linnaeus 1758), commonly known as the Nile tilapia or Nile kurper, is an endemic African freshwater fish that is native to the Nile River basin and river systems of West Africa and the southwestern Middle East. Since its initial introduction into Lake Victoria in the 1950s, the Nile tilapia is currently one of the most widely distributed invasive fish and has become established and naturalised in many tropical and subtropical environments in eastern and southern Africa. Nile tilapia is known as "aquatic chicken" due to its high growth rate, adaptability to a wide range of environmental conditions, ability to grow and reproduce in captivity, and to feed at low trophic levels. Owing to its hardy nature, it has been widely introduced, mainly for aquaculture, but also to augment capture fisheries and for sport fishing.

The global aquaculture community regards the Nile tilapia as the best-growing fish species. It has been the focus of much research and development over the past two decades. Nile tilapia is produced in everything from open ponds fertilized with manure to closed recirculating aquaculture systems (RAS). Production, which varies from subsistence culture to high-tech aquaponics, occurs in fresh water and in brackish to ocean salinities at optimal temperatures between 26 °C and 30 °C. However, South Africa's Highveld climatic conditions require the use of closed-tunnel systems to provide adequate warmth for this tropical species. This is not necessary in areas 1 000 m above sea level, which experience warmer climatic conditions. Nile tilapia exhibits a broad invasive potential over most of southern Africa, which overlaps with the natural distribution range of indigenous species such as the Mozambique tilapia (*Oreochromis mossambicus*). The introduction of the invasive Nile tilapia into South African river systems that are still free of this fish is a cause of concern for the conservation of indigenous tilapia that are at risk of local extinction through hybridisation and competition with the Nile tilapia. Although closed RAS are regarded as the higher-yielding and economically more viable production method in South Africa and pose less of an environmental risk, the risk of escape from open-pond culture and non-biosecured RAS into unaffected river systems remains. There are no effective means of controlling this species once it has been introduced. Mitigating efforts should therefore focus on preventing its introduction to new freshwater habitats, especially those that serve as "sanctuaries" for the indigenous *Oreochromis* species.

How can you contribute? Please visit the Aquaculture SEA Project website (<http://aquasea.csir.co.za/nile-tilapia-mapping/>) and complete the online submission form providing us with details of your Nile tilapia catches. This online survey needs to be completed by 30 September 2017.
CSIR Contact person: Lizande Kellerman
Email: lkellerman@csir.co.za



An example of the invasive *Oreochromis niloticus* (Nile tilapia), which is known to have become established in South African watercourses. Photo: Prof Ben van der Waal



An example of the indigenous *Oreochromis mossambicus* (Mozambique tilapia), which is under threat from Nile tilapia. Photo: Prof Ben van der Waal



An example of the *Oreochromis niloticus* x *mossambicus* (hybrid). Photo: Prof Ben van der Waal

Nicholas James, Tilapia Sector representative of the Aquaculture Association of Southern Africa, writes:

To assist in the identification of tilapia by the public, I would like to illustrate some of the species likely to be encountered. Many landowners have tilapia in rivers and dams on their properties, especially in the warmer areas of Limpopo, Mpumalanga and KwaZulu-Natal. Basically, one can say that if the water never cools to below 10 °C during the winter, tilapia may be present.

The genus Tilapia

The two species encountered are *T. rendalli*, the redbreast tilapia, and *T. sparrmanii*, the banded tilapia.

Identification is best done by looking for the "tilapia spot" on the posterior part of the dorsal fin. This is present even in juvenile fish and is a black blotch on the soft part of the dorsal fin. Banded tilapia are green with vertical stripes, and do not generally exceed 12 cm in length. Redbreast tilapia also show six to eight vertical body bands and have red scales on the chest region, although large males in breeding trim tend to have white bellies. All *T. rendalli* have "two-tone" tail fins, with clear upper and reddish lower halves.

The genus *Oreochromis*

There are four locally occurring species: two indigenous and two alien. *O. mossambicus*, the Mozambique tilapia, is indigenous to the country, as is *O. placidus*, the black tilapia. The former is well known and widely distributed from the Bushman's River in the Eastern Cape, along the coastal region of the Transkei and Kwa-Zulu-Natal into the Mkuze area. Absent from the cooler uplands of Mpumalanga, blue tilapia are common throughout the Lowveld further north, including Loskop Dam, Hartbeespoort Dam and from Pretoria north to Musina across Limpopo. It is easily recognised by its clear, non-striped caudal (tail) fin, edged red in adult males, and with reddish trim to the dorsal and anal fins. Breeding males are black with white cheeks and a large mouth. Females are drab grey, sometimes with faint, vertical body stripes.

O. placidus is a rare species, localised in the Mkuze/Lake St Lucia region. It is very similar in juvenile colouration to the blue tilapia, but lacks the black breeding males. It has four instead of three spines in the anal fin.

O. niloticus, the non-indigenous Nile tilapia, is easy to identify. All fish, even juveniles, have iridescent dots that form vertical stripes in the tail fin, which extend into both the anal fin and the posterior part of the dorsal fin. The species does not have the upturned, enlarged mouth of the male *O. mossambicus*, and breeding males have a reddish plum colour that extends over the head region. Whereas juvenile *O. mossambicus* often show three dark spots along the flanks, Nile tilapia juveniles do not. Hybrids between the two species may show intermediate features, but always have the vertical striped tail fin, although this may be faint.

O. andersoni is the three-spot tilapia, introduced from the upper Zambezi and Okavango. It is generally silver in colour,

with three dark spots on the flanks. Its juveniles greatly resemble *O. mossambicus*. However, adult males are completely different, with a plum-red colour all over the head and dorsal surface, and a blue iridescence on the flanks. Fins are edged in a red trim, and the mouth, even in adult males, is far smaller than in *O. mossambicus*, with a convex, rather than a concave forehead profile.

Likely collection localities

O. mossambicus has been widely translocated throughout the country and survives wherever the habitat is suitable. It is one of the great invaders of the aquatic world, even existing on a Pacific atoll where it was used as bait for tuna fishing. This species has wider salinity and temperature tolerances than any other local species, so is often found in estuaries and coastal marshes.

T. rendalli and *O. niloticus* are limited to water warmer than 12 °C, so they are only

present in the eastern, low-altitude parts of the country. *O. niloticus* and *O. andersoni* have invaded major rivers shared with neighbouring countries. *O. andersoni* has been reported from the Limpopo, having been stocked in the Shashi River, and *O. niloticus* has penetrated the Limpopo, Incomati, Crocodile and Phongolo river systems from Mozambique, as well as elsewhere.

Apart from rod and line catches, a throw net is the best way to catch small tilapia for identification. Please photograph with the tail fin extended, on a light-coloured background. I would ask you to record the catch date and locality, with coordinates, and the name and contact details of the collector, if possible. I can be emailed at nickjames@intekom.co.za if help in identification is required.

These photos are important as they serve to illustrate the features that you will need to observe to identify the species. 📷



Juvenile *O. mossambicus* showing the clear tail fin.



A 2-kg female *O. mossambicus*: A large female *O. mossambicus*, which lacks the red fin edging typical of the male.



Chitralela strain Nile tilapia: Typical dark-coloured *O. niloticus* clearly showing the striped tail fin and straight forehead profile.



Venda tilapia: A probable hybrid *O. mossambicus* and *O. niloticus* caught in Venda in 2008. The striped tail and straight forehead profile are typical of *O. niloticus*.



Tilapia rendalli: The domed forehead, two-tone tail and white chest are distinguishing features of this adult male.



Tilapia sparrmanii: The green colour and "tilapia spot" in the dorsal fin identify this species.

Letters

A guide to identifying tilapia species

Lizande Kellerman's letter (FW 9 June) requesting tilapia species collection records in South Africa refers.

To assist in identification of tilapia, I would like to describe some of the species that may be encountered.

Many landowners have tilapia in rivers and dams on their properties, especially in the warmer areas of Limpopo, Mpumalanga and KwaZulu-Natal. In short, if the water never cools to below 10°C during winter, there may be tilapia present.

THE GENUS *TILAPIA*

The two species of this genus found in South Africa are *Tilapia rendalli*, the redbreast tilapia, and *T. sparrmanni*, the vlei kurper. Both show the diagnostic 'tilapia spot' on the posterior part of the dorsal fin. This is a black blotch on the soft part of the fin and is present even in juvenile fish.

Vlei kurper are green with vertical stripes, and do not normally exceed 12cm in length. Redbreast tilapia also show six to eight vertical body bands and have red scales on the chest, although large males in breeding trim tend to have white bellies.

All *T. rendalli* have 'two-tone' tail fins, with clear upper and reddish lower halves.

THE GENUS *OREOCHROMIS*

There are four locally occurring species: two indigenous, two alien.

Oreochromis mossambicus, the blue kurper, and *O. placidus*, the black tilapia, are indigenous to South Africa.

The former is well known and widely distributed from Bushman's River in the Eastern Cape, along the coastal region of the Transkei and KZN into the Mkuze area. It is absent from the cooler uplands of Mpumalanga, but common throughout the Lowveld further north, including in Loskop and Haartbeespoort dams, and from Pretoria North to Musina across Limpopo.

Blue kurper is easily recognised by its clear, non-striped, caudal (tail) fin, edged red in adult males, and a reddish trim to the dorsal and anal fins. Breeding males are black with white cheeks, and have a large mouth. Females are drab grey, sometimes with faint vertical body stripes.



ABOVE: *Tilapia rendalli*.



LEFT: Big female *Oreochromis mossambicus*.



BELOW LEFT: Juvenile *O. mossambicus*.
PHOTOS SUPPLIED

O. placidus is a rare species localised in the Mkuze/Lake St Lucia region. It is very similar in juvenile colouration to blue kurper but the breeding males do not turn black, as is the case with the blue kurper. It also differs from the latter in having four instead of three spines in the anal fin.

O. niloticus is a non-indigenous Nile tilapia that is easy to identify: all fish of this species, even juveniles, have iridescent dots forming vertical stripes in the tail fin, which extend into both the anal fin and the posterior part of the dorsal fin. The species does not have the large, upturned mouth of male *O. mossambicus*, and breeding males show a plum-red colour in the head region.

Juvenile *O. mossambicus* often have three dark spots along the flanks, but Nile tilapia juveniles do not. Hybrids between the two species may show intermediate features but always have the vertical striped tail fin, although this may be faint.



ABOVE: Nile tilapia – *Chitalada* strain



ABOVE: Vlei tilapia.



ABOVE RIGHT: *T. sparrmanni*.

O. aeneus is the three-spot tilapia introduced from the upper Zambezi and Okavango. Juveniles resemble those of *O. mossambicus*: they are generally silver with three dark spots on the flanks. But adult males are completely different, with a plum-red colour over the head and dorsal surface, and blue iridescence on the flanks. Fins are edged in red trim, and the mouth is far smaller than in *O. mossambicus*. The forehead profile is convex rather than concave.

WHERE TO FIND TILAPIA SPECIES

O. mossambicus has been translocated countrywide and survives wherever the habitat is suitable. It is often found in estuaries and coastal marshes.

T. rendalli and *O. niloticus* are limited to water warmer than 12°C, so are present only in the eastern, low-altitude parts of South Africa.

O. niloticus and *O. aeneus* have invaded major rivers shared with neighbouring countries; *O. aeneus* has been reported from Limpopo, having been stocked in the Shashi River; and *O. niloticus* has penetrated the Limpopo, Incomati, Crocodile and Phongolo river systems and elsewhere.

HOW TO CATCH AND RECORD TILAPIA

A throw net is the best way to catch small tilapia. Photograph the fish with the tail fin extended, on a light-coloured background, then record the date and locality, with coordinates, and the name and contact details of the collector. Please feel free to contact me for assistance if necessary.

Nicholas James

Aquaculture Association of Southern Africa
Tilapia Sector Representative, Grahamstown
Tel. 082 575 9781

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CSIR CALLS PUBLIC TO PARTICIPATE IN A RAPID CITIZEN SCIENCE SURVEY

Publication Date: Monday, June 26, 2017

The Council for Scientific and Industrial Research (CSIR) is calling on South Africans to participate in a rapid citizen science survey to source knowledge on the distribution of Nile tilapia in South African watercourses.

Oreochromis niloticus (Linnaeus 1758), commonly known as the Nile tilapia (English) or Nyl kurper (Afrikaans) is an endemic African freshwater fish that is native to the Nile River basin and river systems of West Africa and the south-western Middle East. Since its initial introduction into Lake Victoria in the 1950s, the Nile tilapia is currently one of the most widely distributed invasive fish and has become established and naturalised in many tropical and sub-tropical environments in eastern and southern Africa. The Nile tilapia is known as an 'aquatic chicken' due to its high growth rates, adaptability to a wide range of environmental conditions and ability to grow and reproduce in captivity and feed on low trophic levels. Owing to its hardy nature, it has been widely introduced mainly for aquaculture, but also to augment capture fisheries and for sport fishing.

The citizen science survey forms part of a national Strategic Environmental Assessment (SEA) for aquaculture development in South Africa. The SEA was commissioned by the Departments of Environmental Affairs (DEA) and Agriculture, Forestry and Fisheries (DAFF). It forms part of Operation Phakisa and is aimed at promoting and supporting the sustainable growth of the aquaculture industry in South Africa. Nile tilapia is a candidate species being investigated in the SEA as a potential species to be incentivised for farming, but is also known to pose a risk to South Africa's indigenous fish species.

According to Lizande Kellerman, the CSIR Environmental Scientist coordinating this study, "The survey aims to provide a better understanding of the presence and distribution of Nile tilapia in South African watercourses and will also serve as initial input for a national-scale biodiversity initiative to be undertaken by the DEA in collaboration with the South African National Biodiversity Institute (SANBI)."

This is how you can contribute to the survey: Please visit the Aquaculture SEA Project website: <http://aquasea.csir.co.za/nile-tilapia-mapping/> and complete the online submission form providing us with details of your Nile tilapia catches. This online survey needs to be completed by 30 September 2017.

More on Nile tilapia

The Nile tilapia is regarded as the best growing fish species by the global aquaculture community and it has been the focus of much research and development over the past two decades. The Nile tilapia is produced in everything from open ponds fertilised with manure to closed recirculating aquaculture systems (RAS). Production, varying from subsistence culture to high-tech aquaponics, occurs in freshwater and in brackish to

ocean salinities at optimal temperatures between 26°C and 30°C. However, South Africa's Highveld climatic conditions require the use of closed-tunnel systems to provide adequate warmth for this tropical species. This is not necessary in areas that are 1 000 meters above sea level, which experience warmer climatic conditions.

The Nile tilapia exhibits a broad invasive potential over most of southern Africa that overlaps with the natural distribution range of the indigenous species such as Mozambique tilapia (*Oreochromis mossambicus*) (Mozambique tilapia [English] and Blou kurper [Afrikaans]). The introduction of the invasive Nile tilapia into South African river systems that are still free of the Nile tilapia is a cause of concern for the conservation of indigenous tilapia that are at risk of local extinction through hybridisation and competition with the Nile tilapia. Although closed RAS are regarded as the higher yielding and economically more viable production method in South Africa and pose less environmental risk, the risk of escape from open pond culture and non-biosecured RAS into unaffected river systems remains. There are no effective means of controlling this species once introduced, therefore, mitigating efforts should focus on preventing its introduction to new freshwater habitats, especially those that serve as 'sanctuaries' for the indigenous *Oreochromis* species.

For more information contact Lizande Kellerman
Email: lkellerman@csir.co.za

8 GLOBAL AQUACULTURE ADVOCATE

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South Africa undertakes strategic environmental assessment for aquaculture development

Monday, 7 August 2017

By Luanita Snyman-van der Walt , Lizande Kellerman and Paul Lochner

Geographic Information Systems and stakeholder participation to identify suitable aquaculture areas

<https://www.aquaculturealliance.org/advocate/south-africa-strategic-environmental-assessment/?headlessPrint=AAAAPIA9c8r7gs82oWZBA>

8/22/2019

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Feeding trout at a farm in South Africa. Photo by Darryl Jory.

The aquaculture sector in South Africa is relatively small and has not been extensively developed. However, the South African Government has identified this sector as a development priority for its potential to create economic, job creation and food security opportunities.

South African aquaculture development faces many challenges ranging from climate change and access to land- and sea space, to the fact that it is a highly regulated sector with permits and authorizations required from a number of different departments at the national, provincial and local level. Streamlining and integration of the current environmental authorization framework can help address these challenges and allow the industry to reach its potential in an environmentally responsible manner.

To this end, the South African Department of Environmental Affairs and the Department of Agriculture, Forestry and Fisheries have commissioned the Council for Scientific and Industrial Research (CSIR) to conduct a Strategic Environmental Assessment (SEA) for aquaculture development.

The overarching goal of the SEA is to facilitate responsible and sustainable aquaculture within geographic areas that have been pre-assessed in terms of potential environmental (biophysical, social, economic) risks and opportunities. The SEA is an 18-month project, which is to be completed by the end of the first quarter 2018.

Identifying strategic areas for aquaculture

A key objective of the SEA process constituted a screening phase (completed in June 2017) which served to identify strategic aquaculture areas for marine- and freshwater aquaculture. The identification and investigation of strategic aquaculture areas aims to

- facilitate the development of aquaculture in an environmentally responsible manner;
- assist potential aquaculture developers by acting as a high-level development siting tool;
- maximize the sustainability of new aquaculture development; and
- stimulate the industry by reducing regulatory complexity and incentivizing development within the identified strategic aquaculture areas.

<https://www.aquaculturealliance.org/advocate/south-africa-strategic-environmental-assessment/?headlessPrint=AAAAPIA9c8r7gs82oWZBA>

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The identification of strategic aquaculture areas was an iterative process involving consultation with key stakeholders and a spatial analysis using multi-criteria Geographic Information Systems (GIS) analysis (Fig.1). Stakeholders that were consulted during the process included relevant national and provincial decision-makers and authorities, industry associations, conservation agencies, and research institutions.

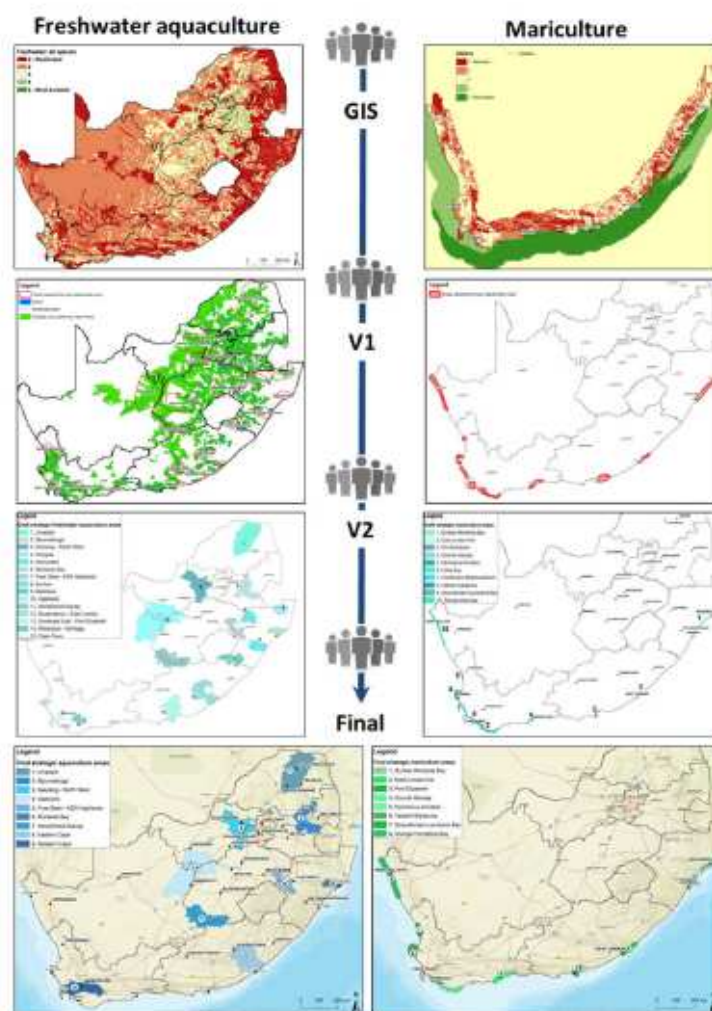


Fig. 1: Process summary for the identification of strategic freshwater- and marine aquaculture areas, produced through a process of GIS analysis and iterative stakeholder engagement.

The screening phase was conducted in three main stages: 1) variable and threshold identification; 2) a multi-criteria analysis using Geographic Information Systems; and 3) area selection and refinement.

First, spatially explicit key siting variables, which would act as the input for the GIS analysis, were identified, selected and ranked in terms of importance in a workshop setting with stakeholders. The variables constituted push-and-pull factors which broadly represented environmental conditions and sensitivities; uses and users of the environment; as well as requirements of aquaculture facilities employing specific operational systems for breeding different species (Fig. 2).

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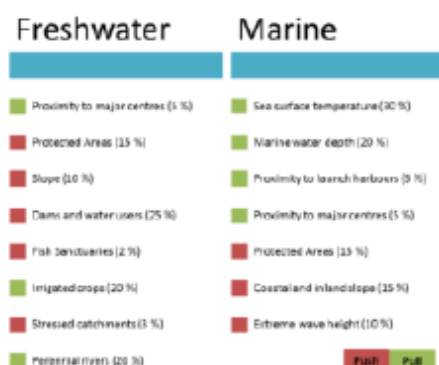


Fig. 2: Selected key variables identified and ranked by stakeholders, and subsequently used as input for a GIS analysis to identify the strategic aquaculture areas. Importance ranking are indicated in brackets. Pull factors are indicated with a green block and push factors are indicated with a red block.

The variables were used as input for a Weighted Overlay Analysis using GIS software which created a mosaic of spatial suitability classes ranging from least suitable/restricted to most suitable. The GIS analysis output was scrutinized by stakeholders, where participants were actively involved in delineating and refining broader areas from the most suitable classes. The inclusion or exclusion of areas was supported by rationales for doing so.

Results

A total of nine freshwater areas and eight marine areas were identified from this process, representing all nine South African provinces. The identified strategic aquaculture areas will serve as study areas for specialist investigation during the assessment phase of the SEA. Experts in their respective fields will undertake scientific assessments to highlight any potential environmental sensitivities where potential impacts associated with aquaculture development would not be appropriate, and make recommendation on best practice mitigation, management and monitoring requirements for responsible aquaculture.

Topics that will be investigated include biodiversity and ecology; heritage resources; visual and aesthetic resources; and socioeconomics. The specialist findings will serve as the evidentiary basis for a Decision Support Framework (DSF) that aims to provide guidance on site- and activity specific assessment processes and supply government with the necessary tools it needs to enable responsible, integrated and streamlined decision-making on aquaculture development. This includes guidance on regulations, decision-making and assessment protocols, and monitoring requirements.

Other outputs of the SEA include creating a database of all existing aquaculture facilities in South Africa; reviewing and updating biodiversity risk and benefit assessments for alien invasive species proposed for aquaculture (an assessment required in terms of the South African National Environmental Management Biodiversity Act); and mapping the presence of Nile tilapia in South African watercourses through a [citizen science survey](https://www.csir.co.za/csir-calls-public-participate-rapid-citizen-science-survey). (<https://www.csir.co.za/csir-calls-public-participate-rapid-citizen-science-survey>).

For more information on the SEA, and to access the detailed report on the Screening Phase, please visit the [project website](http://aquasea.csir.co.za/) (<http://aquasea.csir.co.za/>).

Authors

<https://www.aquaculturealliance.org/advocate/south-africa-strategic-environmental-assessment/?headlessPrint=AAAAAPIA9c8r7gs82oWZBA>

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9 LETTER OF INVITATION: PROJECT STEERING COMMITTEE



environmental affairs

Department
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, South Africa; Environment House, Corner Steve Biko & Soutpansberg,
Arcadia, Pretoria, 0083.

Enquiries: Simon Moganetsi; **Tel:** 012 399 9309; **Email:** Smoganetsi@environment.gov.za

STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE IN SOUTH AFRICA: INVITATION TO PARTICIPATE IN THE PROJECT STEERING COMMITTEE (PSC) AND NOTICE OF FIRST PSC MEETING ON 7 JUNE 2016

The Department of Environmental Affairs (DEA) in collaboration with the Department of Agriculture, Forestry and Fisheries (DAFF) has commissioned the Council for Scientific and Industrial Research (CSIR) to undertake a Strategic Environmental Assessment (SEA) for the development of the aquaculture industry in South Africa.

Aquaculture is one of the priority focus areas of Operation Phakisa, the national initiative geared towards unlocking the economic potential of South Africa's oceans. The SEA will support integrated and responsible decision-making in support of Operation Phakisa.

The SEA will aim to promote responsible and integrated decision-making by developing instruments such as accepted norms and standards to streamline and integrate applicable aquaculture permits and environmental authorisations.

The SEA will be conducted under the guidance of a Project Steering Committee (PSC) and Expert Reference Group (ERG). Your department/organisation is invited to nominate two individuals (primary representative and alternate) to join the PSC. The PSC is scheduled to meet approximately four times over the 18 month duration of the SEA. The PSC meetings will most likely be held in Cape Town/Stellenbosch or in Pretoria. The Terms of Reference (ToRs) for the PSC is attached.

Your designated Project Steering Committee (PSC) member representing your department/organisation is hereby requested to attend the first National Aquaculture SEA PSC meeting as follows:

DATE	TIME	VENUE
Tuesday, 7 June 2016	09:00 – 12:00	Mountain View Seminar Room, CSIR Campus, Stellenbosch (Directions Enclosed)

Please RSVP by Thursday, 2nd June 2016 to Karabo Mashabela (kmashabela1@csir.co.za; 021-888-2482) to confirm your attendance.

Should you require additional information or have project related enquires you are welcome to contact the CSIR: Environmental Management Services (EMS). The project manager for the Aquaculture SEA is Lizande Kellerman (LKellerman@csir.co.za ; 021-888-2489)

We look forward to working with your organisation on this important project.

Sincerely,

Ms Nosipho Ngcaba
DIRECTOR-GENERAL
Date: 11 May 2016

10 LETTER OF INVITATION: EXPERT REFERENCE GROUP



agriculture, forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Private Bag x9087, Cape Town, 8000, 120 Plain Street, Cape Town

Enquiries: Michelle Pretorius; Tel: 021-430-7034; Fax: 021-434-2899; Email: MichellePR@daff.gov.za

STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE IN SOUTH AFRICA: INVITATION TO PARTICIPATE IN THE EXPERT REFERENCE GROUP (ERG) AND NOTICE OF FIRST ERG MEETING ON 7 JUNE 2016

The Department of Environmental Affairs (DEA) in collaboration with the Department of Agriculture, Forestry and Fisheries (DAFF) has commissioned the Council for Scientific and Industrial Research (CSIR) to undertake a Strategic Environmental Assessment (SEA) process to identify Aquaculture Development Zones (ADZs) for offshore, inshore, land and inland water based aquaculture within the country for the prioritising and incentivising of aquaculture. It is intended that through a pre-assessment of the environmental sensitivities within these ADZs, certain aquaculture activities could be excluded from requiring environmental authorisation based on the implementation of aquaculture standards. In addition, within the ADZs, the management and legislative framework must also be streamlined and integrated to reduce complexity and to incentivise environmentally sustainable aquaculture.

Aquaculture is one of the priority focus areas of Operation Phakisa, the national initiative geared towards unlocking the economic potential of South Africa's oceans. The SEA will thus be a tool to support the implementation of Operation Phakisa, noting that the SEA includes offshore and land-based aquaculture for both freshwater and salt water species.

The SEA will be conducted under the guidance of an Expert Reference Group (ERG). Your department/organisation is invited to nominate two individuals (primary representative and alternate) with relevant aquaculture expertise to join the ERG. The ERG is scheduled to meet approximately four times over the 18 month duration of the SEA. The ERG meetings will most likely be held in Cape Town/Stellenbosch or in Pretoria.

The purpose of the ERG is to provide technical knowledge and insights from a range of sectors and to ensure that the important issues are identified and addressed in a balanced and scientific manner. Inputs from your department/organisation will inform the approach to the SEA tasks, in addition to reviewing the draft outcomes from the SEA.

Your designated Expert Reference Group (ERG) member representing your department/organisation is hereby requested to attend the first National Aquaculture SEA ERG meeting as follows:

DATE	TIME	VENUE
Tuesday, 7 June 2016	13:00 – 16:00	Mountain View Seminar Room, CSIR Campus, Stellenbosch (Directions Enclosed)

Please RSVP by Wednesday 27th May 2016 to Wisaal Osman (WOsman@csir.co.za ; 021-888-2482) to confirm your attendance.

Should you require additional information or have project related enquires you are welcome to contact the CSIR Environmental Management Services (EMS). The project manager for the Aquaculture SEA is Lizande Kellerman (L.Kellerman@csir.co.za ; 021-888-2489).

We look forward to working with your organisation on this important project.

Sincerely,



Mr Belemane Semoli
Acting Chief Director
Aquaculture and Economic Development
Department of Agriculture, Forestry and Fisheries
Date: 5 May 2016



Ms Dee Fisher
Chief Director:
Integrated Environmental Management Support
Department of Environmental Affairs
Date: 5 May 2016

11 STAKEHOLDER DATABASE

Appendix B-2: Stakeholder Database					
Type	Category	Institution/Department/Company/Organisation	Designation	Name	Role
National	National	Department of Water and Sanitation	Chief Director	A. Starkey	
Provincial	Free State	Department of Agriculture and Rural Development		A.J. Olivier Clostridial	
Provincial	KwaZulu-Natal	Department of Economic Development, Tourism & Environmental Affairs		Aadil Osman	
National	National	South African National Parks		Aban Padayachee	
National	National	Department of Water and Sanitation	Chief Director: Northern Cape	Abe Abrahams	
National	National	Department of Agriculture, Land Reform and Rural Development	Chief Director Rural Disaster Mitigation Services	Abigail Thabethe	
Provincial	Northern Cape	Department of Environment and Nature Conservation		Adeleen Cloete	PSC
Industry		The Cape Piscatorial Society		Administrator	
Industry	Marine	Aqunion (Pty) Ltd (previously Aquafarm Development)		Adre Claassen	
Research	Research	BirdLife South Africa		Adri Meyer	
Industry		South African Consolidated Recreational Angling Association		Aidan Wood	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Alan Boyd	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Alan Southwood	ERG
Industry	Marine	Doring Bay Abalone Farm (Pty) Ltd		Albe Moelich	
National	National	Department of Environment, Forestry and Fisheries	Environmental Advisory Services	Alfred Mochekeo	PSC
National	National	Department of Environment, Forestry and Fisheries	Environmental Advisory Services	Alfred Wills	
National	National	National Council of SPCAs	Special Projects Unit	Alwyn Marais	
National	National	Department of Mineral Resources and Energy		Amanda Nyingwa	
National	National	Department of Environment, Forestry and Fisheries	Framework & Policy Support / Legal Authorisations and Compliance	Amanda van Reenen	PSC
Research	Research	Agricultural Research Council		Ana Mbokeleng Tsotetsi-Khambule	
Research	Research	South African National Parks		Anban Padayachee	
Industry	Marine	Marine Finfish Farmers Association of South Africa		Andre Bok	
Provincial	Mpumalanga	Mpumalanga Tourism and Parks Agency	Aquatic Systems Scientific Services	Andre Hoffman	ERG
Industry	Marine	Buffalo Bull Farming (Pty) Ltd		Andre de Wet	
Provincial	Western Cape	Department of Agriculture	Director: Sustainable Resource Management	Andre Roux	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Andre Share	
National	National	Department of Agriculture, Land Reform and Rural Development	Aquaculture and Economic Development	Andrea Bernatzeder	PSC
Industry	Marine	Pisces Environmental Services		Andrea Pulfrich	Author
Industry		COEGA IDZ		Andrea Shirley	
Industry	Marine	Buffalo Bull Farming (Pty) Ltd		Andrew Barker	
Industry	Marine	Atlantic Royal		Andrew Maclachlan	ERG
Industry	Marine	Biorganics (Pty) Ltd		Andries van Tonder	
Research	Research	South African National Parks	National Marine Co-ordinator, Park Planning & Development	Ané Oosthuizen	ERG
Research	Research	South African Institute for Aquatic Biodiversity		Angus Paterson	
Research	Research	Council for Scientific and Industrial Research	Bio-Economy and Resource Management	Anton Nahman	
Industry	Marine	Aqunion (Pty) Ltd (previously known as Roman Bay Sea Farm (Pty) Ltd)		Antwanette Holzhausen	
Research	Research	University of Cape Town	Student	Apelele Zonda	
National	National	Department of Environment, Forestry and Fisheries	Aquaculture Economic Development	Asanda Njobeni	PSC
Provincial	Gauteng	Department of Agriculture and Rural Development		Ashla Gohell	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Ashley Naidoo	
Research	Research	MSC University of Stellenbosch		Ashley Patience	
National	National	Transnet National Ports Authority	Acting Chief Director Aquaculture and Economic Development	Asiphe Majova	
Industry	Marine	Saldanha Shellfish Forum / Aqua Food SA (Pty) Ltd	Secretary	Audrey Maree	
Industry	Marine	Insect Protein Pty company.		Axel Tarrisse	
Industry		Anchor Environmental Consultants		Barry Clark	

Provincial	Gauteng	Department of Agriculture and Rural Development		Basani Ndindani	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Belemane Semoli	PSC
Industry	Freshwater	University of Venda		Ben C W van der Waal	ERG
Research	Research	North West University	Director: Commercialisation Support	Ben Zaaïman	
Industry	Visual	Bernard Oberholzer Landscape Architect (BOLA) Landscape and Environmental Planning		Bernard Oberholzer	Author
Industry		New Partnership for Africa's Development		Bernice Mclean	
Industry	Marine	Atlantic Sea Farm (Pty) Ltd (previously Hannasbaai Fishing)		Bernie Pols	
Industry	Marine	HIK Abalone Farm (Pty) Ltd		Bertus van Oordt	
Research	Research	Council for Scientific and Industrial Research	Water Quality and Human Health	Bettina Genthe	Author
Provincial	North West	Department of Rural Environment, Agriculture and Development	Advisor	Betty Matebesi	ERG
National	National	Department of Environment, Forestry and Fisheries		Betty Mdala	
Industry		SA Sailing	Chairperson	Bev le Sueur	
Industry		Uphold Trade and Invest (Pty) Ltd		Bheki Xaba	
Industry	Freshwater	Federation of Southern African Flyfishers		Bill Bainbridge	
Provincial	Gauteng	Department of Agriculture and Rural Development		Bismark Mashau	
Research	Research	Council for Scientific and Industrial Research	NRE Oceanography	Bjorn Backeberg	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism	HOD: Economic Development Environmental Affairs and Tourism	Bongani Gxilishe	
National	National	Department of Water and Sanitation		Bongiwe Nkosi	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Bongiwe Nkosi	
Provincial	KwaZulu-Natal	Ezemvelo KZN Wildlife		Boyd Escott	ERG
National	National	Department of Agriculture, Land Reform and Rural Development	Research	Brett Macey	ERG
Provincial	Northern Cape	Department of Environment and Nature Conservation		Brian Fischer	PSC
Research	Research	South African National Biodiversity Institute	Freshwater Programme	Brian Huntley	
National	National	Department of Environment, Forestry and Fisheries	Climate Change	Brian Mantlana	
Research	Research	University of Stellenbosch		Brian W van Wilgen	
Research	Research	South African Institute for Aquatic Biodiversity		Bruce Ellender	
National	National	Transnet National Ports Authority		Brynn Adamson	
Industry	Marine	Deep Blue Aqua		Brynn Simpson	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Buntu Mzamo	
Industry		The Cape Piscatorial Society		C Bellingham	
Research	Research	Agricultural Research Council		C Sabeta	
Provincial	Western Cape	Department of Agriculture	Acting Chief Director: Rural Development	C Stefan	
National	National	Department of Water and Sanitation	Chief Director: North West	C. Lobakeng	
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment: Coastal Systems	Carla-Louise Ramjukadh	Author
Industry	Marine	Abagold (Pty) Ltd (Previously Hermanus Abalone)		Carlene Faro	
Industry	Marine	Abagold (Pty) Ltd (Previously Hermanus Abalone)		Catherine Greengrass	ERG
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Chantal Engelbrecht	PSC
Industry		The Guild	TGC	Charity Mukuna	
Industry	Freshwater	South African Fly Fishing Association	SAFFA Development	Cheryl Heyns	
Municipal	Northern Cape	Namakwa District Municipality	Municipal Manager	Chris Fortuin	
National	National	Department of Agriculture, Land Reform and Rural Development		Chris Fouche	ERG
				Chris Savage	
National	National	Department of Environment, Forestry and Fisheries	Environmental Programmes	Christo Marais	
Industry		Lindon Corporation		Clarissa Konar	
National	National	Department of Trade and Industry		Cliff Rasoesoe	
Industry	Marine	Paternoster Oyster Company (Pty) Ltd		Cliffie Smit	
Provincial	Free State	Department of Economic, Small Business Development, Tourism and Environmental Affairs		Coenie Erasmus	
Industry	Marine	Paternoster Oyster Company (Pty) Ltd		Colin Marais	

Industry		Biocentric		Conchita Milburn	
Research	Research	Cape Peninsula University of Technology		Conrad Sparks	
Industry	Marine	Aqunion (Pty) Ltd (previously Aquafarm Development)		Craig Edwards	
Industry		Consultant		Craig Hill	
Industry		EVONIK		Cuthbert Mamabolo	
National	National	Department of Water and Sanitation		Daniel Shaddai	
National	National	Department of Agriculture, Land Reform and Rural Development	Chief Director Technology Research and Development	Daphney Mayindi	
Research	Research	University of the Witwatersrand		Darragh Woodford	
Municipal	Western Cape	City of Cape Town	Department of Environmental Resource Management	Darryl Colenbrander	
Provincial	Western Cape	Department of Agriculture	Deputy Director General: Agricultural Development & Support Services	Darryl Jacobs	
Industry	Marine	Jaymat Enviro Solutions CC (previously Mbasa Sea Farms CC)		Dave Krebsner	
Industry	Marine	Marine Wizard CC		Dave Oerder	
Industry	Freshwater	Bushmans River Trout	General Manager	David Barnes	
Industry		Rydawi Pvt Ltd		David Fincham	ERG
Industry	Heritage	David Gibbs Landscape Architect		David Gibbs	Author
National	National	Department of Mineral Resources and Energy	Acting Director-General	David Msiza	
Provincial	Northern Cape	Department of Environment and Nature Conservation	Acting Director	David Pause	ERG
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism	Port Elizabeth	Dayalan Jeff Govender	ERG
Provincial	Western Cape	CapeNature		Dean Impson	ERG
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Dean Ricketts	
National	National	Department of Environment, Forestry and Fisheries	Natural Resource Management Programme	Debbie Muir	
National	National	Department of Environment, Forestry and Fisheries	Biodiversity and Conservation	Deborah Kahatano	
National	National	Department of Environment, Forestry and Fisheries	Climate Change	Deborah Ramalope	PSC
Research	Research	University of KwaZulu Natal		Deborah Robertson-Andersson	
National	National	Department of Environment, Forestry and Fisheries	Chief Director: Environmental Advisory Services	Dee Fischer	PSC
Industry	Freshwater	Falls Fish Farm		Dee Malcomess	
Industry	Marine	Jacobsbaai Sea Products (Pty) Ltd		Deidre Du Toit	
National	National	Department of Environment, Forestry and Fisheries		Denise Alcock	
Industry	Marine	West Coast Abalone (Pty) Ltd (previously J H Abalone Trust)		Dennis Whyte	
National	National	Department of Environment, Forestry and Fisheries		Desiree Madlala	
Research	Research	South African National Biodiversity Institute		Dewidine van der Colff	
Provincial	Gauteng	Department of Agriculture and Rural Development		Dietana Nemudzivhadi	ERG
Provincial	Western Cape	Department of Agriculture		Dikeledi Kunene	
Provincial	Northern Cape	Department of Environment and Nature Conservation		Dineo Molekwa	PSC
Provincial	Free State	Department of Agriculture and Rural Development		Disebo Mashitisho	
National	National	Department of Public Enterprises	Chief Director: Economic Impact and Policy Alignment	Dzingai Chapfuwa	
Research	Research	Agricultural Research Council		E Madoroba	
Industry	Marine	West Coast Abalone (Pty) Ltd (previously J H Abalone Trust)		Eddie Kartun	
Industry		WCADI Green Cape		Edward Shalala	
Research	Research	Plymouth Marine Laboratory, United Kingdom		Eleni Papathanasopoulou	
National	National	South African Maritime Safety Authority		Elijah Ramulifho	
Industry	Freshwater	Liz Day Consulting (Pty) Ltd		Elizabeth Day	Author
Provincial	North West	Department of Agriculture and Rural Development		Ellis Thebe	PSC
Provincial	Northern Cape	Department of Environment and Nature Conservation	Deputy Director: Research & Development Support	Elsabe Swart	ERG
Research	Research	iziko Museums of South Africa	Built Environment	Elsona van Huyssteen	Author
Industry	Heritage	Hearth Heritage		Emmylou Bailey	Author
National	National	Department of Science and Technology	Deputy Director	Eric Watkinson	PSC
Provincial	Limpopo	Department of Economic Development, Environment and Tourism		Errol Moeng	

Industry		Aqua Eco - Environmental Consultants		Etienne Hinrichsen	ERG
National	National	Department of Water and Sanitation	Chief Director: Mpumalanga	F. Guma	
National	Research	South African National Biodiversity Institute		Fahiema Daniels	
National	National	Transnet National Ports Authority		Faisal Sultan	
Research	Research	South African National Parks	Cape Research Centre, Scientific Services	Farhaana Damon	
National	National	Department of Agriculture, Land Reform and Rural Development	Aqua SEA Project Manager	Fatima Savel	
Industry		WCADI Green Cape		Fatima Seedat	
Industry		Pangrow / AquacultureSA		Fazlur Pandor	
Provincial	Western Cape	Department of Agriculture	Specialist Extension Officer: Aquaculture - Farm Support and Development	Ferdie Endemann	ERG
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Frances Craigie	
Provincial	Mpumalanga	Mpumalanga Tourism & Parks Agency		Francois Roux	ERG
Industry	Freshwater	Tilapia Aquaculture Association of South Africa		Frans Swanepoel	ERG
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Franz Scheepers	PSC
Industry	Marine	Diamond Coast Abalone (Pty) Ltd		Frik Venter	
Industry		Uphold Trade and Invest (Pty) Ltd		Furacoeffe	
Industry		Iziko Museums of South Africa		G Avery	
Industry	Marine	Aqua Food SA (Pty) Ltd		Gail Maare	
Industry		The Guild	Director	Gary Newman	
Industry	Marine	Zwembesi Eastern Cape: Port Elizabeth (Algoa Bay)	Oysters	Gavin Schlapoff	
Industry		Agribusiness Development Agency	Aquaculture and Aquaponics Consultant	Geoff Griffiths	
National	National	Department of Water and Sanitation		Gerhard Cilliers	
Industry	Freshwater	Mpumalanga Trout Forum / Mpumalanga Trout Association		Gerrie Van der Merwe	ERG
Research	Research	University of Stellenbosch		Gert Le Roux	
Research	Research	Council for Scientific and Industrial Research	Biosciences: BioManufacturing Industry Development Centre (BIDC)	Ghaneshree Moodley	
Municipal	Eastern Cape	Nelson Mandela Bay Municipality		Godfrey Murrel	
Provincial	Free State	Department of Economic, Small Business Development, Tourism and Environmental Affairs		Grace Mkhosana	PSC
Industry	Visual	Graham A Young Landscape Architect (GYLA)		Graham Young	Author
National	National	Department of Water and Sanitation		Granny Mhlaré	
National	National	Department of Agriculture, Land Reform and Rural Development	Research	Grant Pitcher	ERG
				Greer Hawley	
Municipal	Western Cape	City of Cape Town	Sustainable Coastal Management Plans	Gregg Oelofse	
Industry		Three Streams	CEO	Gregory Stubbs	ERG
Industry	Marine	Marine Finfish Farmers Association of South Africa/Saldanha Bay Oyster Company/JSP		Guy Musson	ERG
National	National	Department of Environment, Forestry and Fisheries	Environmental Programmes	Guy Preston	
Provincial	North West	Department of Rural Environment, Agriculture and Development		H Roux	
National	National	Department of Environment, Forestry and Fisheries	Governance and Special Projects	Hanlie Schoeman	
Provincial	Mpumalanga	Department of Agriculture, Rural Development and Land Administration		Heather Aspeling	
Research	Research	South African National Biodiversity Institute		Heather Terrapon	ERG
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment: Rivers & Wetlands	Heidi van Deventer	ERG
National	National	Department of Environment, Forestry and Fisheries		Heinrich Muller	
Industry		Aquaculture Assosiation of SA		Henk Stander	ERG
Industry	Freshwater	Aquaculture Tilapia Association	Secretary	Henk Stander	
Industry	Freshwater	Aquaponics Assosiation of SA		Henk Stander	
Industry	Freshwater	Western Cape Trout Farmers Association	Secretary	Henk Stander	
Research	Research	University of Stellenbosch		Henk Stander	ERG
Provincial	Free State	Department of Agriculture and Rural Development		Hennie du Toit	
Industry	Marine	Jacobsbaai Sea Products (Pty) Ltd		Heyla Stead	
Industry		Ritztrade 1048 CC		Howard Hui	

Industry	Freshwater	Trout South Africa / Cox Attorneys		Ian Cox	ERG
Provincial	KwaZulu-Natal	Ezemvelo KZN Wildlife		Ian Rushworth	ERG
Industry	GIS	Spatial Modelling Solutions		Ian Wilson	Author
National	National	Transnet National Ports Authority		Iggie Fourie	
Industry	Freshwater	Federation of Southern African Flyfishers		Ilan Lax	ERG
National	National	Department of Trade and Industry	Director: Agro Processiong	Imameleng Mothebe	
National	National	Department of Environment, Forestry and Fisheries		Imtiyaz Ismail	PSC
Industry	Marine	Blue Cap General Trading (Pty) Ltd		Ingo Beckert	
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Ishaam Abader	
Industry	Heritage	Heritage Contracts and Archaeological Consulting (HCAC) CC		Jaco van der Walt	Author
Provincial	Mpumalanga	Department of Agriculture, Rural Development and Land Administration	Acting HOD: Economic Development & Tourism	Jacob Simon Migidi	
Industry	Marine	Abalone Farmers Association of South Africa / Aquanion Aquaculture	Chairperson	Jacques du Plessis	
Industry	Freshwater	Federation of Southern African Flyfishers / Trout South Africa		Jake Alletson	
Industry	Marine	Blue Ocean Mussels (Pty) Ltd (previously) Blue Bay Aquafarm (Pty) Ltd		Jan (Vos) Pienaar	ERG
Industry		Green Counsel	Environmental Lawyer	Janah Miller	
Industry		INMED Partnerships for Children South Africa	Operations Manager	Janet Ogilvie	
Industry	Marine	Kowie Oysters (Pty) Ltd		Jannie Gie	
Industry	Heritage	Archaeological Services & Heritage Assessment (ASHA) Consulting (Pty) Ltd		Jayson Orton	Author
Provincial	KwaZulu-Natal	Ezemvelo KZN Wildlife		Jean Harris	
Research	Research	South African Institute for Aquatic Biodiversity		Jeremy Shelton	ERG
Provincial	Western Cape	Department of Agriculture	Director: Land Reform	Jerry Aries	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Jerry Pienaar	PSC
Municipal	Eastern Cape	Nelson Mandela Bay Municipality		Jill Miller	
National	National	Department of Public Enterprises	Director: Environmental Alignment	Joan Arrikum	
Industry	Freshwater	Catfish Supreme, Ventersdorp, NW		Johan Kooij	ERG
Research	Research	University of Limpopo		Johan Theron	
Industry		Uphold Trade and Invest (Pty) Ltd		Johannes Marais	
Industry	Palaeontology		Natura Viva CC	John Almond	Author
Research	Research	University of Cape Town		John Bolton	
Research	Research	South African National Biodiversity Institute	Freshwater Programme	John Dini	
Industry	Heritage	ACO-Associates CC		John Gribble	Author
Research	Research	University of Cape Town	Department of Archaeology	John Parkington	
National	National	Department of Public Works and Infrastructure		John Walaza	
Provincial	Western Cape	Department of Environmental Affairs and Development Planning		John Wilson	PSC
Provincial	Gauteng	Department of Agriculture and Rural Development		Jolidee Matongo	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Jonas Mphepya	
Industry	Heritage	University of Cape Town	Director: African Centre for Heritage Activities	Jonathan Sharfman	
Industry	Marine	Jacobsbaai Sea Products (Pty) Ltd		Jonathan Venter	
National	National	Department of Environment, Forestry and Fisheries		Joseph Ginindza	
Research	Research	Water Research Council		Joseph Sara	
Industry	Marine	Marine Growers (Pty) Ltd (previously Premier Fishing SA (Pty) Ltd)		JP Coetzer	
National	National	Department of Environment, Forestry and Fisheries	Climate Change	Judy Beaumont	
National	National	Transnet National Ports Authority		Justin Uren	
Research	Research	Council for Scientific and Industrial Research	Environmental Management Services	Karabo Mashabela	SEA Team
Research	Research	University of the Witwatersrand		Karim Sadr	
Industry	Marine	Lwandle Technologies (Pty) Ltd, South Africa		Kate Munnik	
Industry	Heritage	Cedar Tower Services (Pty) Ltd t/a CTS Heritage		Katie Smuts	Author
Provincial	Free State	Department of Economic, Small Business Development, Tourism and Environmental Affairs		Katlego Mogorosi	

National	National	Department of Agriculture, Land Reform and Rural Development		Keagan Halley	ERG
National	National	Department of Water and Sanitation		Keith du Plessis	
Industry		COEGA Industrial Development Zone		Keith du Plessis	
Provincial	Limpopo	Department of Economic Development, Environment and Tourism	Deputy Director General	Keleabetswe Tlouane	
Provincial	Free State	Department of Economic, Small Business Development, Tourism and Environmental Affairs		Kelebongile Molotedi	
Industry		Uthando Lolwandle (Pty) Ltd		Kenneth Cooper	
Industry		Anchor Environmental		Kenneth Hutchings	
Research	Research	South African National Biodiversity Institute	Marine Programme	Kerry Sink	
National	National	Department of Agriculture, Land Reform and Rural Development		Kevin Christison	ERG
Industry	Marine	Blue Sapphire Pearls CC		Kevin Ruck	ERG
National	National	Department of Rural Development and Land Reform		Kgoroshi Mashabane	
Research	Research	University of Stellenbosch		Khalid Salie	ERG
Industry	Marine	Aqua Marine Investments		Khanya Ngonyama	
National	National	Department of Environment, Forestry and Fisheries	Environmental Programmes	Khathutshelo Nelukalo	
Industry		Eastern Cape Industrial Development Corporation		Kingsley Dell-Robertson	
National	National	Department of Agriculture, Land Reform and Rural Development		Kishan Sankar	PSC
Industry	Freshwater	Trout South Africa / Western Cape Trout Association		Krijn Resoort	
Industry		Lindon Corporation (Pty) Ltd.		Krish Govender	
Provincial	Free State	Department of Agriculture and Rural Development		Kristen Mojabelo	
Industry	Freshwater	Integrated Aquaculture	Tilapia farmer, Magaliesberg	Lance Quiding	
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment: Estuaries	Lara van Niekerk	
Industry	Visual	Square One Landscape Architects		Larissa Heyns	
Industry		Biocentric		Larry Hubbard	
Industry		Ori Organisation		Larry Oellermann	
National	National	National Council of SPCAs	Animals Ethics Unit	Lebo Sentle	
Industry		ENVIROVATORS		Lebogang Mokonyane	
Industry	Marine	Doring Bay Abalone Farm (Pty) Ltd		Lee-Ann Moelich	
Provincial	Mpumalanga	Department of Agriculture, Rural Development and Land Administration		Len Coetzer	
Provincial	Free State	Department of Economic, Small Business Development, Tourism and Environmental Affairs	Biodiversity Research Division	Leon Barkhuizen	PSC
Industry	Marine	Director of the Wemmershoek Diagnostic Laboratory		Leonard Flemming	
Provincial	Free State	Department of Agriculture and Rural Development		M. Lerato	
Industry		Aquaculture Innovations	Aquaculture Consultant and Trainer	Leslie Ter Morshuizen	ERG
Industry	Marine	Marine Finfish Farmers Association of South Africa		Liam Ryan	
Academic	Research	Council for Scientific and Industrial Research	Freshwater Programme	Liesl Hill	Author
Industry	Marine	Port Nolloth Abalone (Pty) Ltd (previously) Port Nolloth Sea Farms (Pty) Ltd)		Liewellyn Sweetnam	
Industry	Marine	Irvin & Johnson Ltd		Lilian Viviers	
National	National	Department of Environmental Affairs	Legal Authorisations and Compliance	Linda Garlipp	
National	National	Department of Environment, Forestry and Fisheries		Linda Mabaso	
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment	Lindie Smith-Adao	
Provincial	Mpumalanga	Department of Agriculture, Rural Development and Land Administration		Lindokuhle Sibiya	
Industry		Lindon Corporation (Pty) Ltd		Lindon Corporation	
National	National	Department of Trade and Industry		Lionel October	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Lisolomzi Fikizolo	
National	National	Department of Environment, Forestry and Fisheries		Livhuwani Nzzeru	PSC
Provincial	Western Cape	Department of Environmental Affairs and Development Planning		Liza Petersen	PSC
Research	Research	Council for Scientific and Industrial Research	Environmental Management Services	Lizande Kellerman	SEA Team
Industry		Aqunion (Pty) Ltd		Lize Schoonbee	
Industry	Marine	Marine Growers (Pty) Ltd (previously Premier Fishing SA (Pty) Ltd)		Lizelle Van Den Berg	

Provincial	Northern Cape	Department of Environment and Nature Conservation	Marine Scientist	Louise Geldenhuys	PSC
Provincial	Free State	Unverified		Louise Glen	
Industry		Aqunion (Pty) Ltd		Louise Vosloo	
Research	Research	Council for Scientific and Industrial Research	Environmental Management Services	Luanita van der Walt	SEA Team
Industry		KZN Agribusiness Development Agency	Project Admin Officer	Lucinda Sinclair	
Research	Research	Student		Luke Colvin	
National	National	Department of Water and Sanitation		Lumka Kuse	
National	National	Transnet National Ports Authority		Luvuyo Jekwa	
National	National	Department of Environment, Forestry and Fisheries	Environmental Programmes	Luvuyo Mlilo	
Industry		Komati Basin Water Authority (KOBWA)		M E Shongwe	
Provincial	Free State	Department of Economic, Small Business Development, Tourism and Environmental Affairs		M Gasela	
National	National	Department of Water and Sanitation		M Molefi	
National	National	Department of Water and Sanitation		M. Mazibuko	
National	National	Department of Environmental Affairs Climate change	Climate Change	Maesela Kekana	
Industry		Uphold Trade and Invest (Pty) Ltd		Malcolm Keeley	
Provincial	Eastern Cape	Department of Economic Development, Tourism and Environmental Affairs		Malcolm Moses	PSC
Provincial	Free State	Unverified		Mantombi Mbongo	
Provincial	Gauteng	Gauteng Department of Agriculture and Rural Development		Marc Leroy	
Industry		Aquatic		Mardie Boulton	
National	National	Department of Water and Sanitation		Margaritha Cox	ERG
Industry		CDC consultants		Mari Wolmarans	
Provincial	Free State	Unverified		Maria Tjale	
Industry		CDC consultants		Maribe Joe Petja	
Industry	Marine	Irvin & Johnson Ltd		Mark Botbyl	
Industry	Marine	Irvin & Johnson Ltd		Mark Ralph	
Industry		Relmar Investments (Pty) Ltd		Mark Raynard	
Industry		Uphold Trade and Invest (Pty) Ltd		Mark Smith	
National	National	Department of Environment, Forestry and Fisheries	Environmental Advisory Services	Marlanie Moodley	PSC
Research	Research	University of Rhodes		Martin Davies	
Provincial	Western Cape	Cape Nature		Martine Jordaan	
Research	Research	Agricultural Research Council		Mary Jane Thaela-Chimuka	ERG
National	National	Department of Public Works and Infrastructure		Mashikoane Mogodi	
Industry		Coega Shipping (Pty) Ltd	Co-Founder & Managing Director	Masixole Ntunguntwana	
Municipal	KwaZulu-Natal	Mandeni Municipality		Masupha Mathenjwa	
National	National	Department of Environment, Forestry and Fisheries	Environmental Programmes	Matilda Skosana	
Provincial	Free State	Unverified		Matlale Lucia	
National	National	Department of Environmental Affairs		Matshidisho Malatji	
Industry	Marine	HIK Abalone Farm (Pty) Ltd		Matt Naylor	
Industry	Marine	Dusky kob cage	Manager	Mauritz Viljoen	
Research	Research	Council for Scientific and Industrial Research	Build Environment	Mawande Ngidi	
National	National	Department of Agriculture, Land Reform and Rural Development		Maxhoba Jezile	PSC
National	National	Department of Mineral Resources and Energy		Mbavhalelo Nephawe	
National	National	Department of Environment, Forestry and Fisheries		Mbulelo Dopollo	
National	National	Department of Agriculture, Land Reform and Rural Development		Mduduzi Shabane	
Provincial	KwaZulu-Natal	Department of Economic Development, Tourism and Environmental Affairs		Mduduzi Zondo	
Industry	Visual	Megan Anderson Landscape Architect CC		Megan Anderson	
Provincial	Western Cape	Department of Environmental Affairs and Development Planning		Melissa Naicker	PSC
Industry	Visual	Cave Klapwijk & Associates	Landscape Architects and Environmental Planners	Menno Klapwijk	

Provincial	Mpumalanga	Mpumalanga Tourism & Parks Agency		Mervyn Lötter	ERG
Research	Research	Nelson Mandela University		Michael Roberts	
National	National	Department of Agriculture, Land Reform and Rural Development		Michelle Pretorius	PSC
Research	Research	Rhodes University		Mike Bruton	
National	National	Department of Water and Sanitation		Mike Silberbauer	
Industry	Marine	Irvin & Johnson Ltd		Milanie Krugel	
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Millicent Solomons	PSC
Provincial	Limpopo	Department of Economic Development, Environment and Tourism		Mishack Masindi	
Industry	Marine	Irvin & Johnson Ltd		MJ Malibu	
National	National	Department of Public Enterprises		Mogokane Richard Seleka	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Monde Mayekiso	
National	National	Department of Agriculture, Land Reform and Rural Development		Mortimer Mannya	
Industry	Marine	Irvin & Johnson Ltd		Moses Madondo	
Provincial	KwaZulu-Natal	Department of Economic Development, Environmental Affairs & Tourism		Malcolm Moses	PSC
Industry		Uluntu Agri		Moses Nhlanhla Nene	
National	National	Department of Environment, Forestry and Fisheries: Oceans and Coasts		Moses Ramakulukusha	
National	National	Limpopo Directory: Extension and Advisory Services		Mowelase Abram Shiya	
Provincial	Gauteng	Department of Agriculture and Rural Development		Mpfareleni Mashau	
National	National	Department of Mineral Resources and Energy		Mpumzi Bonga	
Industry	Freshwater	Falls Fish Farm		Myron Cort	
National	National	Department of Water and Sanitation		N Fourie	
Industry		Komati Basin Water Authority (KOBWA)		N Mkhathswa	
Provincial	Free State	Department of Economic, Small Business Development, Tourism and Environmental Affairs		Nacelle Collins	
National	National	Department of Environment, Forestry and Fisheries	Infrastructure Programmes	Nangamso Dyantyi	
Provincial	Northern Cape	Department of Environment and Nature Conservation		Nanine van Olmen	
Provincial	Northern Cape	Department of Environment and Nature Conservation	Botanist Eastern Region	Natalie Uys	
Industry	Marine	Jacobsbaai Sea Products (Pty) Ltd		Natalie van der Westhuizen	
Industry		Aquaculture Association of Southern Africa		Natasha Marshall	
Industry		Barefoot teacher		Nazeem Lowe	
National	National	Transnet National Ports Authority		Neal Naidoo	
National	National	Department of Water and Sanitation		Neels Kleynhans	
Industry	Marine	Zini Fish Farms	Production Manager	Neil Stallard	ERG
Research	Research	University of Stellenbosch		Neill Goosen	
National	National	Transnet National Ports Authority		Nelisa Ndulama	
Industry		Biocentric		Neville Boardman	
Industry	Freshwater	Envirofin Aquaculture		Neville Futter	ERG
Industry		Biocentric		KP Ngcamu	
National	National	Department of Mineral Resources and Energy		Nhlanhla Jali	
Research	Research	University of Fort Hare		Niall Vine	
Industry		Uphold Trade and Invest (Pty) Ltd		Nicholas P E James	ERG
Industry	Marine	West Coast Oyster Growers (WCOG)		Nick Loubser	ERG
Industry	Marine	Blue Ocean Mussels (Pty) Ltd		Nico Prins	
Research	Research	North West University		Nico Smit	
National	National	Department of Environment, Forestry and Fisheries		Nicolette De Kock	
Industry	Marine	South African Abalone		Nigel Dorward	ERG
Industry	Marine	Saldanha Bay Oyster Company	Intern	Nikki Rodewald	
Industry		Steffani Marine Environmental Consultant		Nina Steffani	
National	National	Department of Environment, Forestry and Fisheries	Oceans and Coast	Nitasha Baijnath-Pillay	

National	National	Department of Water and Sanitation		Nkhensani Tshidzuma	
Research	Research	North West University		Nkosinathi Machine	
Industry		African Olive Trading		Nolan Adams	
Industry		Ages-group		Nolubabalo Ntunzi	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Noluthando Bam	
National	National	Department of Environment, Forestry and Fisheries	Environmental Programmes	Nomahlubi Sishuba	
National	National	Transnet National Ports Authority		Nomkhitha Shogole	
Provincial	Gauteng	Department of Agriculture and Rural Development		Nontokozi Mahlalaa	
National	National	Transnet National Ports Authority		Nopinki Thomas	
Provincial	KwaZulu-Natal	Department of Economic Development, Tourism & Environmental Affairs		Nqobile Hlabisa	
National	National	Department of Environment, Forestry and Fisheries	Environmental Programmes	Ntakadzeni Tshidada	
Industry		Agribusiness Development Agency	ADA Project Officer	Ntathu Tiale	
Industry		Agribusiness Development Agency		Ntatu Tiale	
National	National	Department of Agriculture, Land Reform and Rural Development		Ntiyiso Nonyane	
Industry		East London Industrial Development Zone	Sector Manager: Aquaculture	Ntobeko Bacela	
National	National	Department of Public Enterprises		Ntsiki Mbono	
National	National	Department of Environment, Forestry and Fisheries	Chemicals Management	Obed Baloyi	
Research	Research	South African Institute for Aquatic Biodiversity		Olaf Weyl	ERG
Provincial	KwaZulu-Natal	Department of Economic Development, Tourism & Environmental Affairs	Coastal Management Unit	Omar Parak	
Research	Research	Council for Scientific and Industrial Research	Modelling and Digital Sciences	Onno Ubbink	
Industry		Uphold Trade and Invest (Pty) Ltd		Owen Zaba	
National	National	Department of Water and Sanitation		P Makhanya	
National	National	Department of Water and Sanitation		P Ramunenyiwa	
Research	Research	Council for Scientific and Industrial Research	Environmental Management Services	Patrick Morant†	SEA Team
Provincial	Mpumalanga	Department of Agriculture, Rural Development, Land and Environmental Affairs		Patricia Ledwaba	PSC
Industry	Marine	Abagold (Pty) Ltd (Previously Hermanus Abalone)		Paul Bruwer	
Provincial	Western Cape	Department of Environmental Affairs and Development Planning	Director: Planning and Policy Coordination	Paul Hardcastle	PSC
Research	Research	Council for Scientific and Industrial Research	Environmental Management Services	Paul Lochner	SEA Team
Industry	Freshwater	Western Cape Trout Farmers Association / Three Streams Smokehouse		Paul Luckhoff	ERG
Industry	Marine	COEGA IDZ		Paul Martin	
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment	Paul Oberholster	
Research	Research	South African Institute for Aquatic Biodiversity		Paul Skelton	ERG
Research	Research	Aquaculture Association of Southern Africa / Rhodes University		Peter Britz	ERG
Industry	Freshwater	P.J. Ashton Consulting, Pretoria		Peter J. Ashton	Author
Industry	Marine	Maribus Industries (Pty) Ltd		Peter Jordaan	
Provincial	KwaZulu-Natal	Department of Economic Development, Environmental Affairs & Tourism		Peter Kyler	PSC
Industry	Freshwater	Eastern Cape Fly Fishing		Peter Mills	
Provincial	Northern Cape	Department of Environment and Nature Conservation		Peter Ramollo	PSC
Industry		Uphold Trade and Invest (Pty) Ltd		Peter Wakefield	
Provincial	Western Cape	Department of Agriculture		Petro van Rhyn	
Industry		Uphold Trade and Invest (Pty) Ltd		Phakama Ndlovu	
National	National	Department of Water and Sanitation		Phakamisa Mgedezi	
Provincial	Free State	Department of Agriculture and Rural Development		Phemelo Kegakilwe	
National	National	Department of Science and Technology		Phil Mjwara	
Research	Research	Nelson Mandela University		Philip Desmet	
Research	Research	South African National Biodiversity Institute	Marine Programme	Philip Ivey	
Industry		Lindon Corporation		Philip Jex	
Industry		Chabi		Philisa Mangakane	

Provincial	Western Cape	CapeNature		Pierre de Villiers	ERG
Research	Research	South African National Parks	Namakwa NP: Conservation Coastal Section	Piet Schreuder	
Industry	Marine	MFFASA / Viking Aquaculture		Pieter Marais	ERG
Research	Research	PHD		Pieter Taljaard	
Provincial	Western Cape	Department Environmental Affairs and Development Planning	HOD	Pieter van Zyl	
Provincial	Free State	Department of Agriculture and Rural Development		Pilot Nchabeleng	
Provincial	North West	Department of Rural Environment, Agriculture and Development	HOD	Poncho Mokaila	
National	National	Department of Agriculture, Land Reform and Rural Development		Pontsho Sibanda	
Provincial	North West	Department of Agriculture and Rural Development		Portia Krisjan	PSC
Industry		Chabi		Precious Ntshangase	
Provincial	Free State	Unverified		Puleng Moloi	
Industry	Visual	MLB Architects, Cape Town		Quinton Lawson	Author
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Quintus Hahndiek	
Industry	Marine	Kleinzee Mariculture CC (previously De Beers Ltd)		Quiryn Snethlage	ERG
National	National	Department of Water and Sanitation		R Khan	
National	National	Department of Environment, Forestry and Fisheries		Radia Razack	
Research	Research	Council for Scientific and Industrial Research	Biosciences: Bioprocess Development	Raj Lalloo	
National	National	Transnet National Ports Authority		Rajesh Dana	
Provincial	Western Cape	Department of Economic Development & Tourism	Trade and Sector Development	Rasheeq Williams	
Industry	Marine	Tuna Marine (Pty) Ltd		Ray Arthur Henderson	
Industry		Ukulima Food Sovereignty		Ray Mutessa	
Industry		Agribusiness Development Agency	ADA Project Manager	Rechi Dlamini	
Provincial	North West	Department of Rural Environment, Agriculture and Development		Refilwe Mokgajane	
Provincial	Free State	Department of Agriculture and Rural Development		Rene van Loggerenberg	
Industry	Marine	Buffelsags Abalone Farm (Pty) Ltd		Retha Van Staden	
Provincial	Mpumalanga	Mpumalanga Tourism & Parks Agency	Chief Conservation Officer	Reuben Ngwenya	
Provincial	Western Cape	CapeNature		Rhett Smart	
Industry	Marine	Wild Coast Abalone (Pty) Ltd		Richard Clark	
Industry	Freshwater	KZN Fly Fishing Association / South African Fly Fishing Association	SAFFA Vice President	Richard Gorlei	
Industry	Freshwater	Trout South Africa		Richard H Viljoen	ERG
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism	Assistant Manager: Biodiversity Conservation & Coastal Zone Management	Ricky Hannan	
Industry	Freshwater	Bushman's River Trout		Rob Barnes	
Industry		KZN Conservancies Association		Rob Crankshaw	
Provincial	Northern Cape	Department of Agriculture, Land Reform & Rural Development	Research & Technology Development Services	Roberta Burgess	
Industry	Marine	Lwandle Technologies (Pty) Ltd, South Africa		Robin Carter	Author
Provincial	Mpumalanga	Department of Agriculture, Rural Development, Land and Environmental Affairs		Robyn Luyt	PSC
Industry		Pangrow / AquacultureSA		Rogan Field	
Industry		Aquaculture Association of Southern Africa	Chairperson	Roger Krohn	ERG
Research	Research	Nelson Mandela University		Ronel Nel	
Provincial	Eastern Cape	Eastern Cape Development Corporation		Rory Haschick	
Municipal	Eastern Cape	Nelson Mandela Bay Municipality	Acting Director	Rosa Blaauw	
Provincial	Western Cape	Department of Agriculture		Rose Horne	
National	National	Department of Environment, Forestry and Fisheries	Biodiversity and Conservation	Rose Masela	
Industry	Marine	Diamond Coast Abalone (Pty) Ltd		Rowan Yearsley	
Industry	Marine	WSP Maritime Africa, South Africa		Roy van Ballegooyen	Author
Industry	Marine	Beast Importing CC		Rudi Ramage	
Research	Research	Applied Science Associates		Rudolph du Toit	Author
Provincial	Limpopo	Department of Economic Development, Environment and Tourism		RV Mthombeni	

Industry	Marine	Beast Importing CC		S. C. Mtetwa	
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Sabelo Malaza	
Industry	Marine	Abalone Farmers Association of SA / HIK Abalone Farm (Pty) Ltd		Sally Paulet	ERG
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Sandiso Zide	
Industry		Red bicycle		Santosh Singh	
Municipal	Western Cape	City of Cape Town	Department of Environmental Resource Management	Sarah Heneck	
Industry		SRK Consulting		Scott Masson	
Research	Research	South African National Biodiversity Institute		Sebataolo Rahlao	
Provincial	Mpumalanga	Department of Agriculture, Rural Development, Land and Environmental Affairs		Selby Hlatshwayo	PSC
Provincial	Free State	Department of Agriculture and Rural Development		Serf van Schalkwyk	
Provincial	KwaZulu-Natal	Department of Agriculture & Rural Development	HOD	SF Mkhize	
National	National	Department of Water and Sanitation		Shaddai Daniel	
Research	Research	Seawise		Shannon Wilsnagh	
Industry	Marine	Marine Growers (Pty) Ltd (previously Premier Fishing SA (Pty) Ltd)		Share Hobkirk	
Industry		Pangrow / AquacultureSA		Sharif Pandor	
Research	Research	South African Environmental Observation Network		Shirley Parker-Nance	
National	National	Department of Environment, Forestry and Fisheries	Biodiversity and Conservation	Shonisani Munzhedzi	
National	National	Department of Environment, Forestry and Fisheries	Climate Change	Sibonelo Mbanjwa	
Industry		Pangrow / AquacultureSA		Sibongiseni Mkhize	
National	National	Department of Water and Sanitation		Siboniso Mkhaliphi	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Sibulele Nondoda	
Provincial	KwaZulu-Natal	Department of Economic Development, Tourism and Environmental Affairs		Sikhali Mathenjwa	
Industry	Marine	Knysna Oyster Co. (Pty) Ltd		Simon Burton	
Industry	Marine	Zwembesi (Eastern Cape: Port Elizabeth (Algoa Bay))	Oysters	Simon Burton	
Industry	Marine	Oysters	Oysters	Simon Daniel	
Research	Heritage	University of Cape Town	Department of Archaeology	Simon Hall	
National	National	Department of Environment, Forestry and Fisheries	Environmental Advisory Services	Simon Moganetsi	PSC
National	National	Department of Environment, Forestry and Fisheries		Sindiswa Dlomo	
National	National	Transnet National Ports Authority		Siraj Paruk	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Siyabonga Gqalangile	PSC
Research	Research	South African National Biodiversity Institute		Siyasanga Miza	
Provincial	KwaZulu-Natal	Ezemvelo KZN Wildlife		Skhumbuzo Kubheka	ERG
National	National	Department of Environment, Forestry and Fisheries	Biodiversity and Conservation	Skumsa Mancotywa	
Provincial	Mpumalanga	Department of Agriculture, Rural Development, Land & Environmental Affairs	Chief Director	SM Ndal	
Provincial	Limpopo	Department of Economic Development, Environment and Tourism	HOD	Solly Kgopong	
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Sonnyboy Bapela	
Research	Research	Agricultural Research Council		Sowemimo B O	
Provincial	Free State	Unverified		SP Moloko	
Provincial	Mpumalanga	Department of Agriculture, Rural Development, Land & Environmental Affairs	HOD	SP Xulu	
Provincial	Limpopo	Department of Economic Development, Environment and Tourism	Biodiversity Monitoring	Stanley Rogers	ERG
NGO	NGO	World Wide Fund for Nature (WWF)		Stephanie Rainier	
Industry	Marine	Aqunio (Pty) Ltd (previously known as) Roman Bay Sea Farm (Pty) Ltd		Stephen Ashlin	
Provincial	Mpumalanga	Department of Agriculture, Rural Development, Land & Environmental Affairs		Stephen Goetze	ERG
Provincial	Gauteng	Department of Agriculture and Rural Development		Steven Mukhola	PSC
National	National	Department of Water and Sanitation		Steven Nhlabathi	ERG
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment: Coastal Systems	Steven Weerts	Author
Research	Research	Council for Scientific and Industrial Research	NRE Earth Systems Earth Observation	Stewart Bernard	ERG
Industry	Marine	Irvin & Johnson Ltd		Steyn Miller	

Industry	Marine	Irvin & Johnson Ltd		Sue Lane	
Industry		SRK Consulting		Sue Reuther	
Industry	Marine	Saldanha Bay Oyster Company	Nursery Manager	Sue Tonin (nee Jackson)	ERG
National	National	Department of Environment, Forestry and Fisheries	Environmental Advisory Services	Sujata Carlyle	PSC
National	National	Transnet National Ports Authority		Sujit Bhagattjee	
Research	Research	Council for Scientific and Industrial Research	Environmental Management Services	Surina Laurie	Author
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment: Coastal Systems	Susan Taljaard	Author
National	National	Department of Environment, Forestry and Fisheries		Susara Burger	
Industry		Really Useful Investments No. 72 Investments No. 72		SW Van der Merwe	
National	National	Department of Water and Sanitation		T M Matidzo	
Provincial	Free State	Department of Agriculture and Rural Development		Taka Chiwanza	
National	National	Department of Environment, Forestry and Fisheries		Takalani Nemarude	
Provincial	Free State	Department of Agriculture and Rural Development		Takisi Masiteng	
Industry		Advance Africa Management Services		Tamsyn Bean	
Provincial	KwaZulu-Natal	KZNWildlife		Tamsyn Livingstone	
Industry		Advance Africa Management Services		Tandi Breetzke	
Provincial	Gauteng	Department of Agriculture and Rural Development		Tebogo Nkadimeng	
Industry	Marine	Jaymat Enviro Solutions CC (previously Mbasa Sea Farms CC)		Terence Phinda Jayiya	
Provincial	Free State	Unverified		Thabo Molibeli	
Provincial	Western Cape	Department of Agriculture		Thabo Sefike	ERG
National	National	Department of Environment, Forestry and Fisheries		Thato Mogapi	
Provincial	North West	Department of Rural Environment, Agriculture and Development	Director Agribusiness Development	Thebe Mothusi	
Industry		Trade and Investment KwaZulu-Natal	Project Manager	Thembelihle Ndlovu	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Thembinkosi Tyali	
National	National	Department of Environment, Forestry and Fisheries	Environmental Advisory Services	Thembisile Hlatshwayo	PSC
National	National	Department of Water and Sanitation		Thendo Matidze	
Industry		Aquatic		Theo During	
National	National	Transnet National Ports Authority		Theo Sethosa	
Provincial	Northern Cape	Department of Agriculture, Land Reform & Rural Development	Animal Production	Thinus Jonker	ERG
National	National	Department of Environment, Forestry and Fisheries	Climate Change	Thulie N Khumalo	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism		Tim de Jongh	
Industry	Heritage	ACO Associates CC		Tim Hart	
Industry	Marine	Abagold (Pty) Ltd		Tim Hedges	
National	National	Department of Environment, Forestry and Fisheries		Tintswalo Shirinda	
Provincial	Gauteng	Department of Agriculture and Rural Development		Tjaja Mosia	PSC
National	National	Department of Environment, Forestry and Fisheries	Climate Change	Tlou Ramaru	
National	National	Department of Water and Sanitation		TM Matidze	
Industry	Marine	Advance Africa Management Services CC		Tom Hecht	ERG
Industry	Freshwater	The Spirit of Fly Fishing		Tom Sutcliffe	
National	National	Department of Environment, Forestry and Fisheries		Tondani Kone	
Industry	Marine	Saldanha Shellfish Forum	Chairperson	Toni Tonin	
Research	Research	University of Cape Town		Tony Leiman	ERG
National	National	Department of Water and Sanitation		TP Ntili	
Industry	Marine	Itakane Trading 240 (Pty) Ltd		Trevor Page	
National	National	Department of Agriculture, Land Reform and Rural Development		Trevor Probyn	
National	National	Department of Planning, Monitoring and Evaluation		Tshediso Matona	
Provincial	Limpopo	Department of Economic Development, Environment and Tourism		Tshikani Moyana	
National	National	Department of Water and Sanitation	Integrated Environmetal Engineering	Tsholofelo Sephoti	

Research	Research	South African National Biodiversity Institute		Tsungai Zengeya	
Industry	Freshwater	Tilapia Aquaculture Association of South Africa		Valdi Pereira	ERG
National	National	Department of Environment, Forestry and Fisheries	Legal Authorisations and Compliance	Vanessa Bendeman	
Provincial	Limpopo	Department of Economic Development, Environment and Tourism		Victor Mongwe	PSC
Industry	Marine	Imbaza Mussels (Pty) Ltd		Vos Pienaar	ERG
National	National	Department of Environment, Forestry and Fisheries	Biodiversity and Conservation	Wadzi Mandivenyi	
Industry	Marine	Gapwedge Properties (Pty) Ltd		Walter Smith	
National	National	Department of Water and Sanitation		Warren Dreyer	
Municipal	Western Cape	Mossel Bay Local Municipality		Warren Manual	
Industry	Marine	Doring Bay Abalone Farm (Pty) Ltd		Wayne Cooke	
Industry	Marine	Abagold (Pty) Ltd (Previously Hermanus Abalone)		Werner Piek	
National	National	Department of Water and Sanitation	Instream	Wietsche Roets	ERG
Research	Research	South African Institute for Aquatic Biodiversity	Biodiversity Information Manager	Willem Coetzer	
Industry	Marine	Blue Ocean Mussels (Pty) Ltd		Willemien Visser	
National	National	Department of Environment, Forestry and Fisheries	Biodiversity and Conservation	Wilma Lutsch	PSC
Research	Research	University of Limpopo		Wilmien Luus-Powell	
Provincial	Eastern Cape	Department of Economic Development, Environmental Affairs & Tourism	Coastal Zone Management	Xolani Nikelo	
Research	Research	Council for Scientific and Industrial Research	Natural Resource and Environment	Yonwaba Atyosi	
Industry		Yuexiang Chemical Co.,Ltd.		Yuexiang	
Provincial	Western Cape	Department of Environmental Affairs and Development Planning	Director	Zaahir Toefy	
National	National	Department of Environment, Forestry and Fisheries	Environmental Advisory Services	Zaheer Fakir	
National	National	Transnet National Ports Authority		Zanda Mkhulisi	
National	National	Department of Trade and Industry		Zandile Khoza	
Provincial	Free State	Department of Agriculture and Rural Development		Zandile Moloai	
Industry		COEGA IDZ		Zanele Hortmann	
Industry	Marine	West Coast Abalone (Pty) Ltd (previously J H Abalone Trust)		Zelda Roets	
National	National	Department of Agriculture, Land Reform and Rural Development		Zimasa Jika	PSC
Industry		TOKS LOG (PTY) LTD		Zungu Thembinkosi	

12 COMMENTS AND RESPONSE REPORT FOLLOWING THE PSC REVIEW OF THE FINAL DRAFT SEA REPORT AND SPECIALIST ASSESSMENTS

Table 1. Comments and Response Report following the Project Steering Committee review of the Final Draft SEA Report in September-October 2019

Commenting Source	Comments	Response from CSIR
Dr Wietsche Roets Specialist Scientist Sub-Directorate: In-stream Water Use Department of Water and Sanitation 16/10/2019	I only had a brief look through applicable section and cannot think of anything to add. Our authorisation requirements have been included, depending on the level of risk to resource quality it may qualify for the GA or not.	Noted.
Michelle Pretorius Environmental Officer: Shellfish Production Directorate: Sustainable Aquaculture Management Department of Environment, Forestry and Fisheries 26/09/2019	<p>I have reviewed the SEA reports and supporting documents and have the following comments to submit -</p> <p><u>Part 3.1 Marine report:</u> Page 10, the table – salmon sea based cages, there is a repeat in the table for alternation of benthic habitat.</p> <p>Page 11, Table 3.1.5 – Design/planning and construction. Predictive analytical and numerical modelling should be undertaken before authorisation for mariculture operations is granted. This is a very costly undertaking and if we are trying to create an enabling environment then this is going to restrict the development. I'm not sure how we get around this.</p> <p><u>Part 4: Decision support framework:</u> Page 9 – list of specialist assessments required in BA report – I disagree that an Air quality assessment is required for an aquaculture facility this is more relevant to a Fish Processing facility, aquaculture facilities don't generally omit odours of concern. Agriculture impact assessment for freshwater, I have never seen this report in any freshwater application. Noise assessment for marine applications, again I have never seen a BA for aquaculture that included a noise impact assessment, often these facilities are located in remote areas or in industrial areas.</p>	<p>Noted and amended.</p> <p>Noted.</p> <p>Noted. Requirement for air quality, noise and agricultural impact assessments have been removed from the recommendations.</p>
Imtiyaz Ismail Environmental Officer: Authorisations Directorate: Sustainable Aquaculture Management Department of Environment, Forestry and Fisheries 21/10/2019	I've checked Part 4 of the document and it seems to be in line with the email we've sent you, if I read correctly the proposed changes (i.e. registration process, integrated permitting, validity of permits 24 months) will be implemented under the Aquaculture Bill as we suggested.	Noted.
Andrea Bernatzeder Operation Phakisa Delivery Unit Department of Environment, Forestry and Fisheries 28/10/2019	Part 4 / Section 4.2.1: GDA, General Discharge Authorisation	Noted and amended accordingly. Refer to Section 4.3.1 in Part 4 of the SEA Report.
	Part 4 / Section 4.2.2: <i>"DEA has delegated responsibility to the DAFF through the A&S Regulations for all freshwater aquaculture facilities to register with the DAFF."</i>	Yes. This requirement was stipulated on the DAFF Freshwater Aquaculture Sector Farm Registration Form dated 2015. On the

	<p>They have? Formally under what regulations?</p>	<p>aquaculture registration form it stated the following: “The DAFF aims to create an enabling regulatory environment required to optimize its opportunities and actively contribute to national food sovereignty, national wealth and job creation and to regional and world fish supply. This is achieved through the National Aquaculture Policy Framework as well as in partnership with the Department of Environmental Affairs (DEA) through the National Environmental Management: Biodiversity Act (10 of 2004): Alien Invasive Species (AIS) regulations 2014 (Government Notice R.598 of 2014). The DEA have delegated responsibility to the DAFF through the AIS regulations for all freshwater aquaculture facilities to register with the DAFF. Registration is required by the department to establish a database of the existing freshwater aquaculture facilities and hatcheries located in South Africa. The production information will be utilised to report to the Food and Agriculture Organisation of the United Nations on the status of the freshwater sector in South Africa.”</p> <p>Note that this recommendation was amended accordingly. Refer to Section 4.3.2 in Part 4 of the SEA Report.</p>
	<p>Part 4 / Section 4.3.1 / Model A: <i>“....species cultured and facility description (including site maps and technical layouts), to the applicable Fisheries directorate within the Department of Environment, Forestry and Fisheries (DEFF). The validity of an Applicant’s registration is open-ended on condition that should any aspect of information submitted in the registration process changes at any time, the Applicant be required to inform the DEFF for the registration to be updated accordingly.”</i></p> <p>What about research/pilot projects that don't trigger EIA or other legislation?</p>	<p>Noted. This recommendation has been amended accordingly. Refer to Section 4.3.1 in Part 4 of the SEA Report.</p>
	<p>Part 4 / Section 4.3.1 / Model B: <i>“Entity: Marine aquaculture developer / operator / importer / exporter</i></p>	<p>Noted. This recommendation has been amended accordingly. Refer to Section 4.3.2 in Part 4 of the SEA Report.</p>

	<p><i>Permit: Integrated permit application for marine aquaculture activities, including collection and possession of broodstock, operating hatcheries, grow-out, processing, vessel, import, export, transport, sell, trade, dive in banned areas, and scientific research and development."</i></p> <p>I would separate this, generally likely to be once off and should not be promoted?</p>	
	<p>Part 4 / Section 4.3.1 / Model B: <i>"Entity: Transport Companies Permit: Permit application to transport marine aquaculture products in agreement with a marine aquaculture License Holder."</i></p> <p>Is this not issued to the Rights holder?</p>	<p>Noted. It is understood that currently transport as a permitted activity is included in the integrated grow-out permit of the Rights Holder, but if a Rights Holder sub-contracts a transport company on behalf of the Rights Holder, then this permit would apply to the transport company. Refer to Section 4.3.2 in Part 4 of the SEA Report.</p>
	<p>Part 4 / Section 4.3.1 / Model B: <i>"An additional recommendation from the SEA is that the requirement to apply for CWD, A&IS and/or TOPS permits would form part of the integrated marine aquaculture permit, including the associated permitting conditions as per the relevant legislation."</i></p> <p>Not sure I understand?</p>	<p>Noted. Refer to Section 4.3.2 in Part 4 of the SEA Report.</p>
	<p>Part 4 / Section 4.3.2 / Model A: <i>"As subsistence and recreational developers / operators are exempted from obtaining Environmental Authorisation (EA) in terms of NEMA...."</i></p> <p>Recommendation or current status quo? Listing notices do trigger small farms as does AIS regulations?</p>	<p>Noted. This recommendation has been amended. Refer to Section 4.4.1 in Part 4 of the SEA Report.</p>
	<p>Part 4 / Section 4.3.2 / Model A: <i>"....Integrated Provincial Freshwater Aquaculture Permit; and (iv) Alien and Invasive (A&IS) or iv) Threatened or Protected (TOPS) Species permits (if applicable)."</i></p> <p>This is an overlap!</p>	<p>Noted. This recommendation has been amended. Refer to Section 4.3.2 in Part 4 of the SEA Report.</p>
	<p>Part 4 / Section 4.3.2 / Model A: <i>"Note that the aforementioned A&IS and TOPS permit application processes could potentially be incorporated into the Integrated Provincial Freshwater Aquaculture Permit application process to further streamline the approval requirements (see Model B below)."</i></p> <p>Why delegate down to province as opposed to up to National? Provincial should be integrated into national permit to ensure consistent approach.</p>	<p>Noted. This recommendation has been amended. Refer to Section 4.3.2 in Part 4 of the SEA Report.</p>

	Part 4 / Section 4.4: <i>"Further to this, it is recommended that should a proposed marine or freshwater aquaculture development be sited in an identified area of Low sensitivity, the BA process is to include site verification by relevant specialists producing only a compliance statement, instead of conducting a full impact assessment. Public participation is optional in these areas."</i>	Noted. Yes, this could be supported in terms of section 24(3) of NEMA, 1998. Refer to Section 4.4.1 in Part 4 of the SEA Report.
	Supported. Does NEMA current support this? In terms of the SEA, etc.?	
<p>Amanda van Reenen Director: Legal Support NEMA Department Environment, Forestry and Fisheries 23/10/2019</p> <p>With additional comments by S. Burger.</p>	Part 4 / Section 4.4: Add socio-economic specialist assessment to both Marine and Freshwater aquaculture as part of the BA process.	Noted and added.
	<u>General comment</u> : Change capital letters of words in sentences to small letters.	Noted. All capital letters changed to small letters where indicated.
	Part 1 / Section 1.3.2 – Paragraph 2: Aquaculture activities only require BA not S&EIA	Noted. However, some activities associated with large scale aquaculture operations such as clearance of vegetation of >20 ha for land-based tanks can trigger the requirement for an S&EIA.
	Part 1 / Section 1.3.2 – Paragraph 3: section 24(5) contains a lot more than just this. To say section 24(5) includes...	Noted. Paragraph was amended to correctly reference the relevant sections.
	Part 1 / Section 1.3.3: Listing Notices needs to be mentioned.	Noted. Reference to Listing Notices was included.
	Part 1 / Section 1.3.3: Also a BA. Mention activity 30 of LN1.	Noted. Reference to activity 30 in Listing Notice 1 was included.
	Part 1 / Section 1.3.4: Must section 87(a) of NEMBA not be mentioned?	Noted. Reference to section 87(a) of NEMBA was included.
	Part 1 / Section 1.3.4: Regulation 14 does not indicate that a risk assessment must be undertaken. It merely indicates what the risk assessment must consider and identifies where such risk assessment is required. It is section 89 of NEMBA that indicates that before issuing a permit the issuing authority may in writing requires the applicant to furnish it with an independent risk assessment or expert evidence. It is thus not in all instances a requirement but where the issuing authority requires it. This information should be included here.	Noted. This information was added as indicated.
	Part 1 / Section 1.3.5: Mention the section.	Noted. Reference to the relevant sections of the NEM:ICMA were added.
	Part 1 / Section 1.3.6 – Paragraph 2: Check sentence construction please. Something seems to be missing.	Noted. Sentence construction was fixed.
	Part 1 / Section 1.3.6 – Paragraph 2: Is this the latest name?	Noted. The new name has been added i.e. National Department of Human Settlement, Water and Sanitation

	Part 1 / Section 1.4.3 – Paragraph 4: ...reviewed with the purpose to do what with that information?	Noted. The review of this documentation was done to gain an understanding of the legislative framework presently governing the marine and freshwater aquaculture sectors on both a national and provincial level, to enable the SEA team to make recommendations for possible integration and/or streamlining of application and/or decision-making processes.
	Part 2 / Section 2.1 – Paragraph 1: Is there no private land that form part of the ADZs?	Yes, privately owned land forms part of each ADZ as each focus area spans 100s and 1000s of square kilometres. The paragraph was amended to read as follows: <i>“The location of these ADZs are motivated based on the environmental and technical suitability of an area to sustain aquaculture activities, the extent of existing marine and freshwater aquaculture operations, the availability of state-owned land earmarked for future development, as well as suitable sea-space conducive for farming of various aquaculture species, in and along coastal provinces.”</i>
	Part 2 / Section 2.1 – Paragraph 1: Don't understand the sentence <i>“These suitable areas are subject to undergoing EIA processes and receiving Environmental Authorisation prior to being declared ADZs.”</i> Areas are never subjected to EIA processes in the absence of activities. And are there proposed aquaculture activities currently proposed for these areas or is the point that, should it be done it would trigger the EA requirement?	Noted. Yes, should an aquaculture activity be proposed for a particular site located within the ADZ, an impact study would be required should the requirement for EA be triggered. The paragraph was amended accordingly – see previous comment.
	Part 2 / Section 2.1.2 – Paragraph 2: Protected areas in terms of all of the following - doesn't make sense? Please clarify whether the reference to PAs is supposed to be stand-alone category of push factors, followed by the others mentioned.	Noted. Paragraph was rephrased to clarify the reference to PAs as a stand-alone category, followed by other areas of biodiversity importance.
	Part 2 / Table 2-3: Why is there a * at Abalone? What does it mean?	Asterisk at Abalone is indicative of the production of micro- and macro algae often associated with abalone farms. A note has been added to Table 2-3.
	Part 2 / Table 2-4: Where in Limpopo, Mpumalanga and Gauteng - not the entire province? One zone per province or multiple ones?	No, it is not a reference to the entire province. Column 1 in Table 2-4 indicates the name of the strategic aquaculture development zone e.g. Limpopo. Column 4

		indicates the province or provinces in which the particular ADZ is located.
<p>Adeleen Cloete Environmental Officer: Coastal Management Northern Cape Department of Environment and Nature Conservation 17/10/2019</p>	<p>Part 1 - STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)</p> <p><u>Section 1.2.1 - Need for the SEA</u> “Assessment of socio-economic impacts is inherently challenging due to the variation on the capacity of human beings to adapt to change and unexpected shocks and is linked to diverse factors such a culture, value systems, relative income levels, and physiological resilience. This level of uncertainty was compounded in this SEA in which concrete project variables (location, size, layout, employment numbers, etc.) are excluded in favour of understanding a relative geographic location’s capacity to accommodate a given development. By necessary implication, high-level impact evaluation cannot provide accurate information on economic and social impacts which are strongly related to unique local contextual variables. Unsurprisingly, uncertainty is further exacerbated when the scope of the assessment encompasses vast geographic regions of a country as socio-economically diverse as South Africa.”</p> <p>The limitations in terms of the socio-economic assessment is noted. A general comment in terms of the assessment of socio-economic impacts stems from the Inaugural Integrated Coastal Management Lekgotla conducted during 10 and 11 September 2019. The speaker, in summary, implied that social scientists should be involved in the design of studies, from the onset, and not at an advanced stage only to provide inputs. The specific talk by Professor Monieba Isaacs, The role of Social Research, Methodologies and Design in Building Successful ICM Interventions, can be downloaded from the Lekgotla website on https://www.icmlekgotla.com/</p> <p><u>Section 1.3 - Legal Framework</u></p> <p>“A key objective of the SEA is to make recommendations for a streamlined and integrated management and regulatory framework to reduce compliance complexities and improve decision-making processes.”</p> <p><i>Integrated Coastal Management Act</i></p> <p>The ICM Act instruments mentioned in the SEA includes Estuary Management Plans, Coastal Water Discharge Permits and Coastal Management Lines. The following instruments, which has relevance for the aquaculture industry, are not mentioned.</p> <p><i>Coastal Management Programmes</i></p>	<p>Noted.</p> <p>Noted. Additional ICM Act instruments were added to Section 1.3.5 of the SEA Report.</p>

	<p>Provincial Coastal Management Programmes contains specific objectives for coastal areas within a province's jurisdiction.</p> <p><i>Control of use of Vehicles in the Coastal Area (R 496)</i></p> <p>There are different categories for which Off-Road Vehicles (ORV's) permits are issued. An aquaculture company in the Northern Cape was in possession of an ORV permit in the category for carrying out a non-recreational activity (for seaweed collection). The company then commenced with maintenance of infrastructure and consequently needed another ORV permit as the activity falls under a different category; the construction or maintenance of infrastructure authorised by law.</p> <p><i>Management of Public Launch Sites in the Coastal Zone (R 497)</i></p> <p>A permissible use in the ORV regulations is "the use of a vehicle within a vehicle use launch site or privately used launch site."</p> <p>The amount of Public Launch sites listed, which allows the use of vehicles to launch a vessel, are subject to the capacity of municipalities to manage the site. This means that if there is no public or privately used launch site, and an applicant wants to use a vehicle to launch a vessel they need to apply for an exemption. As mentioned in some instances these aquaculture companies already have more than one ORV permit, although for different categories.</p> <p>Perhaps the streamlining of these regulations within the ADZ's can be explored.</p> <p>Part 2 - IDENTIFICATION OF THE ADZ's</p> <p>"Key high level environmental and technical constraints for aquaculture development included all Protected Areas in terms of marine, aquatic and terrestrial biodiversity, archaeological and cultural heritage sites, military areas, mining areas, fish sanctuaries, steep coastal and inland slope, stressed water catchments, extreme wave height, high risk areas for harmful algal blooms, major river plumes, waste outfalls, as well as existing water resource users and uses."</p> <p>The Orange to Hondeklip Bay study area is dominated by mining and large areas are therefore restricted. Although the SEA is a high level strategic document which does not go into project level detail, it is important, from a Northern Cape perspective, to plan for post-mining economies. Since the major economic activity along the coast is mining, based on non-renewable resources, there should be better planning for post mining economies. Generally the mining houses are not against aquaculture operations within mining right areas given that it is reasonable; and that operations don't negatively impact on one another.</p>	<p>Noted. It is recognised that site specific verification and ground-truthing will be required at a project level to investigate the possible siting of land-based aquaculture facilities in already transformed areas such as old mining areas along the Northern Cape coast. Baseline environmental sensitivity data that resulted from the SEA</p>
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	<p>Will the maps/sensitivities be updated and the ADZ's re-assessed should mining activities cease?</p> <p>Part 3 - SCIENTIFIC ASSESSMENT OF ADZ's</p> <p>The entire Northern Cape is high to very high on the ecological sensitivity; refer to comments from the Coastal Ecologist, Louise Geldenhuys.</p> <p><i>"The pre-assessments were undertaken considering aspects of freshwater- and marine biodiversity and ecology, including water quality and quantity, ecosystem health, biodiversity risks and pathology; archaeology, palaeontology and cultural heritage, visual and scenic aesthetics, socio-economics and effluent management."</i></p> <p>"A limitation mentioned in the SEA is the lack of structured, consistent ground-truthing of any of the study areas. This means that sensitivity maps may over-emphasize the extent of areas of high and very high sensitivity."</p> <p>This is a concern as the SEA specifically aims to provide strategic spatial guidance in terms of optimal project-level siting and promote investment in areas of low environmental sensitivity through the identification of priority areas i.e. aquaculture development zones (ADZs).</p> <p>CONCLUSION</p> <p><i>"A limitation of the outputs of this assessment is thus the lack of structured, consistent ground-truthing of any of the study areas. This means that sensitivity maps may over-emphasize the extent of areas of high and very high sensitivity. This limitation is an important one and can be addressed only by ground-truthing and the collection, collation and verification of more accurate data within the ADZs."</i></p> <p>Stemming from the above statement it should be ensured that the high level SEA will not negatively affect investment in areas indicated as for example high sensitivity; when ground-truthing and site verification of more accurate data have not been done.</p>	<p>will have to be informed by detailed provincial level information and updated accordingly in future.</p> <p>Noted. The SEA aimed to provide strategic spatial guidance in terms of the identification of priority (focus) areas for aquaculture development based on high level environmental and technical suitability following from an opportunities and constraints analysis undertaken during the SEA. However, at the high (strategic) level of assessment of environmental sensitivities determined for each of the identified ADZs in this desktop-based SEA, optimal project level siting was not possible as this requires more detailed provincial level and/or site specific information to verify sensitivity. The limitations experienced in this regard have been emphasized in the SEA report.</p>
<p>Louise Geldenhuys Ecologist: Coastal Management Northern Cape Department of Environment and Nature Conservation 17/10/2019</p>	<p>1. As stated in the previous comments by Adeleen Cloete, it is still recommended that the Orange River Estuary be excluded from the Orange-Hondeklip Bay Marine Aquaculture Development Zone, and that the northern boundary of this zone should be moved to just south of the estuary (including a buffer area). The reasons for this recommendation is:</p>	<p>1. Noted. Although this focus area including the Orange River Estuary has been assessed at a high level in this SEA, estuaries are excluded from streamlining of environmental authorisation for aquaculture development. To prevent</p>

	<p>- The high sensitivity and environmental importance of the Orange River Estuary area makes it not suitable for aquaculture. This environmental sensitivity has been described correctly in the Marine Specialist Assessment.</p> <p>- It is not clear why this Aquaculture Development Zone still includes the estuary, since there is no apparent benefit of not moving the boundary a little bit south.</p> <p>- Furthermore, keeping the Estuary in this Aquaculture Development Zone will create confusion, and may result in applicants wasting money on authorisation applications in this area, which, for environmental reasons, should not be granted.</p> <p>2. The change of the name of the Development Zone from Orange-Kleinsee to Orange-Hondeklip Bay Marine Aquaculture Development Zone is noted and appreciated.</p> <p>3. The environmental sensitivity map for the Orange-Hondeklip Bay Aquaculture Development Zone would be much more useful if it shows areas that are less sensitive and more sensitive, instead of covering almost everything terrestrial under "critically endangered habitats". While it is understood that the SEA is on a national level, and did not consider fine-scale detail, it currently creates confusion around the motivation behind the existence of the zone, if everything is "critically endangered". A suggestion to make this map more useful is:</p> <p>- Use the South African modified land cover layer to extract transformed areas (in this case areas that have been mined) from the terrestrial "critically endangered" area. These areas that has already been mined are less valuable from a biodiversity perspective, and could be used for land-based aquaculture development.</p> <p>4. It is recommended that the way forward regarding this SEA is clarified in the summary, or part one of the SEA report (e.g. gazetting of Development Zones).</p>	<p>confusion and unauthorised applications for aquaculture development within the boundaries of the estuary area, it is suggested that the relevant provincial authority considers officially declaring this area a 'no-go zone' for development. It is also agreed that the boundary of the ADZ can be moved southwards as suggested prior to gazetting this ADZ. These recommendations have been added to Part 4 of the SEA Report.</p> <p>2. Noted.</p> <p>3. Agreed. The recommendation to apply the South African modified land cover layer to extract transformed areas to refine this ADZ prior to gazetting this strategic aquaculture area has been added to Part 4 of the SEA Report.</p> <p>4. Noted. Recommended actions regarding the way forward have been included in Part 4 of the SEA Report.</p>
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Collated comment submitted from Western Cape DEA&DP and CapeNature on the Final Draft Aquaculture SEA Report.			
Name of Department:	Department of Environmental Affairs and Development Planning / CapeNature		
Matter:	Aquaculture SEA		
Contact Person:	Liza Petersen / Mellisa Naicker	Due Date for comments:	25 October 2019
Email:	Liza.Petersen@westerncape.gov.za	Date of Submission	25 October 2019
Telephone:	021 483 4247	Legal Services Ref. No.:	n/a

Submitted To:		Lizande Kellerman			
Clause		Comment	Suggestion	Response	
General		The document is well written and the illustrations selected add value.		Noted.	
Part 1 1.3.5 (CapeNature Comment)		Aquaculture developments in Estuaries should engage with Estuary Forums.	Include reference to the need for aquaculture developments in estuaries should engage with Estuary Forums for mutual benefit.	Noted. Reference added to Section 1.3.5 of the SEA Report. Note that this SEA did not consider streamlining of environmental authorisation for aquaculture development within estuaries.	
Part 2. Identification of the aquaculture development zones (ADZs) (CapeNature Comment)		The appropriateness in relation to environmental sensitivity of all the identified Proposed Freshwater Aquaculture Development Zones (ADZs) is questioned, particularly given the species considered for farming and possible impacts on the receiving environment.	Prior to this report being approved by the Minister it is strongly suggested that a final meeting of key role players in mariculture and freshwater aquaculture (i.e. two meetings) takes place to confirm the zones. The zones will have little impact if there is not strong buy in from industry and support from government at all levels.	Noted. This recommendation has been added to Part 4 of the SEA Report.	
Part 2. Section 2.2.2 (CapeNature Comment)		Clarity should be provided about the choice of species for the aquaculture zones. This needs to be workshopped and communicated with the industry in order to be supported by industry. Reasons for including certain species in some zones but not in others should be provided, particularly in cases where species which have been excluded from certain zones are already actually being cultured in these zones. For example the W Cape aquaculture zone is only for trout, yet in practice it includes areas where Nile and Mozambique tilapia applications have been approved and	Reasons for including certain species in some zones but not in others should be provided. Revisit each zone with industry and regulators and ensure that the zones do include species that could be sustainably farmed in such zones.	Noted. The mentioned candidate species have been added to the Western Cape ADZ. However, please note that the potential impact associated with farming these additional species within the Western Cape focus area has not been pre-assessed in this SEA process. Also, the recommendation for further stakeholder engagement prior to gazetting this ADZ has been added to Part 4 of the SEA Report.	

	where sharptooth catfish could potentially be farmed in RAS (Recirculating Aquaculture Systems).		
Part 2 2.2.2.1	Apply similar methodology used for evaluation of land based nodes to the marine sector where possible.	The off-shore based nodes evaluation process should assess the site where operations are proposed as well as where stocks are to be landed (if not in a harbour).	Noted.
Part 2 2.2.2.1	Need to provide clarity on the methodology applied to calculate the buffer areas between protected areas and the proposed ADZs.	Detailed methodology applied to calculate the buffer areas between protected areas and the proposed ADZs should be supplied. Specifically include the rationale and methodology used to calculate the 100m buffer around reefs. Islands are protected areas so should have a 1000m buffer.	Noted. Recommended buffers zones for sensitive features located in high and very high sensitive areas, with special reference to reefs and marine protected areas are provided in Section 9.1.1 of the Marine Biodiversity and Ecology Specialist Assessment (Appendix A-1). Further recommended buffer zones relating to visual sensitivity of water features and the coastal zone are also provided in Section 4.2 of the Visual, Aesthetic and Scenic Resources Specialist Assessment (Appendix A-4).
Part 2, Page 4 Launch Harbours (Coastal Comment)	Has this been linked with the provincially listed PUBLIC LAUNCH SITES		The list of launch harbours that were used in the screening phase of the SEA to identify the ADZs were identified during stakeholder workshops as key harbours to consider. These launch harbours were used as input for high-level identification of strategic and suitable aquaculture focus areas. Launch and access rights will have to be established on a project by project basis and that are informed by provincial level data. The launch harbours considered in the SEA are: Porth Nolloth, Doringbaai, Lambertsbaai, Velddrif, St Helenabaai, Saldanha, Blouberg, Cape Town,

			Houtbaai, Vishoek, Simonstad, Gordonsbaai, Kleinmond, Hermanus, Struisbaai, Arniston, Stilbaai, Mosselbaai, St Francisbaai, Port Elizabeth, East London, Durban and Richards Bay.
Section 2.3	The statement that sharptooth catfish <i>Clarias gariepinus</i> is common in all major river systems of the Eastern and Western Cape is queried. This statement is only partially correct	Amend to indicate that while this species is fully established in the Berg and Breede mainstream rivers in the WCP, their invasion status in the Olifants-Doring Gouritz systems still needs to be determined. Also, it must be made clear that while their ability to invade headwater/tributary habitat has been scientifically proven, very little is known about the potential impacts in these sensitive habitats. See Ellender et al. 2015.	Noted. Section 2.3 of the Freshwater Biodiversity and Ecology Specialist Assessment Report (Appendix A-2) has been updated with this information and reference accordingly.
Part 2, Page 4 Extreme Waves (Coastal Comment)	<i>"CSIR coastal vulnerability study"</i> The Western Cape has more detailed data linked to the determination of coastal management lines. This information / date was provided to the CSIR (Ms Luck-vogel). It may be beneficial to also check the identified risk areas against that data set.	Suggest using the more detailed information / data provided by the Western Cape.	Noted. However, this information was not available at the time of assessment during 2017. The recommendation to check the identified risk areas against more detailed provincial level information has been added to Part 4 of the SEA Report.
Part 3	Need to align development application processes for various components of a development	Authorizations for marine based developments need to be linked to their land based development nodes to enable thorough understanding of potential impacts throughout the process.	Noted.
Part 3_1, Page 2	<i>"Critically Endangered Habitats"</i>	Suggest updating with the data from the new NBA 2018.	Noted. However, this information was not available at the time of assessment during 2017. The recommendation to

Table 3.1.1 (Coastal Comment)	Will this be updated to the data from the new NBA 2018?		potentially re-assess environmental sensitivities based on newly available 2018 NBA data has been added to the way forward in Part 4 of the SEA Report.
Part 3_1, Page 13 No. 3.1.6 (Coastal Comment)	It may be beneficial to look at recent example of monitoring and sampling plans of the Saldanha ADZ		Noted. Section 3.1.6 in the SEA Report has been updated accordingly.
Part 3_2, Page 14 No. 3.2.3 (Coastal Comment)	Has the gazetted or about to be gazetted resource quality objectives been incorporated as part of the sensitivity analysis?		No. Section 4.3.2.4 in the Freshwater Biodiversity and Ecology Specialist Assessment Report (Appendix A-2) states: In addition to the data used above, it was initially proposed that the Ecological Target Categories for meeting gazetted Resource Quality Objectives should also inform sensitivity mapping. However, these data are limited in current application and were not readily available as mappable units within the time frames of this study, and have thus rather been referred to in the pre-approval check-list for proposed aquaculture activities, rather than being mapped spatially.
Part 3. Section 3.2 freshwater biodiversity (CapeNature Comment)	There is concern at the outcome of the mapped ADZs in terms of sensitivity and whether all the attributes chosen are appropriate for this type of assessment. For example, the identified aquaculture zones for Limpopo, KZN, Mpumalanga and 90% of the E Cape coincide with red (sensitive) to dark red (highly sensitive) areas. Should these areas (aquaculture zones) have been chosen (i.e. are	Meet as soon as possible with industry and regulatory authorities (separately) to discuss maps and determine if they are appropriate for the species chosen (industry) and if the attributes have been correctly mapped (regulatory authorities). Concern about the maps	Noted. This desktop based SEA aimed to provide strategic spatial guidance in terms of the identification of priority (focus) areas for aquaculture development based on high level environmental and technical suitability following from an opportunities and

	these areas too sensitive for aquaculture) or is the mapping overly cautious for aquaculture (i.e. inappropriate attributes chosen which make less sensitive areas into sensitive ones)?	has already been expressed by stakeholders at stakeholder meetings. The maps and attributes need to be refined.	constraints analysis conducted during the SEA. However, at the high (strategic) level of assessment of environmental sensitivities determined for each of the identified ADZs in the SEA, optimal project level refinement of the areas was not possible as this requires more detailed provincial level and/or site specific information to verify sensitivity. The limitations experienced in this regard have been emphasized in the SEA Report. Recommendations stressing the need for additional stakeholder engagement to further refine sensitivity mapping of the proposed ADZs and risk assessment criteria is acknowledged and have been included in Part 4 of the SEA Report.
3.2.4 Risk assessment (CapeNature Comment)	More detailed is required regarding the criteria used for risk assessment. The different freshwater aquaculture systems in the Figure need to be defined. For example clarity is needed about what constitutes 'small-scale' and 'large scale'.	Further refine risk assessment criteria with input from industry experts. Define different aquaculture production systems according to national / international standards.	Noted. Detailed information regarding the various criteria used in the risk assessment is provided in the Freshwater Biodiversity and Ecology Specialist Assessment Report (Appendix A-2).
Figure 3.2. 12 (CapeNature Comment)	The issue of species with high invasive capability escaping into a river in a low to medium sensitivity catchment needs to be carefully considered as rivers are open systems and hence the species can invade most suitable parts of the catchment which may be very big and include sensitive sub-catchments e.g. sharptooth catfish invading Breede River system. The only time the impact would be low is if the species is already present in the catchment as an invasive population and has occupied most if not all available habitat. Note that there are also species with low invasive capability e.g. most tropical ornamental species being farmed in heated RAS in the W Cape (e.g. Nembwe Fish farm near	Check sensitivity of criteria and adjust where appropriate. For the Western Cape include a category "Species with low invasive potential" as these species could be farmed in sensitive catchments in heated RAS with little if any risk.	Noted. Refer to previous response regarding limitations experienced in terms of mapping environmental sensitivity at a strategic level. More detailed provincial level and/or site specific information is required to verify and adjust sensitivity. These recommendations have been added to Part 4 of the SEA Report.

	Cape Town). If they were to escape, they cannot become invasive as they cannot survive the W Cape winters.		
3.2.4.1. Risk assessment implications (CapeNature Comment)	The table has been well compiled but has onerous financial implications for applicants in the areas defined as sensitive to highly sensitive. As mentioned above the maps need to be refined to make sure such designations are appropriate. Additionally stakeholders need to be made aware of the implications of the protocol requirements.	Refine maps where appropriate. Develop one protocol plan for aquaculture operations in sensitive areas and stipulate what is needed in each component of the plan. This will guide consultants writing such plans and support a uniform approach.	Noted. This recommendation has been added to Part 4 of the SEA Report.
Part 4. Decision support framework	The regulation process needs more detail in order to support uptake.	More detail is needed regarding specific mandates, regulatory process and roles and responsibilities that various regulatory authorities assume in the process. For example detail such as the responsibility for monitoring of effluent, the regularity of monitoring and reporting process should be stipulated. Providing this level of detail will be of benefit to all stakeholders and support a common understanding of delegated roles and responsibilities. Regulations for aquaculture species outside of ADZs need to be provided.	Noted. This recommendation has been added to Part 4 of the SEA Report.
Part 4, Page 7 No. 4.3.1 - Step 1 (Coastal Comment)	<i>"The validity of an Applicant's registration is open-ended on condition that should any aspect of information submitted in the registration process changes at any time, the Applicant be required to inform the DEFF for the registration to be updated accordingly."</i>	Suggest that this is changed.	Noted.
Part 4, Page 7 No. 4.3.1 Step 2	<i>"An application for a license to engage in marine aquaculture activities only apply to commercial- and small-scale developers and operators, as subsistence and recreational activities are exempted from this requirement. In terms of the Draft Aquaculture Development Bill, the validity period of a license for commercial-scale developers and operators is 30 years,</i>	Suggest having the same time period.	Noted. This recommendation has been added to Part 4 of the SEA Report.

(Coastal Comment)	<p><i>and for small-scale developers and operators only 10 years."</i></p> <p>Why the difference? This makes it onerous for small scale operators who are making a subsistence or low income living compared to larger operators who can afford to renew licensing/registration more regularly and conduct monitoring and reporting more regularly too. Why not just have the same time period?</p>		
Part 4, section 4.3	<p>Reference is made to the requirements for water use licences. The SEA recommends "<i>....that all freshwater aquaculture activities undertaken in South Africa only be granted a General Authorisation, instead of a Water Use License</i>". This Department does not agree with this proposal, as the sensitivity of the receiving environment and the scale of the development should be considered. It is recommended that the options provided for in section 22(3) and (4) of the NWA be considered:</p> <p><i>"(3) A responsible authority may dispense with the requirement for a licence for water use if it is satisfied that the purpose of this Act will be met by the grant of a licence, permit or other authorisation under any law.</i></p> <p><i>(4) In the interests of co-operative governance, a responsible authority may promote arrangements with other organs of state to combine their respective licence requirements into a single licence requirement."</i></p> <p>More specifically, it is recommended that the Department of Water and Sanitation, in terms of section 22(4) of the NWA, agree to not follow a separate regulatory process, but become part of an integrated regulatory application process.</p>		Noted. This recommendation has been added to Part 4 of the SEA Report.
Part 4, section 4.3.1	<p>As part of step 1 the SEA it is recommended that the "<i>.....current application for a "right" to engage in marine aquaculture activities be converted into a <u>registration</u> process...</i>". It is not clear what the purpose is and legal</p>		Noted. The SEA initially recommended that DAFF removes the need to apply for a marine right, but this recommendation was not supported by

	status of the proposed registration will be, or how this will streamline the regulatory processes.		DAFF. To streamline marine and freshwater aquaculture, DAFF agreed to consider converting the need to apply for a marine right to a registration process, to align with the requirement for registration to engage in freshwater aquaculture. Should this recommendation be accepted, it will however require changes to the Aquaculture Development Bill.
Part 4, Section 4.4	This section speaks of applications in low risk zones, and suggests that public participation for NEMA applications is optional. This is not legally possible without suitable enabling provisions. This Department does not agree with this statement. In terms of section 24(4) of NEMA, for an application for environmental authorisation, public participation is a minimum requirement – it is not optional.	The mechanisms through which the SEA will be implemented must be outlined in order to better understand the legislative implications of the SEA.	Noted. This section has been amended accordingly.
Part 4, Section 4	In the various integrated permitting processes put forward for marine environments, the SEA suggests that the NEMA requirements for capturing changes in particulars of the authorized entity be utilized for MLRA requirements. However, the institutional arrangements associated with this are not expanded upon.	The SEA should outline the institutional arrangements required to implement the SEA.	Noted. Amendments have been made to Part 4 of the SEA Report to address this comment.
Part 4: Discharge Permit in terms of the NEM: ICMA (Planning and Policy Coordination Comment)	<p>Please note that the draft General Discharge Authorisation in terms of section 69(2) of NEM: ICMA, was gazetted on 23 August 2019 for public comment. It is this Department's understanding that the draft General Discharge Authorisation currently <u>does not</u> provide for a special dispensation for aquaculture.</p> <p>It is also this Department's understanding that general discharge permit is only applicable / can only be issued, in instances where the predetermined gazetted requirements of the general discharge permit are met.</p>		Noted. This section in Part 4 of the SEA Report has been updated accordingly.

	<p>Therefore, it is not clear what is meant by the statement “..... it is recommended from the SEA that all marine aquaculture operations, located within the coastal ADZs of South Africa, only be granted a General Authorisation for discharge of effluent into coastal waters instead of a permit”. To be clear, a decision to issue a general discharge authorisation cannot be a predetermined decision, but must be evidence-based (i.e. the gazette effluent standards of the general discharge authorisation must be met).</p> <p>Also, the motivation for aquaculture to be afforded a special dispensation (i.e. allowed to fall under a general discharge permit) in the SEA is inadequate. Is there enough scientific information to motivate that the effluent (water quality) will fall within the threshold (of acceptability) catered for in the general discharge permit? Put differently, the motivation for aquaculture to be treated differently, it must be evidence-based.</p>		
Appendix A2, p43 (CapeNature Comment)	Existing water quality condition need to be elaborated on.	Consider adding reference to the fact that while the lower reaches of the rivers in question are affected by water quality impacts such as untreated effluents and agrichemical pollutants, many tributaries and headwaters are unaffected by these impacts and are relatively pristine.	Noted and information added.
Appendix A2, p44 (CapeNature Comment)	Main threats affecting aquatic ecosystems should include more detail	<p>Include surface water over-abstraction as a significant threat, especially for tributary streams.</p> <p>Also include groundwater abstraction and use as a future potential threat. Include reference to negative impacts of invasive vegetation on aquatic ecosystems.</p>	Noted and information added.

Appendix A2, p51 (CapeNature Comment)	It is stated that data was included only for taxa that had been re-assessed between 2016 – 2018. This may mean that some species/distribution data may have been omitted (e.g. <i>Galaxias zebratus</i> does not appear to be on the SANBI site).	Supplementary fish species data should be included. Consider including data from the IUCN RLAs here where available.	Noted. Although revised IUCN threatened fish species data was included in the assessment, fish data used in the sensitivity ratings comprised only taxa for which the status had been re-assessed during the 2017 IUCN South African Freshwater Fish Workshop (Section 10 in Appendix A-2). However, note that reference to the presence of <i>Galaxias zebratus</i> is provided in Section 5.2.2 of Appendix A-2.
Appendix A2, p51 (CapeNature Comment)	Supplementary provincial fish species data for the Western Cape has not been included	Provincial fish species data for the Western Cape can be provided by CapeNature as this is available in the latest State of Biodiversity Report	Noted. Provincial conservation agencies were approached for additional data regarding fish species distributions and/or other concerns. Of these, only the Mpumalanga Tourism and Parks Agency (MTPA) provided such data, indicating the general paucity of such information nationally (Section 10 in Appendix A-2). The recommendation to consider provincial fish species data for the Western Cape prior to gazetting this area has been added to Part 4 of the SEA Report.
Appendix A2, p64 (CapeNature Comment)	Based on the sensitivity rating, it seems that the Western Cape is considered to be more suitable for aquaculture than Eastern cape, Mpumalanga and Limpopo. This is counter-intuitive as the Western Cape is the province with the highest levels of freshwater fish endemism and with 55% of known taxa threatened based on the latest assessment. The province is also highly water-stressed.	The statement that the WCP, along with Free State-KZN “includes substantial areas for consideration” is a cause for concern both from a water quality and biodiversity perspective and should be reconsidered.	Noted.

Appendix A2, p64 (CapeNature Comment)	Incorrect Reference : Dudgeon 2005	Edit to Dudgeon et al. 2006	Noted and edited.
Appendix A2, p76 (CapeNature Comment)	Table 4 – Western Cape section – clarity required	Please provide clarity for selection of only trout for the WCP.	During the screening phase of the SEA, only trout was selected as a candidate species for the Western Cape as climatic conditions were considered best suited to <u>open water</u> trout culture in this focus area, whereas catfish and tilapia farming will generally require controlled systems e.g. RAS to circumvent climatic restrictions.
Appendix A2, p91 (CapeNature Comment)	Table 12	This table was adapted from table 4 so the same concerns are also applicable here. All species listed pose some form of biodiversity threat but this was not included in the table. In the absence of data for sharptooth catfish its potential invasion risk into sensitive areas such as headwater streams cannot be ignored.	Noted.
Appendix A2, p95 (CapeNature Comment)	Recommendations for Western Cape	The proposed recommendation states that in medium to high sensitivity areas only RAS should be supported. While RAS poses low escape risk there is still a possibility of accidental or deliberate release of fish and ideally if trout are not present in a catchment and the catchment is ecologically sensitive, then aquaculture should not be supported in that catchment. The industry should rather aim to intensify their operations in areas that are already ecologically compromised by the presence of trout. In very sensitive catchments where trout are already	Noted and recommendations included in Appendix A-2.

		present, any further development should only be RAS.	
General (Climate Change)	The document does not appear to me to include consideration of climate change risks and would thus be fundamentally flawed. That being said this may have been packed into a “basket term” like environmental sensitivity or something.		Agreed.
The use of Standards in terms of section 24(2)(d) of NEMA: E.g. Draft National Standard for Land-Based Abalone Aquaculture (Planning and Policy Coordination Comment)	<p>It is also recommended that consideration be given to the possible use of Standards, as an alternative to the current regulatory processes. A significant amount of work has already been done in developing draft standards for abalone and trout farming. This department is willing to meet and discuss this option in more detail.</p> <p>The document makes no mention of the Draft National Standard for Land-Based Abalone Aquaculture. A lot of work and effort was put into developing this document that was out for public comment in 2016. No feedback has been provided from DEA in this regard. It is unclear whether the standard will be used in future. If it is not accepted on a national level, the Western Cape would at least want the option to pursue this as a provincial standard.</p>	<p>Suggest that a Standard is also included as an option for exclusion in terms of NEMA.</p> <p>Suggest that the Draft National Standard for Land-Based Abalone Aquaculture is put forward as pilot in this regard, given all the work already undertaken.</p>	Noted. This recommendation has been included in Part 4 of the SEA Report.
General (Planning and Policy Coordination Comment)	The document is very focused on reduction of environmental regulatory requirements for aquaculture. It's not clear whether the assessment included an assessment of whether the environmental impact of past aquaculture activities merits the heavy regulatory burden. As is, it's more of an assumption that this industry is over-regulated, given that economic productivity is being prioritised.		Noted. Available literary information about the environmental impact of past aquaculture activities was reviewed to inform the assessment of the environmental impact and regulatory requirements of current aquaculture activities during the scientific assessment phase of the SEA, in order to make recommendations regarding assessment and possible regulatory

			integration / streamlining for future aquaculture activities.
Infrastructure Development Act, 2014 (Planning and Policy Coordination Comment)	<p>Section 1.2</p> <p>The objects of the Infrastructure Development Act, 2014 (which will come into effect on a date determined by the President by proclamation in the Gazette) are to provide for— (a) ... (b) the identification and implementation of strategic integrated projects which are of significant economic or social importance to the Republic or a region in the Republic or which facilitate regional economic integration on the African continent, thereby giving effect to the national infrastructure plan; (c) the alignment and dedication of capabilities and resources for the effective implementation and operation of strategic integrated projects across the state in order to ensure coherence and the expeditious completion of infrastructure build and maintenance programmes; (d) the appointment of relevant Ministers to chair strategic integrated projects; (e) the establishment, appointment and functioning of steering committees to provide technical support and oversight for strategic integrated projects; (f) <u>processes and periods of time applicable to the implementation of strategic integrated projects</u>; (g) <u>a statutory instrument by which any approval, authorisation, licence, permission or exemption required in terms of other legislation can be facilitated and expedited</u>; (h) <u>a statutory instrument by which obstacles to the expeditious implementation of the national infrastructure plan can be unblocked</u>; and (i) generally, practices and procedures which seek to ensure that infrastructure development is not undertaken merely in a transactional manner, but in a manner which seeks to advance national development goals, including local industrialisation, skills development, job creation, youth employment, small business and cooperatives development, broad-based economic empowerment and regional economic integration. (2) Any person exercising a</p>		Noted. Reference to this Act has been included in Section 1.3 of Part 1 of the SEA Report.

	<p>power in terms of this Act must do so in a manner that is consistent with the Constitution and, in particular, with the functional competences of the different spheres of government.</p> <p>The SEA makes no mention of the Act - has it been considered during the drafting of the SEA?</p>		
<p>GENERAL</p> <p>(Planning and Policy Coordination Comment)</p>	<p>The Strategic Environmental Assessment makes reference to a number of mechanisms through which it will be implemented. These include stepping down activities that require a Scoping and Environmental Impact Assessment process to Basic Assessment, integrating decisions, listing additional specified activities, facilitated authorisations, exemptions and exclusions.</p> <p>The mechanisms that exist in law, or that will be created through the draft Aquaculture Development Bill, are not outlined, and it is unclear whether the proposed implementation mechanisms are legally sound. This omission fails to provide the reader with an adequate understanding of how the SEA's findings will be implemented.</p>	<p>A chapter should be included in the SEA which directly speaks to how the findings will be implemented. This should detail the relevant provisions in the various Acts to provide the necessary clarity.</p> <p>References to other mechanisms through which the SEA's findings will be implemented, as currently contained in various chapters in the SEA, should be removed to reduce confusion in this regard.</p>	<p>Noted. This recommendation has been included in Part 4 of the SEA Report.</p>
<p>GENERAL</p> <p>(Planning and Policy Coordination Comment)</p>	<p>Although it is unclear in the integrated permitting proposals referred to in the SEA are undertaken in terms of some other Act, other than NEMA, if integration is being considered in terms of NEMA, it is suggested that such integration rather be achieved through Section 24(k). This would allow for shared processes, but still afford the various authorities the ability to reach independent decisions based on the information gathered in the integrated process.</p>	<p>Clarity in terms of which provision in which Act will be used for the integrated permitting must be provided. If integration is being considered in terms of NEMA, it is recommended that Section 24(k) would be a more desirable option than Section 24(l).</p>	<p>Noted. The recommendation that integration is considered in terms of Section 24(k) has been included in Part 4 of the SEA Report. It is important to note that interdepartmental consultation between the relevant competent authorities will be required following this SEA process to consider all relevant legislative compliance requirements, together with other organs of state having jurisdiction in the aquaculture sector, in order to provide clarity in terms of which provision in which Act will be used for the integrated permitting processes.</p>

			However, the SEA anticipates that this integration of aquaculture related permit application processes would be facilitated through the Aquaculture Development Act and its regulations.
GENERAL (Planning and Policy Coordination Comment)	The Aquaculture SEA fails to adequately explain the linkage between the Aquaculture Development Bill, the Inland Fisheries Policy, and the Abalone Standard. These are all pertinent policies and legislation which one would expect to see reflected, and linkages explained, in an SEA.	The relationship between the SEA, the draft Aquaculture Development Bill, the Inland Fisheries Policy, and the Abalone Standard should be elucidated.	Noted. An explanation of the linkage between the SEA and these documents are included in Part 4 of the SEA Report.
GENERAL (Planning and Policy Coordination Comment)	The information contained in the SEA must directly correlate to the implementation options considered. For example, the SEA initially identifies exclusions as an option, but later outlines that exclusions, in most instances, cannot be proposed due to a lack of information contained and considered in the SEA. This is true for any proposed implementation option. The SEA must clearly show why it is appropriate to step down facilities that would usually require a Scoping and Environmental Impact Assessment process, to a Basic Assessment process. What information in the SEA justifies this step-down?	The SEA should justify the implementation options arrived at by clearly linking these options to the information contained therein.	Noted.
GENERAL: Sensitivity maps (Planning and Policy Coordination Comment)	The sensitivity maps should display the provincial boundaries with highest primacy (superimposed on sensitivity rating) as it is difficult to locate areas of sensitivity without these boundaries at present.	Maps to be changed so that provincial boundaries are superimposed on sensitivity ratings.	Noted. The image maps in the SEA Report aims to provide an overview of sensitivity per assessed aquaculture focus area. The spatial data for the sensitivities will be made available where it can be used to locate specific areas of interest within the focus areas and query the different layers of sensitivity.
GENERAL impact significance	The portrayal of impact significance in section 3 is appreciated. The “with mitigation” point should not be coloured green. The significance rating 1 should be green,	The impact significance grading system should be slightly tweaked to more	Noted. The green dots indicate risk after mitigation, but does not imply that risk has been mitigated to acceptable levels.

(Planning and Policy Coordination Comment)	<p>and 4 red, and a gradient applied between. The “with mitigation” dot should then reflect the colour of the significance valued (i.e. 1 to 4), same with the without dot, and the gradient between the two displayed.</p> <p>By colouring the “with mitigation” dot green, it gives the reader the impression that the impact has been mitigated to acceptable levels, even when the “with mitigation” significance could be unacceptably high.</p>	accurately relay the with and without significance for each impact.	The position of the green dot indicates the risk class after mitigation, which may be high, even with mitigation. This note has been added to the relevant ‘risk assessment’ sections of Part 3.1 to 3.5.
Reference to “streamlining”, “exclusions/exemptions” (Planning and Policy Coordination Comment)	<p><i>Par 1.2.1: Need for the SEA:</i> It is stated that “<i>The intention of undertaking SEAs is to pre-assess environmental sensitivities within the proposed development areas at a regional scale to <u>simplify the site specific environmental impact assessments</u> (EIAs) when these are undertaken and to focus the assessment requirements on the sensitivity of the site.</i>” Later on it is stated that “<i>It is intended that through a pre-assessment of the environmental sensitivities within these ADZs, certain aquaculture activities could be <u>excluded from requiring environmental authorisation in areas of confirmed low sensitivity</u></i>”. There is an inconsistency in the aim of the SEA. When considering the information in par 1.4.7 (Assumptions and Limitations), it is not appropriate to refer to exclusions.</p> <p><i>Par 1.4.7.1 “Level of Assessment”:</i> There seems to be a contradiction in the paragraph. It is stated that the SEA is “.....aimed at a high level, to identify focus areas and investigate the potential for streamlining regulatory requirements for aquaculture in those areas”. Yet, later on it is stated that “..... SEA attempted to seek areas to be considered for possible exclusion/exemption from regulatory approvals in the identified ADZs in areas of confirmed low sensitivity or where the risk associated with environmental impacts of aquaculture were found to be low or very low...”. Later on in par 1.4.7.3. it is also stated</p>		Noted. Sections 1.2.1 and 1.4.7.1 have been rephrased to address the inconsistency in wording between the different sections.

	<p>that “.....A limitation of the outputs of this assessment is thus the lack of structured, consistent ground-truthing of any of the study areas. This means that sensitivity maps may over-emphasize the extent of areas of high and very high sensitivity. This limitation is an important one and can be addressed only by ground-truthing and the collection, collation and verification of more accurate data within the ADZs.” Considering the rest of the discussion under “Assumptions and Limitations”, it is not appropriate to refer to “exclusions/exemption”. Also, there is no legal option of being “exempted” from the requirement to obtain environmental authorisation.</p> <p>The most relevant (and appropriate) discussion on this matter, is found under par 1.4.1, where it is stated that “It is important to note that the SEA process is undertaken at a strategic level and cannot replace the requirement for site-specific environmental assessment. The high level, and in many cases limited or even lacking, environmental, social and economic data considered to identify and pre-assess the ADZs is not sufficient for project-level decision-making, and will require ground-truthing of proposed development sites for both marine and freshwater aquaculture prior to application for environmental authorisation.</p> <p>The pre-assessment undertaken in the SEA process does however allow for the integrated and streamlined implementation of national and provincial legislation in support of faster decision-making and more coordinated permitting procedures.”</p> <p>The discussion in par 1.4.1 is appropriate and should be repeated elsewhere, or the reference to “streamlining”, “exclusions/exemptions” elsewhere should</p>		
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	be aligned to be consistent with the above wording of par 1.4.1.		
Part 4 - General comment - A 1-stop shop versus a 1-stop process: (Planning and Policy Coordination Comment)	This Department is of the opinion that the biggest challenge is not the number of permits/approvals that are required, but that the application procedures and information requirements of these various regulatory processes results in a duplication of information gathering and public participation. It is therefore recommended that the solution lies in the integration of the regulatory (i.e. information gathering processes) and not the issuing of integrated permits/approvals. In other words, an integrated application process should be followed, resulting in different organs of state considering their respective applications separately and issuing their decisions independently.		Noted and agreed.
General (CapeNature Comment)	Aquaculture developments in Estuaries should engage with Estuary Forums.	Include reference to the need for aquaculture developments in estuaries should engage with Estuary Forums for mutual benefit.	Noted. Reference to this requirement was added to Part 1 of the SEA Report.
General (CapeNature Comment)	The SEA, although well written, needs further refinement.	The SEA needs further refinement in order to add value nationally as an effective decision support tool for environmentally sustainable aquaculture development in RSA.	Noted.

13 MEETINGS AND WORKSHOPS, INCLUDING AGENDAS AND NOTES

The following pages represent a package of key meetings and workshops that were conducted with the Project Steering Committee and Expert Reference Group members, as well as stakeholders representative of the South African aquaculture industry during the course of the SEA. Included are invitations, agendas, attendance registers, presentations and meeting and/or workshop notes.



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National Strategic Environmental Assessment for Aquaculture Development in South Africa

1st Project Steering Committee Meeting
Tuesday, 7 June 2016

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Agenda

<u>TIME</u>	<u>ACTIVITY/PRESENTATION</u>	<u>PRESENTER</u>
08:30 - 09:00	Registration with tea and coffee	
09:00 - 09:10	Welcome	DAFF: Asanda Njobeni
09:10 – 09:30	Background & need for Aquaculture SEA	DEA: Dee Fischer
09:30 – 09:40	Introduction to the Aquaculture SEA	CSIR: Paul Lochner
09:40 – 10:15	Approach to the Aquaculture SEA Discussion	CSIR: Lizande Kellerman
10:15 – 10:45	Scope & prioritisation Discussion	CSIR: Lizande Kellerman
10:45 – 11:15	Stakeholder consultation Discussion	CSIR: Lizande Kellerman
11:15 – 11:55	Outputs of the SEA Discussion	CSIR: Lizande Kellerman
11:55 – 12:00	Way forward & closure	DEA: Simon Moganetsi
12:00 – 13:00	Lunch	



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Background & need for Aquaculture SEA



- Aquaculture – the breeding, rearing & harvesting of plants & animals in salt or fresh water – is the fastest-growing food production sector in the world.
- Aquaculture is one of the priority focus areas of Operation Phakisa, launched by national government in 2014.
- The goal of  **OPERATION PHAKISA** is to unlock the economic potential of South Africa's oceans.
planning | implementation | growth
- Aquaculture industry in SA is hampered by challenges e.g. financial constraints, complex over-regulation of legislative requirements, limited skills, insufficient development, etc.
- Need to improve, integrate & streamline legislation to reduce complexity and to incentivise environmentally sustainable aquaculture.



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Introduction to the Aquaculture SEA



- DEA in collaboration with DAFF has commissioned CSIR to undertake a Strategic Environmental Assessment (SEA) to prioritise and incentivise sustainable aquaculture in SA.
- Best practice in SEA should satisfy these international principles:
 - Be a mandated, unbiased process conducted in a transparent manner to be legitimate in the eyes of both the public and decision-makers
 - Consider all the salient issues and legitimate concerns that are relevant to decision-makers and other stakeholders
 - Be conducted by suitable experts and in accordance with standards of scientific rigor and technical adequacy in order to have credibility.
- No fixed recipe for SEA → customise to be “fit for purpose”.
- SEA is often conducted to bridge the gap between national policies or programs and project level decision-making.



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Approach to the Aquaculture SEA



The goal is to promote and support the growth of the aquaculture industry in South Africa:

- a) through identifying suitable areas where environmentally sustainable aquaculture development can be prioritised and incentivised; and
- b) by providing a streamlined and integrated management and legislative framework to reduce compliance complexities & improve decision-making processes.



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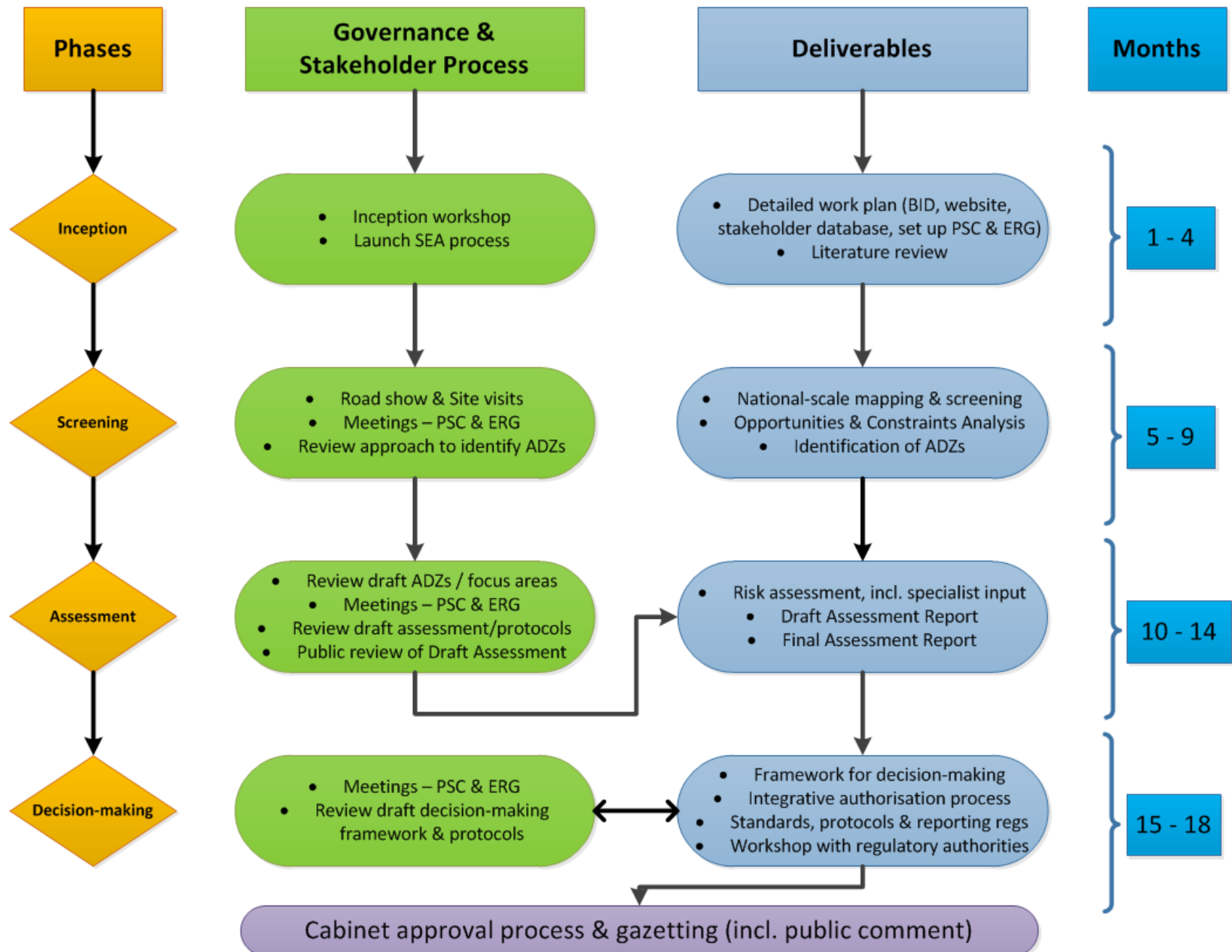


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Approach to Aquaculture SEA



Key objectives of the Aquaculture SEA



- To create an **enabling environment and incentivise sustainable aquaculture** development by:
 - reducing the need for environmental authorisations by use of instruments such as accepted “**norms and standards**”.
 - **streamlining and integrating** the applicable permits and authorisations from national, provincial and local authorities in order to promote efficient decision-making.



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Key legislation governing aquaculture in SA



Administration of the Sector

Environmental Impacts & Permitting

Impacts of Aquaculture on the Environment

Impacts of the Environment on Aquaculture

Product Safety and Quality

Animal Health and Disease Control

Importation of Inputs



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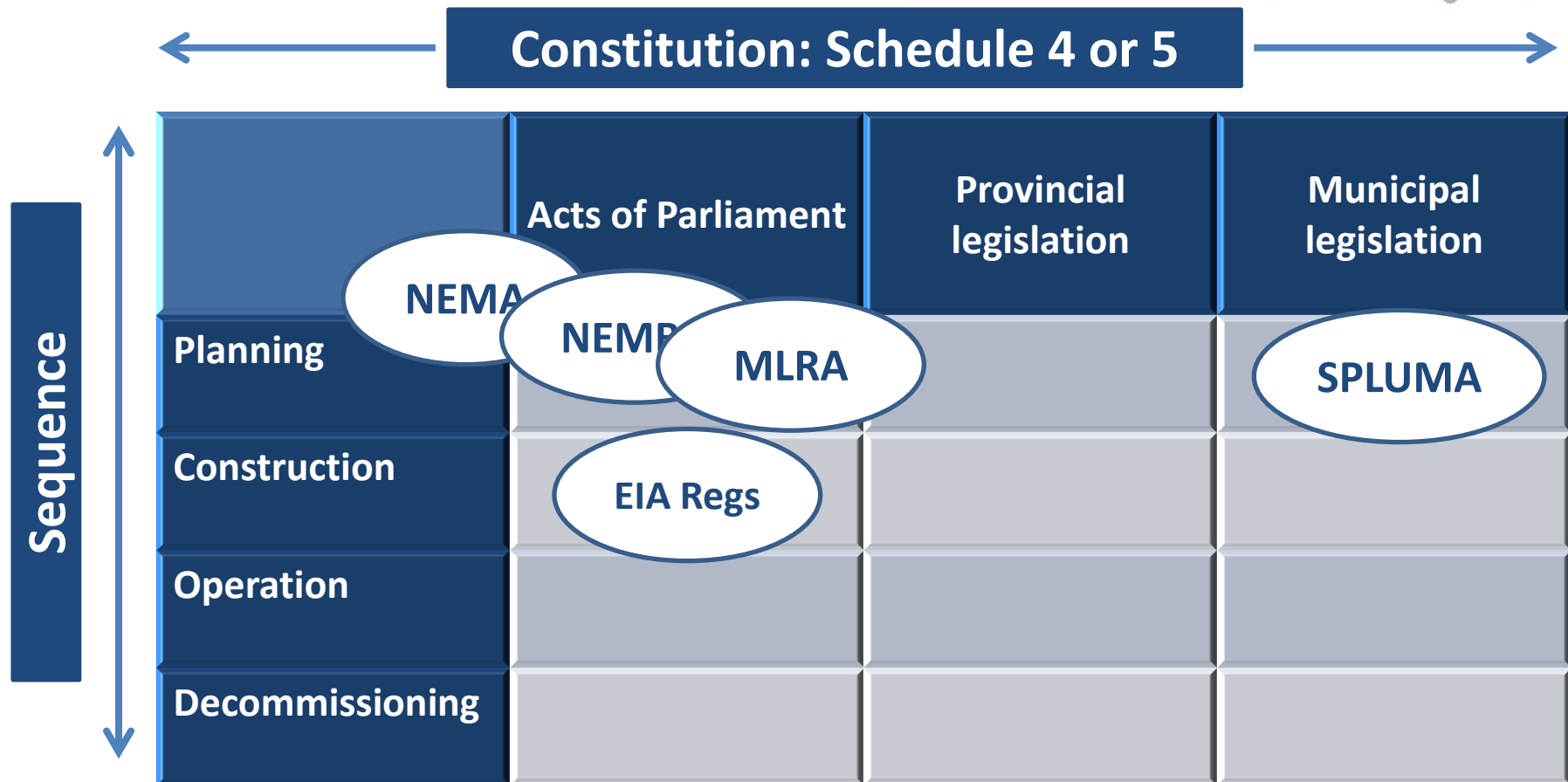


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Approach to Legislative Framework



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Summary of national legislation

Department of Environmental Affairs

DEA

- National Environmental Management Act, 107 of 1998
- Environmental Impact Assessment Regulations, 2010
- National Environmental Management: Biodiversity Act, 10 of 2004
- Draft Alien and Invasive Species Regulations, GN 347 Of 3 April 2009
- Threatened or Protected Species Regulations, GNR.152 of 23 February 2007 (TOPS regulations)
- National Environmental Management: Protected Areas Act, 57 of 2003
- National Environmental Management: Integrated Coastal Management Act, 24 of 2008
- Sea-Shore Act, 21 of 1935
- Sea Birds and Seals Protection Act, 46 of 1973
- National Environment Management: Waste Act, 59 of 2008

Department of Agriculture Forestry and Fisheries

DAFF

- Marine Living Resources Act 18 of 1998
- Marine Living Resources Regulations, 1998
- Genetically Modified Organisms Act, 15 of 1997
- Subdivision of Agricultural Land Act, 70 of 1970
- Animal Diseases Act, 35 of 1984
- Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 36 of 1947
- Animal Improvement Act, 62 of 1998
- Agricultural Products Standards Act, 119 of 1990
- Agricultural Pests Act 36, of 1983
- Animal Protection Act, 71 of 1962

Department of Water Affairs

DWA

- National Water Act 36 of 1998

Department of Trade and Industry

DTI

- Consumer Protection Act No.68 of 2008
- CPA Regulations (GNR 293 of 1 April 2011)
- Standards Act, 8 of 2008
- National Regulator for Compulsory Specifications Act, 5 of 2008
- International Trade Administration Act, 71 of 2002 / The African Customs Union Agreement
- Customs and Excise Act, 91 of 1964
- Broad-Based Black Economic Empowerment Act, 53 of 2003

Department of Health

DOH

- Medicines and Related Substances Act, 101 of 1965
- Foodstuffs, Cosmetics and Disinfectants Act, 54 of 1972
- Health Act, 61 of 2003

Department of Transport

DOT

- Perishable Products Export Control Act, 1983

Department of Labour

DOL

- Occupational Health and Safety Act, 85 of 1993
- Basic Conditions of Employment Act, 75 of 1997
- Labour Relations Act, 66 of 1995
- Employment Equity Act, 55 of 1998

Companies and Intellectual Property Commission/ Department of Justice

CIPC/DOJ

- Companies Act, 71 of 2008
- Trust Property Control Act, 57 of 1988
- Co-operatives Act, 14 of 2005

Department of Public Works

DPW

- State Land Disposal Act 48 of 1961



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Key objectives of the Aquaculture SEA



- To assess & integrate the best available spatial information to identify **focus areas** or **aquaculture development zones** (ADZs) with the following characteristics:
 - highest **commercial potential** for aquaculture (i.e. in terms of technical and operational requirements);
 - highest **social need** (i.e. need for development & job creation); and
 - lowest **environmental sensitivity** (i.e. fewest environmental risks or constraints).



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Aquaculture SEA Project Team



DEA	DAFF	CSIR
Project Leader: Dee Fischer	Project Leader: Asanda Njobeni	Project Leader: Paul Lochner
Project Manager: Simon Moganetsi	Project Manager: Fatima Daya	Project Manager: Lizande Kellerman
Project Administrator: Mpho Moilwa	Project Officer: Michelle Pretorius	Project Officer: Karabo Mashabela



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Aquaculture species for SEA



Marine

Abalone
Finfish
Mussels
Oysters
Prawns
Seaweed

Fresh-water

African
sharp-tooth
catfish
Brown trout
Rainbow trout
Mozambique
Tilapia
Nile Tilapia
Marron
Red claw crayfish



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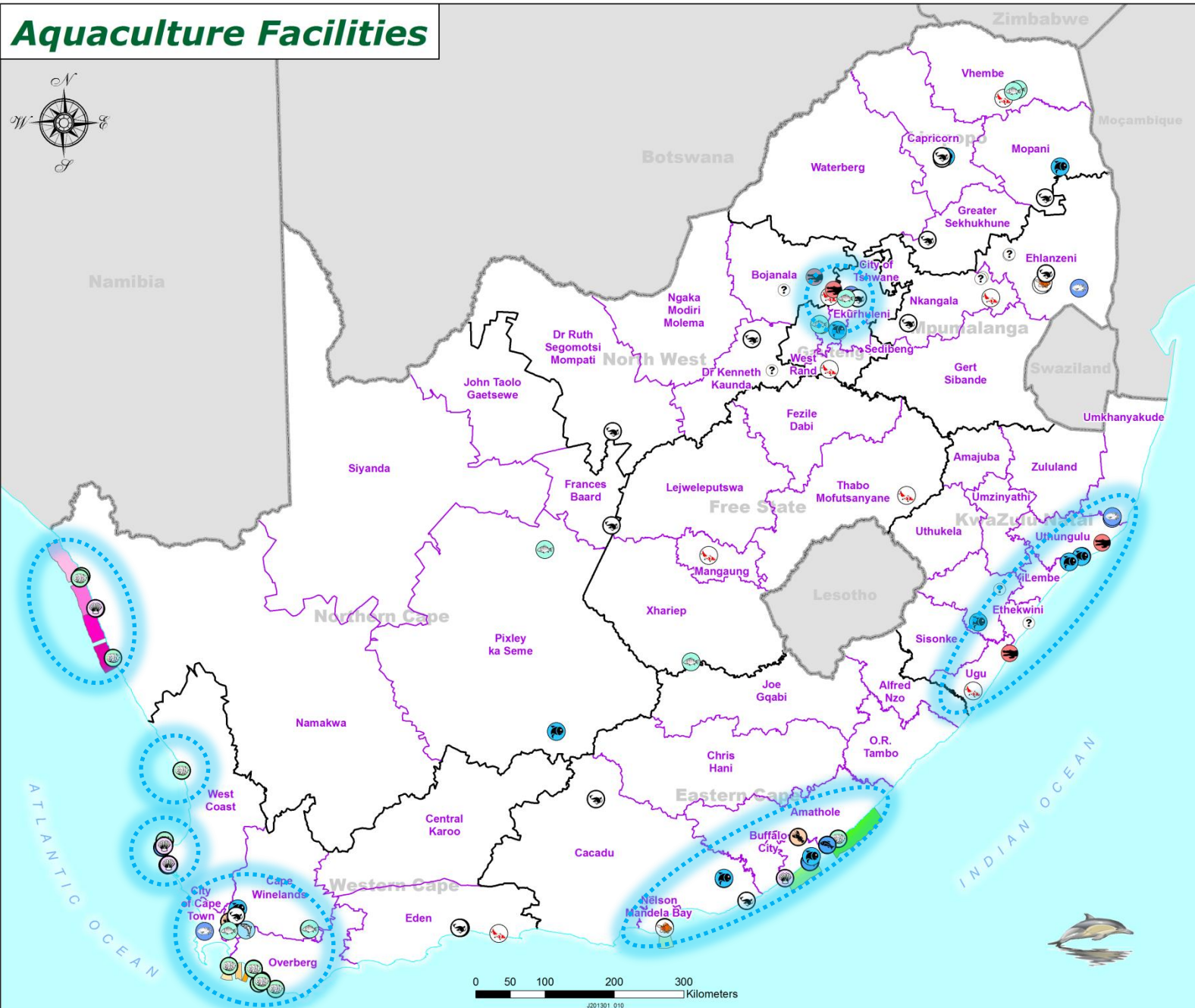
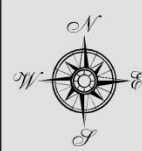
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Marine (salt water) species

Aquaculture Facilities



Aquaculture Facilities

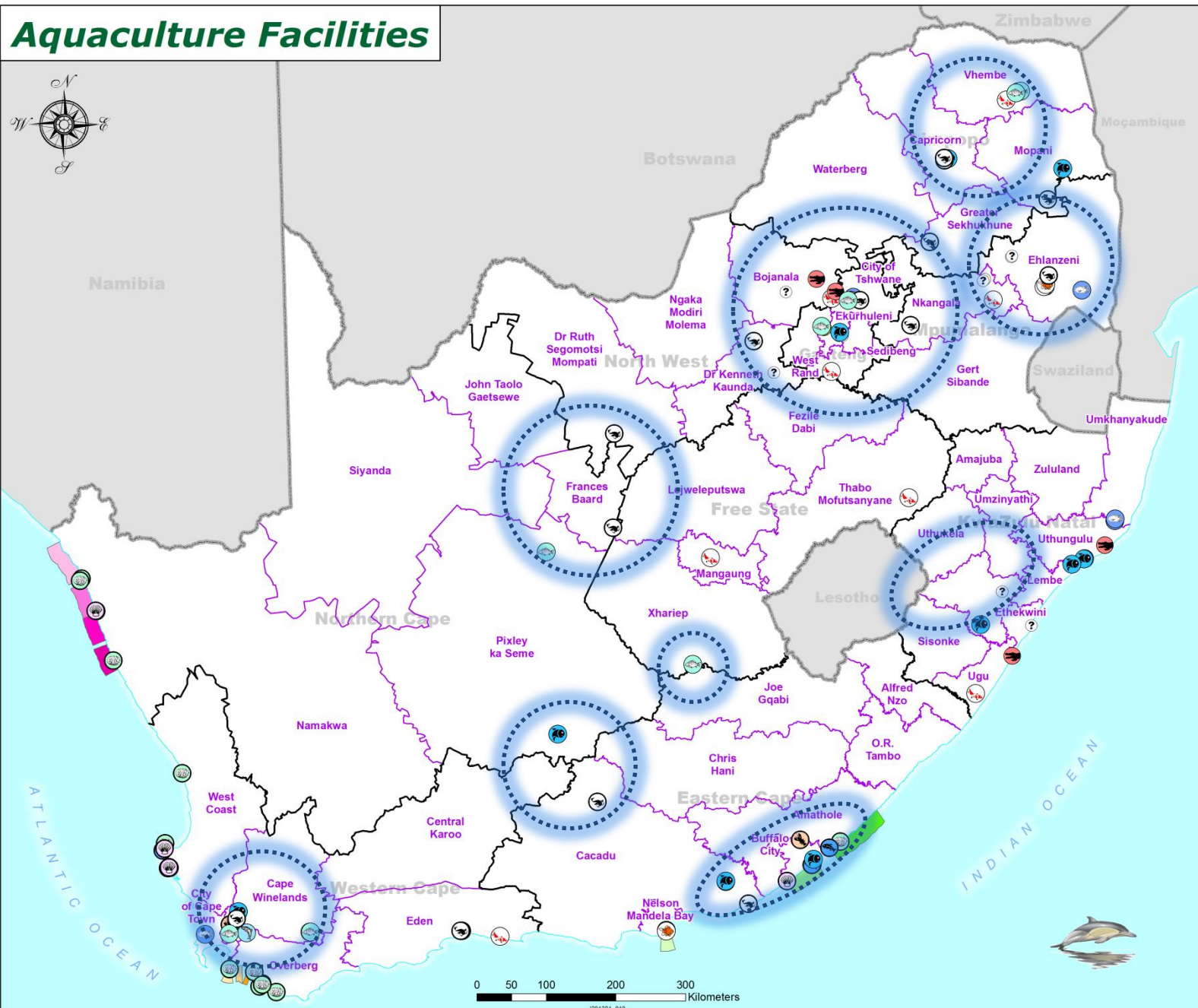
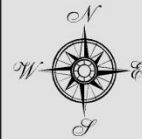
- Abalone (17)
- Marine Finfish (6)
- Mussel Farms (5)
- Oyster Farms (8)
- Carp (8)
- Catfish (16)
- Crocodiles (6)
- Goldfish (6)
- Koi (12)
- Marron Crayfish (2)
- Ornamentals (16)
- Prawns (2)
- Salmon (1)
- Tilapia (18)
- Unknown Species (17)

- International Boundaries
- Provincial Boundaries
- Coastline
- District Municipalities



Freshwater species

Aquaculture Facilities



Aquaculture Facilities

- Abalone (17)
- Marine Finfish (6)
- Mussel Farms (5)
- Oyster Farms (8)
- Carp (8)
- Catfish (16)
- Crocodiles (6)
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- Prawns (2)
- Salmon (1)
- Tilapia (18)
- Unknown Species (17)

- International Boundaries
- Provincial Boundaries
- Coastline
- District Municipalities



Stakeholder Consultation



- Consultation is undertaken to facilitate buy-in and commitment from the different key role players, including:
 - Relevant government departments and organs of state;
 - Key stakeholders (e.g. aquaculture industry, academia and NGOs); and
 - The general public.
- The successful and sustainable growth of aquaculture in South Africa depends on effective coordination between these parties in order to reduce barriers to the development of this industry.
- Consultation through e.g. newspaper adverts, BID, website, online media releases, roadshow, focus group meetings, sector meetings, conferences, etc.



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Project Steering Committee (PSC)



The PSC comprises authorities with a legislated decision-making mandate for aquaculture development in SA.

The PSC consists of representatives from:

- DEA (Environmental Programmes, Oceans and Coasts, etc.)
- DAFF (Operation Phakisa, Aquaculture & Economic Development, etc.)
- Dept. of Mineral Resources (DMR)
- Dept. of Public Enterprises (DPE)
- Dept. of Public Works (DPW)
- Dept. of Rural Development and Land Reform (DRDLR)
- Dept. of Trade and Industry (Dti)
- Dept. of Water and Sanitation (DWS)
- Dept. of Science and Technology (DST)
- Transnet National Port Authority (TNPA)
- Representatives from the nine provinces.



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Main purpose of the PSC



- To inform, guide and monitor the implementation of the SEA process;
- To coordinate the mandates of all organs of state in an integrated manner;
- To facilitate sustainable development and ensure legal compliance; and
- To facilitate discussion on the outcomes of the SEA so that they may be adopted and implemented by government.



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Terms of Reference for the PSC



- PSC shall have DEA as lead agent & chairperson.
- CSIR to provide secretariat function on behalf of PSC.
- PSC members must avail themselves for each scheduled meeting.
- PSC members wish to withdraw must do so in writing, provide alternate.
- PSC members can be national or provincial depending on who is competent authority i.t.o legislation relevant to aquaculture development.
- PSC members must have relevant knowledge/skills/experience in his/her field of work to enable PSC to function effectively & expeditiously.
- PSC members must have decision-making authority on behalf of his/her organ of state, excl. decisions to grant approvals, permits, licenses, etc.
- PSC members must have direct access to the head of their organ of state they represent, the Management Committee and the Secretariat or any of its members.



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Terms of Reference for the PSC



- Each member of the PSC must evaluate the SEA from the perspective of his or her organ of state to:
 - Identify plans, policies or legislation which are relevant to the SEA;
 - Identify what is required for the expeditious and effective implementation of the SEA;
 - Identify challenges faced by the SEA that will impede or delay implementation thereof, and identify associated remedial actions required;
 - Identify amendments required to plans, policies or legislation to ensure proper implementation;
 - Identify to the PSC the amendments to be considered by the SEA to streamline and enable compliance with applicable laws; and
 - Provide inputs on protocols which will be enforced in the Aquaculture Development Zones (ADZs).



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Terms of Reference for the PSC



- Frequency of meetings
 - PSC scheduled to meet 4x during 18-month SEA process.
 - Meetings planned for Jun & Nov 2016, Apr & Aug 2017.
 - Venues to be in Cape Town/Stellenbosch or Pretoria.
- Methods of communication
 - Email distribution list to be set up by PSC Chair or Secretariat.
 - SEA website to incorporate relevant documents e.g. meeting minutes, progress reports, presentations, etc.



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Expert Reference Group (ERG)



The ERG comprises representatives of the following:

- South African Aquaculture Industry Associations
- Directorates from the DEA Oceans and Coasts & DEA Environmental Programmes
- DAFF Fisheries Branch
- Department of Water and Sanitation (DWS)
- South African National Biodiversity Institute (SANBI)
- South African Institute for Aquatic Biodiversity (SAIAB)
- Agricultural Research Council (ARC)
- Provincial representatives (e.g. from nature conservation & planning departments)
- NGOs e.g. WWF South Africa, etc.
- Relevant research bodies and academia.



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Main purpose of the ERG



- The **purpose of the ERG** is to:
 - provide technical knowledge and expert insights from a range of sectors; and
 - to ensure that the important issues are identified and addressed in a balanced and scientific manner.
- The ERG's inputs will inform the approach to the SEA tasks and they will review draft outcomes from the SEA.



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Outputs of the Aquaculture SEA



- Aquaculture development zones (ADZs) or focus areas/suitable habitats in South Africa.
- Environmental compliance framework (standards) for streamlined & integrated decision-making to reduce (or limit) the need for permitting & authorisations.
- Environmental screening & risk assessment for aquaculture in SA that can be continuously updated & maintained by DEA & DAFF.
- Generic Environmental Management Plan (EMP) for the management of aquaculture activities in South Africa.



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Way forward & closure



- Minutes of this meeting will be circulated to all PSC members for review and comments.
- The draft schematic legislative framework (as discussed today) will also be circulated to all PSC members for review and to provide additional inputs.
- Feedback provided from the PSC members will be discussed at the next PSC meeting scheduled during November 2016 (date to be confirmed).
- Acknowledgments & meeting closure.



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AGENDA

PROJECT STEERING COMMITTEE (PSC) MEETING 7 JUNE 2016

FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

DATE	TIME	VENUE
Tuesday, 7 June 2016	08:30 – 12:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
08:30 - 09:00	Registration with tea and coffee	
09:00 - 09:10	Welcome	DAFF: Asanda Njobeni
09:10 – 09:30	Background & need for Aquaculture SEA	DEA: Dee Fischer
09:30 – 09:40	Introduction to the Aquaculture SEA	CSIR: Paul Lochner
09:40 – 10:15	Approach to the Aquaculture SEA Discussion	CSIR: Lizande Kellerman
10:15 – 10:45	Scope & prioritisation Discussion	CSIR: Lizande Kellerman
10:45 – 11:15	Stakeholder consultation Discussion	CSIR: Lizande Kellerman
11:15 – 11:55	Outputs Discussion	CSIR: Lizande Kellerman
11:55 – 12:00	Way forward & closure	DEA: Simon Moganetsi
12:00 – 13:00	Lunch	

For any enquiries, please contact: Karabo Mashabela (CSIR), tel.: 021-888-2482, email: kmashabela1@csir.co.za



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**National Aquaculture SEA
Project Steering Committee (PSC) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 7 June 2016
Attendance Register**

Please sign in and confirm your details below:

<u>Organisation / Institution</u>		<u>Name & Surname</u>	<u>Email</u>	<u>Telephone</u>	<u>Mobile</u>	<u>Signature</u>
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Dept of Agriculture, Forestry & Fisheries	DAFF	Maxhoba Jezile	MaxhobaAJ@daff.gov.za	(021) 430 7037	0733211399	
Dept of Environmental Affairs	DEA	Dee Fischer	DFischer@environment.gov.za	(012) 310 3857	082772 9887	

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ASANDA NJOBENI

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**National Aquaculture SEA
Project Steering Committee (PSC) Meeting
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Tuesday, 7 June 2016
Attendance Register**

<u>Organisation / Institution</u>		<u>Name & Surname</u>	<u>Email</u>	<u>Telephone</u>	<u>Mobile</u>	<u>Signature</u>
Dept of Environmental Affairs	DEA	Simon Moganetsi	SMoganetsi@environment.gov.za	(012) 399 9309	079 427 4626	
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Dept of Minerals Resources	DMR	Mosa Mabuza	mosa.mabuza@dmr.gov.za	(012) 444 3004	082 449 8650	
Dept of Minerals Resources	DMR	Mpumzi Bonga	mpumzi.bonga@dmr.gov.za	(012) 444 3733	082 335 1014	
Dept of Minerals Resources	DMR	Nhlanhla Jali	nhlanhla.jali@dmr.gov.za	(012) 444 3508	082 465 6082	
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Dept of Public Works	DPW	Mashikoane Mogodi	Mashikoane.Mogodi@dpw.gov.za	(012) 406 1964		
Dept of Public Works	DPW	John Walaza	John.Walaza@dpw.gov.za	(012) 406 1368	078 263 7347	
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Dept of Water and Sanitation	DWS	Namisha Muthraparsad	MuthraparsadN@dwa.gov.za	(012) 336 8083		
Dept of Water and Sanitation	DWS	Dr Wietsche Roets	roetsw@dws.gov.za	(012) 336 6510	082 604 7730	



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National Strategic Environmental Assessment for Aquaculture Development in South Africa

1st Expert Reference Group Meeting
Tuesday, 7 June 2016

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Agenda

<u>TIME</u>	<u>ACTIVITY/PRESENTATION</u>	<u>PRESENTER</u>
12:30 – 13:00	Lunch	
13:00 – 13:10	Welcome	DAFF: Asanda Njobeni
13:10 – 13:30	Background and need for Aquaculture SEA	DEA: Dee Fischer
13:30 – 13:40	Introduction to the Aquaculture SEA	CSIR: Paul Lochner
13:40 – 14:15	Approach to the SEA Discussion	CSIR: Lizande Kellerman
14:15 – 14:45	Scope and prioritisation Discussion	CSIR: Lizande Kellerman
14:45 – 15:00	Tea and coffee	
15:00 – 15:20	Stakeholder consultation Discussion	CSIR: Lizande Kellerman
15:20 – 15:55	Outputs of the SEA Discussion	CSIR: Lizande Kellerman
15:55 – 16:00	Way forward and closure	DEA: Simon Moganetsi



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Background & need for Aquaculture SEA



- Aquaculture – the breeding, rearing & harvesting of plants & animals in salt or fresh water – is the fastest-growing food production sector in the world.
- Aquaculture is one of the priority focus areas of Operation Phakisa, launched by national government in 2014.
- The goal of  **OPERATION PHAKISA** is to unlock the economic potential of South Africa's oceans.
planning | implementation | growth
- Aquaculture industry in SA is hampered by challenges e.g. financial constraints, complex over-regulation of legislative requirements, limited skills, insufficient development, etc.
- Need to improve, integrate & streamline legislation to reduce complexity and to incentivise environmentally sustainable aquaculture.



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Introduction to the Aquaculture SEA



- DEA in collaboration with DAFF has commissioned CSIR to undertake a Strategic Environmental Assessment (SEA) to prioritise and incentivise sustainable aquaculture in SA.
- Best practice in SEA should satisfy these international principles:
 - Be a mandated, unbiased process conducted in a transparent manner to be legitimate in the eyes of both the public and decision-makers
 - Consider all the salient issues and legitimate concerns that are relevant to decision-makers and other stakeholders
 - Be conducted by suitable experts and in accordance with standards of scientific rigor and technical adequacy in order to have credibility.
- No fixed recipe for SEA → customise to be “fit for purpose”.
- SEA is often conducted to bridge the gap between national policies or programs and project level decision-making.



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Approach to the Aquaculture SEA



The goal is to promote and support the growth of the aquaculture industry in South Africa:

- a) through identifying suitable areas where environmentally sustainable aquaculture development can be prioritised and incentivised; and
- b) by providing a streamlined and integrated management and legislative framework to reduce compliance complexities & improve decision-making processes.



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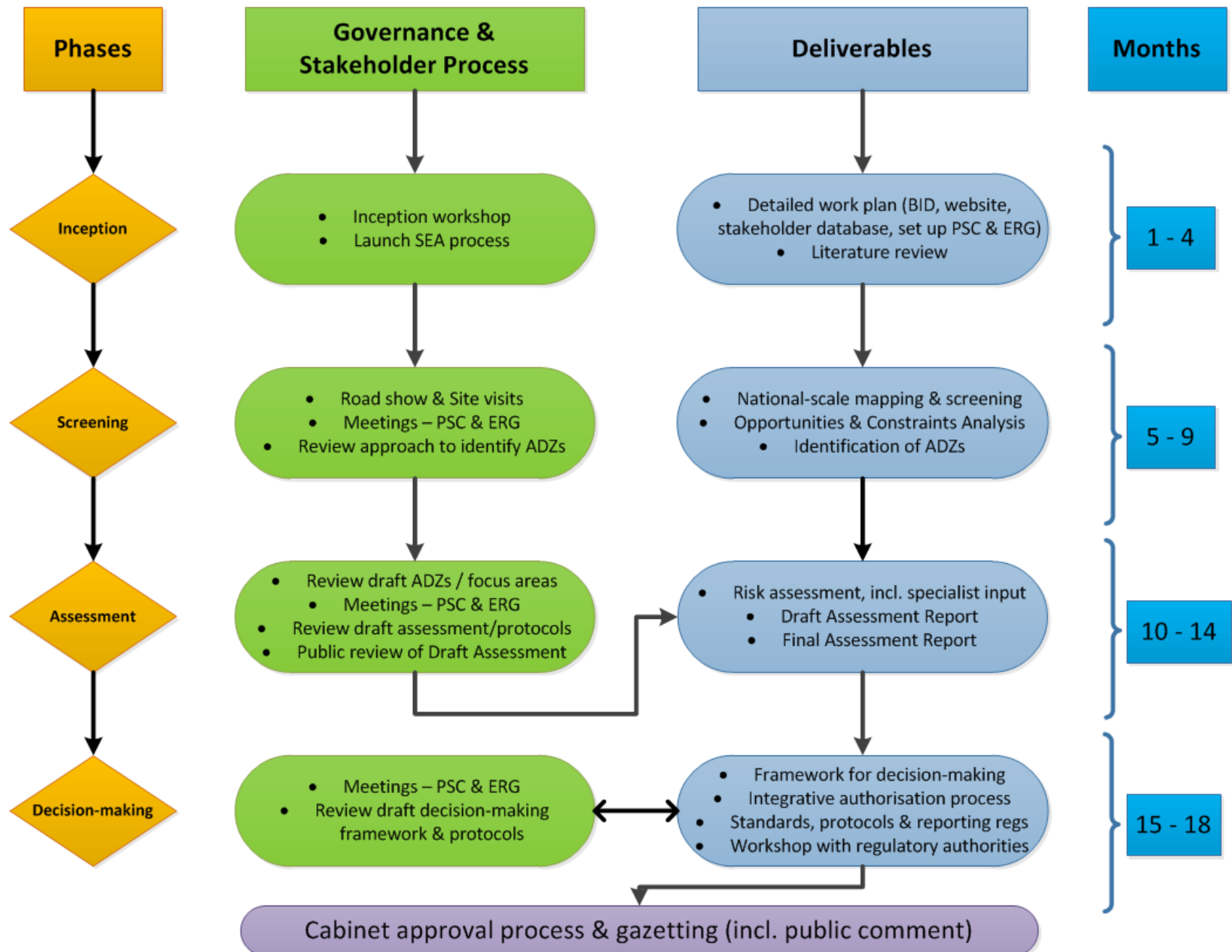


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Approach to Aquaculture SEA



Key objectives of the Aquaculture SEA



- To create an **enabling environment and incentivise sustainable aquaculture** development by:
 - reducing the need for environmental authorisations by use of instruments such as accepted “**norms and standards**”.
 - **streamlining and integrating** the applicable permits and authorisations from national, provincial and local authorities in order to promote efficient decision-making.



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Key legislation governing aquaculture in SA



Administration of the Sector

Environmental Impacts & Permitting

Impacts of Aquaculture on the Environment

Impacts of the Environment on Aquaculture

Product Safety and Quality

Animal Health and Disease Control

Importation of Inputs



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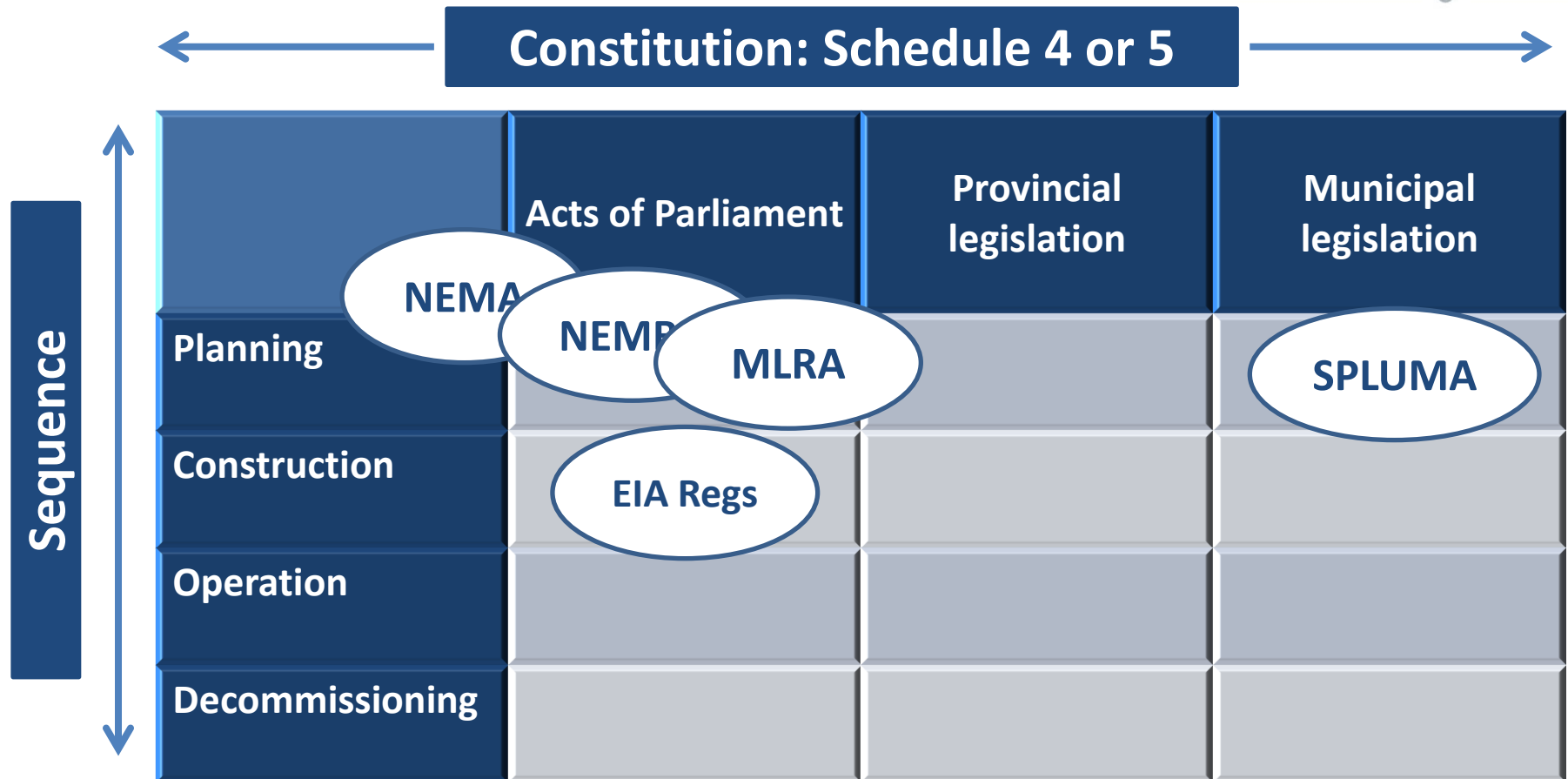


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Approach to Legislative Framework



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Summary of national legislation

Department of Environmental Affairs

DEA

- National Environmental Management Act, 107 of 1998
- Environmental Impact Assessment Regulations, 2010
- National Environmental Management: Biodiversity Act, 10 of 2004
- Draft Alien and Invasive Species Regulations, GN 347 Of 3 April 2009
- Threatened or Protected Species Regulations, GNR.152 of 23 February 2007 (TOPS regulations)
- National Environmental Management: Protected Areas Act, 57 of 2003
- National Environmental Management: Integrated Coastal Management Act, 24 of 2008
- Sea-Shore Act, 21 of 1935
- Sea Birds and Seals Protection Act, 46 of 1973
- National Environment Management: Waste Act, 59 of 2008

Department of Agriculture Forestry and Fisheries

DAFF

- Marine Living Resources Act 18 of 1998
- Marine Living Resources Regulations, 1998
- Genetically Modified Organisms Act, 15 of 1997
- Subdivision of Agricultural Land Act, 70 of 1970
- Animal Diseases Act, 35 of 1984
- Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 36 of 1947
- Animal Improvement Act, 62 of 1998
- Agricultural Products Standards Act, 119 of 1990
- Agricultural Pests Act 36, of 1983
- Animal Protection Act, 71 of 1962

Department of Water Affairs

DWA

- National Water Act 36 of 1998

Department of Trade and Industry

DTI

- Consumer Protection Act No.68 of 2008
- CPA Regulations (GNR 293 of 1 April 2011)
- Standards Act, 8 of 2008
- National Regulator for Compulsory Specifications Act, 5 of 2008
- International Trade Administration Act, 71 of 2002 / The African Customs Union Agreement
- Customs and Excise Act, 91 of 1964
- Broad-Based Black Economic Empowerment Act, 53 of 2003

Department of Health

DOH

- Medicines and Related Substances Act, 101 of 1965
- Foodstuffs, Cosmetics and Disinfectants Act, 54 of 1972
- Health Act, 61 of 2003

Department of Transport

DOT

- Perishable Products Export Control Act, 1983

Department of Labour

DOL

- Occupational Health and Safety Act, 85 of 1993
- Basic Conditions of Employment Act, 75 of 1997
- Labour Relations Act, 66 of 1995
- Employment Equity Act, 55 of 1998

Companies and Intellectual Property Commission/ Department of Justice

CIPC/DOJ

- Companies Act, 71 of 2008
- Trust Property Control Act, 57 of 1988
- Co-operatives Act, 14 of 2005

Department of Public Works

DPW

- State Land Disposal Act 48 of 1961



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Key objectives of the Aquaculture SEA



- To assess & integrate the best available spatial information to identify **focus areas** or **aquaculture development zones** (ADZs) with the following characteristics:
 - highest **commercial potential** for aquaculture (i.e. in terms of technical and operational requirements);
 - highest **social need** (i.e. need for development & job creation); and
 - lowest **environmental sensitivity** (i.e. fewest environmental risks or constraints).



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Aquaculture SEA Project Team



DEA	DAFF	CSIR
Project Leader: Dee Fischer	Project Leader: Asanda Njobeni	Project Leader: Paul Lochner
Project Manager: Simon Moganetsi	Project Manager: Fatima Daya	Project Manager: Lizande Kellerman
Project Administrator: Mpho Moilwa	Project Officer: Michelle Pretorius	Project Officer: Karabo Mashabela



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Aquaculture species for SEA



Marine

Abalone
Finfish
Mussels
Oysters
Prawns
Seaweed

Fresh-water

African
sharp-tooth
catfish

Brown trout
Rainbow trout
Mozambique
Tilapia

Nile Tilapia
Marron
Red claw crayfish



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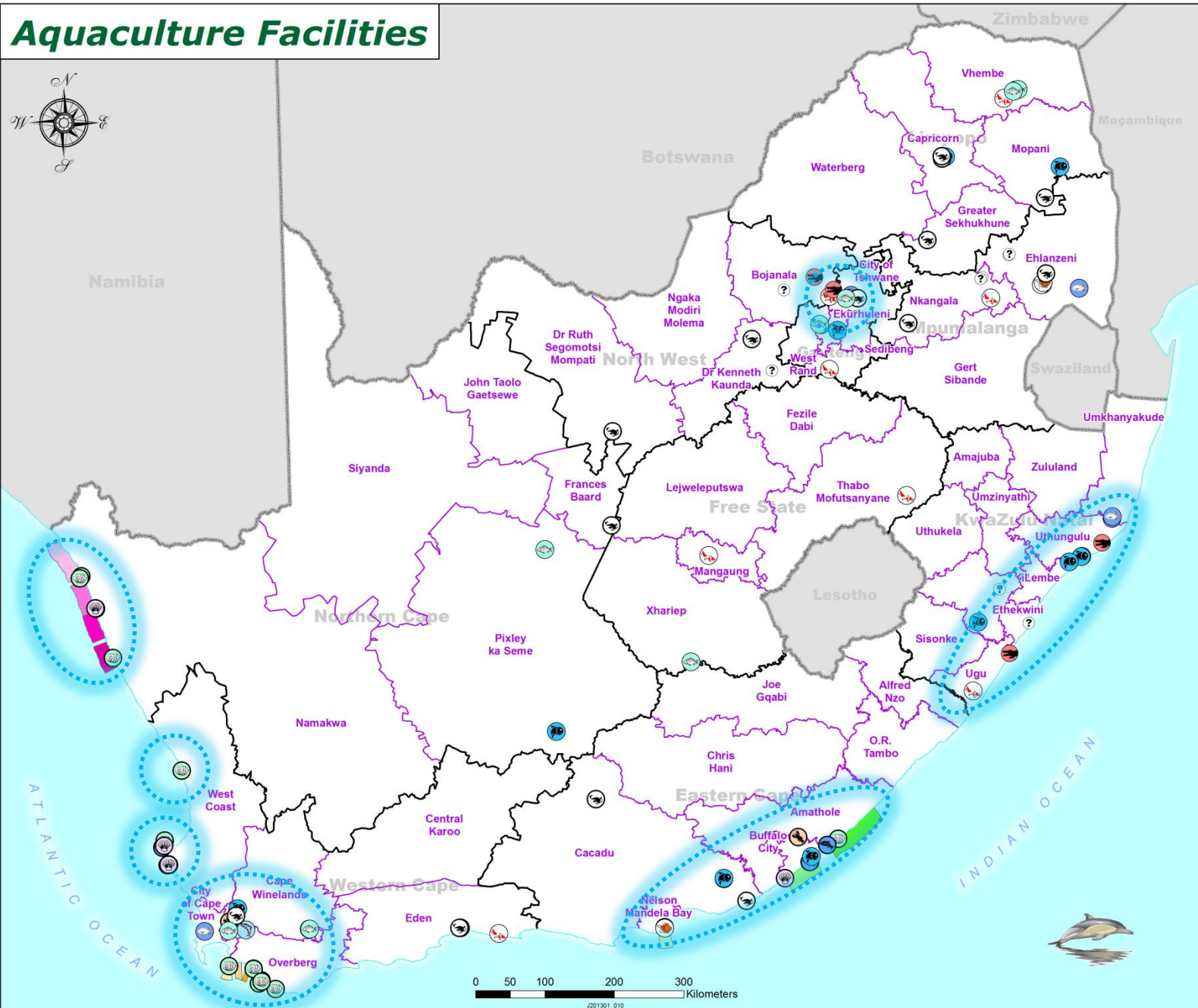
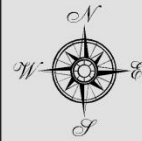
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Marine (salt water) species

Aquaculture Facilities



Aquaculture Facilities

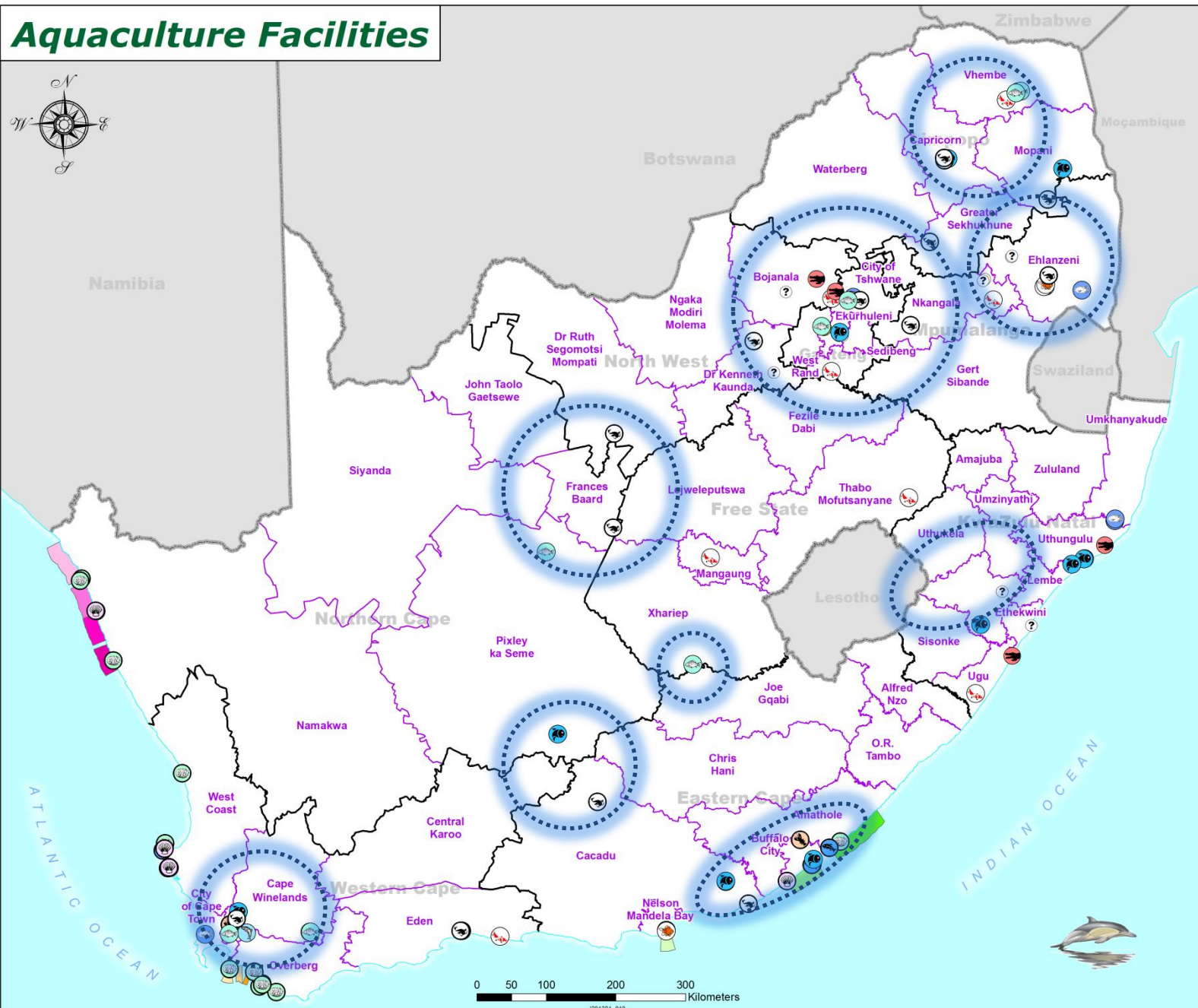
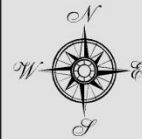
- Abalone (17)
- Marine Finfish (6)
- Mussel Farms (5)
- Oyster Farms (8)
- Carp (8)
- Catfish (16)
- Crocodiles (6)
- Goldfish (6)
- Koi (12)
- Marron Crayfish (2)
- Ornamentals (16)
- Prawns (2)
- Salmon (1)
- Tilapia (18)
- Unknown Species (17)

- International Boundaries
- Provincial Boundaries
- Coastline
- District Municipalities



Freshwater species

Aquaculture Facilities



Aquaculture Facilities

- Abalone (17)
- Marine Finfish (6)
- Mussel Farms (5)
- Oyster Farms (8)
- Carp (8)
- Catfish (16)
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- Tilapia (18)
- Unknown Species (17)

- International Boundaries
- Provincial Boundaries
- Coastline
- District Municipalities



Stakeholder Consultation



- Consultation is undertaken to facilitate buy-in and commitment from the different key role players, including:
 - Relevant government departments and organs of state;
 - Key stakeholders (e.g. aquaculture industry, academia and NGOs); and
 - The general public.
- The successful and sustainable growth of aquaculture in South Africa depends on effective coordination between these parties in order to reduce barriers to the development of this industry.
- Consultation through e.g. newspaper adverts, BID, website, online media releases, roadshow, focus group meetings, sector meetings, conferences, etc.



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Project Steering Committee (PSC)



The PSC comprises authorities with a legislated decision-making mandate for aquaculture development in SA.

The PSC consists of representatives from:

- DEA (Environmental Programmes, Oceans and Coasts, etc.)
- DAFF (Operation Phakisa, Aquaculture & Economic Development, etc.)
- Dept. of Mineral Resources (DMR)
- Dept. of Public Enterprises (DPE)
- Dept. of Public Works (DPW)
- Dept. of Rural Development and Land Reform (DRDLR)
- Dept. of Trade and Industry (Dti)
- Dept. of Water and Sanitation (DWS)
- Dept. of Science and Technology (DST)
- Transnet National Port Authority (TNPA)
- Representatives from the nine provinces.



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Main purpose of the PSC



- To inform, guide and monitor the implementation of the SEA process;
- To coordinate the mandates of all organs of state in an integrated manner;
- To facilitate sustainable development and ensure legal compliance; and
- To facilitate discussion on the outcomes of the SEA so that they may be adopted and implemented by government.



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Expert Reference Group (ERG)



The ERG comprises representatives of the following:

- South African Aquaculture Industry Associations
- Directorates from the DEA Oceans and Coasts & DEA Environmental Programmes
- DAFF Fisheries Branch
- Department of Water and Sanitation (DWS)
- South African National Biodiversity Institute (SANBI)
- South African Institute for Aquatic Biodiversity (SAIAB)
- Agricultural Research Council (ARC)
- Provincial representatives (e.g. from nature conservation & planning departments)
- NGOs e.g. WWF South Africa, etc.
- Relevant research bodies and academia.



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Main purpose of the ERG



- The **purpose of the ERG** is to:
 - provide technical knowledge and expert insights from a range of sectors; and
 - to ensure that the important issues are identified and addressed in a balanced and scientific manner.
- The ERG's inputs will inform the approach to the SEA tasks and they will review draft outcomes from the SEA.



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Outputs of the Aquaculture SEA



- Aquaculture development zones (ADZs) or focus areas/suitable habitats in South Africa.
- Environmental compliance framework (standards) for streamlined & integrated decision-making to reduce (or limit) the need for permitting & authorisations.
- Environmental screening & risk assessment for aquaculture in SA that can be continuously updated & maintained by DEA & DAFF.
- Generic Environmental Management Plan (EMP) for the management of aquaculture activities in South Africa.



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Way forward & closure



- Minutes of this meeting will be circulated to all ERG members for review and comments.
- The draft schematic legislative framework (as discussed today) will also be circulated to all ERG members for review and to provide additional inputs.
- Feedback provided from the ERG members will be discussed at the next ERG meeting scheduled during November 2016 (date to be confirmed).
- Acknowledgements & meeting closure.



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EXPERT REFERENCE GROUP (ERG) MEETING

7 JUNE 2016

FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

DATE	TIME	VENUE
Tuesday, 7 June 2016	12:30 – 16:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

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13:00 – 13:10	Welcome	DAFF: Asanda Njobeni
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For any enquiries, please contact: Karabo Mashabela (CSIR), tel.: 021-888 2482 email: kmashabela1@csir.co.za

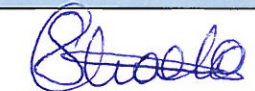
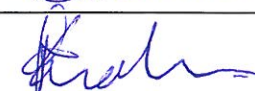

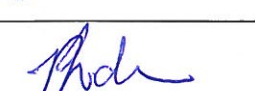
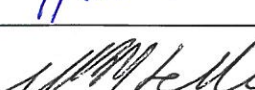
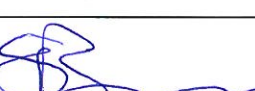
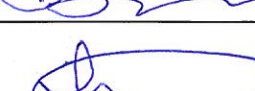





**National Aquaculture SEA
Expert Reference Group (ERG) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 7 June 2016
Attendance Register**

Organisation / Institution		Name & Surname	Email	Telephone	Mobile	Signature
Dept of Agriculture, Forestry & Fisheries	DAFF	Fatima Daya	<u>FatimaD@daff.gov.za</u> <i>FatimaS@daff.gov.za</i>	(021) 430 7006	079491 7050	<i>Daya</i>
Dept of Agriculture, Forestry & Fisheries	DAFF	Grant Pitcher	<u>GrantP@daff.gov.za</u> *	(021) 430 7015		
Dept of Agriculture, Forestry & Fisheries	DAFF	Kevin Christson	<u>KevinCH@daff.gov.za</u> *	(021) 402 3572		
Dept of Agriculture, Forestry & Fisheries	DAFF	Michelle Pretorius	<u>MichellePR@daff.gov.za</u>	(021) 430 7034	<i>0826472263</i>	<i>[Signature]</i>
Dept of Agriculture, Forestry & Fisheries	DAFF	Brett Macey	<u>BrettM@daff.gov.za</u> *			
Dept of Agriculture, Forestry & Fisheries	DAFF	Maxhoba Jezile	<u>MaxhobaAJ@daff.gov.za</u>	(021) 430 7037	<i>0733211399</i>	<i>[Signature]</i>
Dept of Environmental Affairs	DEA	Dee Fischer	<u>DFischer@environment.gov.za</u>	(012) 310 3857	<i>0827729831</i>	<i>[Signature]</i>
Dept of Environmental Affairs	DEA	Simon Moganetsi	<u>SMoganetsi@environment.gov.za</u>	(012) 399 9309		<i>[Signature]</i>
Dept of Environmental Affairs	DEA	Rhett Smart	<u>rsmart@capenature.co.za</u>			
Dept of Water and Sanitation	DWS	Dr Wietsche Roets	<u>roetsw@dws.gov.za</u> *	(012) 336 6510		
Gauteng Dept of Agriculture & Rural Development	GDARD	Basani Ndindani	<u>basani.ndindani@gauteng.gov.za</u>			
Rhodes University / Aquaculture Association of Southern Africa	RU/AASA	Prof Peter Britz	<u>pbritz@ru.ac.za</u>	(046) 603 8415/6		
Saldanha Bay Oysters	SBO	Sue Tonin	<u>sue@saldanhabayoysters.co.za</u>	<i>022 0714 0836</i>	(082) 410 0449	<i>[Signature]</i>
Saldanha Bay Oysters	SBO	Toni Tonin	<u>toni@saldanhabayoysters.co.za</u>		(082) 558 9789	
South African National Biodiversity Institute	SANBI	Siyasanga Miza	<u>S.Miza@sanbi.org.za</u>	(021) 799 8716		

**National Aquaculture SEA
Expert Reference Group (ERG) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 7 June 2016
Attendance Register**

Please sign in and confirm your details below:

<u>Organisation / Institution</u>		<u>Name & Surname</u>	<u>Email</u>	<u>Telephone</u>	<u>Mobile</u>	<u>Signature</u>
Agricultural Research Council	ARC	Mary Chimuka	Thaelamj@arc.agric.za	0126729316	0745291642	
Aquaculture Association of Southern Africa	AASA	Roger Krohn	roger@hik.co.za	(028) 313 1055	082 569 5925	
CapeNature	CapeNature	Dean Impson	dimpson@capenature.co.za *			
Council for Scientific and Industrial Research	CSIR	Paul Lochner	PLochner@csir.co.za	(021) 888 2486	084 442 3646	
Council for Scientific and Industrial Research	CSIR	Lizande Kellerman	LKellerman@csir.co.za	(021) 888 2489	083 799 0949	
Council for Scientific and Industrial Research	CSIR	Lydia Cape	LCape@csir.co.za	(021) 888 2429		
Council for Scientific and Industrial Research	CSIR	Rudolph du Toit	RduToit@csir.co.za *	(021) 888 2538		
Council for Scientific and Industrial Research	CSIR	Dr Stewart Bernard	SBernard@csir.co.za	(021) 658 2755	0836349128	
Council for Scientific and Industrial Research	CSIR	Lara van Niekerk	LvNieker@csir.co.za	(021) 888 2491	082 820 3339	
Council for Scientific and Industrial Research	CSIR	Paul Oberholster	POberholster@csir.co.za	(021) 888 2591	076 390 7689	
Council for Scientific and Industrial Research	CSIR	Yonwaba Atyosi	yatyosi@gmail.com		0739943522	
Council for Scientific and Industrial Research	CSIR	Karabo Mashabela	KMashabela1@csir.co.za	(021) 888 2408		
Dept of Agriculture, Forestry & Fisheries	DAFF	Asanda Njobeni	AsandaN@daff.gov.za	(021) 402 3409	082 924 0101	
Dept of Agriculture, Forestry & Fisheries	DAFF	Andrea Bernatzeder	AndreaB@daff.gov.za	(021) 402 7026		

**National Aquaculture SEA
Expert Reference Group (ERG) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 7 June 2016
Attendance Register**

Organisation / Institution		Name & Surname	Email	Telephone	Mobile	Signature
University of Stellenbosch	SUN	Prof Henk Stander	hbs@sun.ac.za	(021) 808 2544	082 331 8761	<i>Stander</i>
World Wide Fund for Nature	WWF	Stephanie Rainier	srainier@wwf.org.za	(021) 657 6600	083 317 1318	<i>Rainier</i>
Western Cape Trout Asso			hbs@sun.ac.za	021 808 2544	082 331 8761	<i>Stander</i>
Aquaponics Asso of SA			hbs@sun.ac.za	"	"	<i>Stander</i>
Aquacultur Tilapia Ass			hbs@sun.ac.za	021 808 2544	"	<i>Stander</i>

Aquaculture SEA:

Schedule for first set of Focus Group meetings with authorities, industry, NGOs and other stakeholders

Sectors/Regions	Meeting location	Venue	Date	Time
Northern Cape & Western Cape	Stellenbosch	CSIR Mountain View Seminar Room, A block	Friday, 30 Sep 2016	09:30 – 14:30
Gauteng, Free State, Limpopo, & North West	Pretoria	NCPC Training Room, Building 10, CSIR Main Campus	Monday, 3 Oct 2016	09:30 – 14:30
Mpumalanga	Nelspruit	Citrus Research International (CRI) Boardroom	Tuesday, 4 Oct 2016	09:30 – 14:30
KwaZulu-Natal	Pietermaritzburg	Ezemvelo KZN Wildlife: Queen Elizabeth Theatre	Thursday, 6 Oct 2016	09:30 – 14:30
Eastern Cape	Port Elizabeth	EC DEDEAT Boardroom (Ground floor)	Friday, 7 Oct 2016	09:30 – 14:30

8 September 2016

Dear Stakeholder,

**STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR AQUACULTURE DEVELOPMENT:
INVITATION TO PARTICIPATE IN A FOCUS GROUP MEETING**

The Department of Environmental Affairs (DEA) in collaboration with the Department of Agriculture, Forestry and Fisheries (DAFF) has commissioned the Council for Scientific and Industrial Research (CSIR) to undertake a Strategic Environmental Assessment (SEA) for aquaculture development in South Africa. This SEA forms part of Operation Phakisa and includes both marine and freshwater species.

The purpose of the SEA is to promote and support the growth of the aquaculture industry in South Africa through: (i) identifying suitable areas where environmentally sustainable aquaculture development can be prioritised and incentivised; and (ii) providing a streamlined and integrated management and legislative framework to reduce compliance complexities and improve decision-making processes.

As part of the inception phase of the SEA, we are conducting Focus Group meetings with authorities, industry, NGOs and research bodies. These meetings are taking place over the period 30 September to 6 October 2016 at four centres around the country, i.e. in Stellenbosch, Pretoria, Nelspruit and Pietermaritzburg.

The purpose of these **focus group meetings** is to meet with relevant stakeholders who are involved with aquaculture projects, in order to present the approach to the SEA and discuss the following topics:

- additional stakeholders to be included on the stakeholder database for the SEA;
- current legislation and permits/licenses applicable to aquaculture projects;
- mapping of existing aquaculture projects (especially freshwater) based on national data;
- outcomes of the literature review by CSIR, such as key impacts identified, siting criteria and environmental attributes that will inform the national-scale mapping of opportunities and constraints that then informs the identification of focus areas (or “zones”) for potential aquaculture development; and



- input on existing experience and capacity within the provinces and examples of good practice.

Your designated member representing your department/organisation/institution is hereby requested to attend one of the following national Aquaculture SEA focus group meetings:

Sectors / regions	Meeting location	Venue	Date	Time
Northern Cape & Western Cape	Stellenbosch	CSIR Mountain View Seminar Room, A block	Fri, 30 Sep 2016	09:30 – 14:30
Gauteng, Free State, Limpopo, & North West	Pretoria	CSIR Executive Boardroom, Building 3	Mon, 3 Oct 2016	09:30 – 14:30
Mpumalanga	Nelspruit	Citrus Research International (CRI)	Tue, 4 Oct 2016	09:30 – 14:30
KwaZulu-Natal	Pietermaritzburg	Ezemvelo KZN Wildlife: Queen Elizabeth Park	Thu, 6 Oct 2016	09:30 – 14:30
Eastern Cape	Port Elizabeth	EC DEDEAT Boardroom (tbc)	Fri, 7 Oct 2016	09:30 – 14:30

Please RSVP by **Wednesday 21st September 2016** to Karabo Mashabela (KMashabela1@csir.co.za ; 021-888-2482) to confirm your attendance.

Should you require additional information or have project related enquires you are welcome to contact the CSIR Environmental Management Services (EMS). The project manager for the Aquaculture SEA is Lizande Kellerman (LKellerman@csir.co.za ; 021-888 2489).

A draft agenda for the meeting is attached.

We look forward to your participation in this SEA process.

Sincerely,



Ms Lizande Kellerman
 Project Manager: Aquaculture SEA
 CSIR Environmental Management Services
 Date: 6th September 2016



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National Strategic Environmental Assessment for Aquaculture Development in South Africa

Focus Group Meeting
30th Sep - 7th Oct 2016

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Agenda for 5 national focus group meetings

being held in Cape Town, Pretoria, Nelspruit, Pietermaritzburg and Port Elizabeth



<u>TIME</u>	<u>ACTIVITY/PRESENTATION</u>	<u>PRESENTER</u>
09:30 – 10:00	Arrival & registration with tea / coffee	
10:00 – 10:10	Welcome and introductions	DAFF
10:10 – 10:45	Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement	CSIR
10:45 – 11:20	Applicable legislation and permits/licenses	CSIR
11:20 – 12:30	Data capture & mapping of existing aquaculture projects based on national data – inputs from meeting participants	CSIR
12:30 – 13:00	Lunch	
13:00 – 14:15	Findings from literature review: key challenges & impacts, siting criteria and environmental attributes to inform the national-scale mapping of opportunities and constraints – inputs from meeting participants	CSIR
14:15 – 14:30	Way forward and closure	DEA



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Purpose of the meeting

- The **purpose** of this focus group meeting is to discuss & gather information on the following topics:
 - additional **stakeholders** to be included on the database for the SEA;
 - current provincial **legislation** and permits/licenses applicable to aquaculture projects;
 - **mapping** of existing aquaculture projects (especially freshwater) based on national data;
 - key challenges & impacts, **siting criteria** and **environmental attributes** identified that will inform the national-scale mapping of opportunities & constraints that then informs the identification of focus areas (or “zones”) for potential aquaculture development;
 - input on **existing experience** and **capacity** within the provinces & examples of good practice.
- **Prompt! Add extra inputs & comments on paper slips provided**



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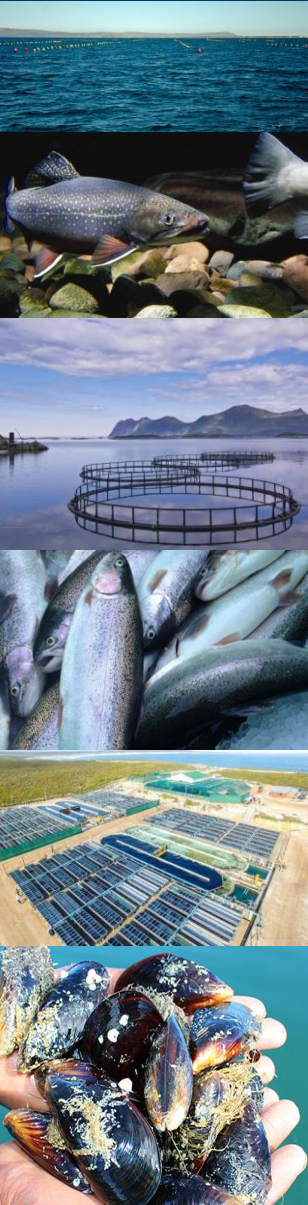
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Overview to the SEA



- Aquaculture includes the breeding, rearing and harvesting of plants and animals in salt or fresh water.
- Aquaculture is the fastest growing food production sector in the world.
- An additional 50 million tonnes of fish is required to feed the world population by 2030 - production will come mainly from aquaculture.
- Operation Phakisa, 2014 – promotion of Oceans Economy
 - ✓ Aquaculture is one of the priority focal areas for implementation
- DEA, in collaboration with DAFF has commissioned the CSIR to conduct a Strategic Environmental Assessment (SEA) for aquaculture development in South Africa.
- The overall purpose of the SEA is to **promote** and **support** the responsible **growth** of the aquaculture industry in South Africa.



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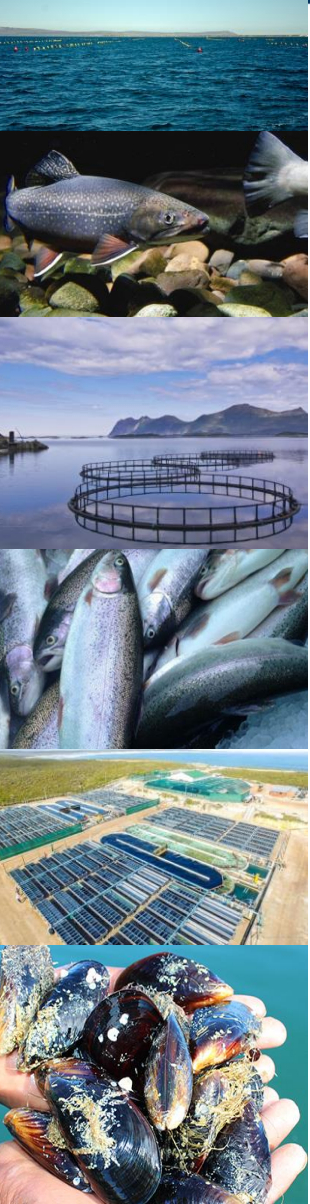


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Key challenges, impacts & risks



- Over regulation of the sector;
- Production is only focused on a few high-value species;
- Scarcity of adequate freshwater and a harsh marine environment;
- Difficulty in accessing project funding;
- Limited pool of skills and support services;
- Unpredictability associated with climate change;
- Vast difference between winter and summer temperatures;
- Challenges with access to sufficient land and sea space; and
- Perceived competition with the tourism and conservation sectors.



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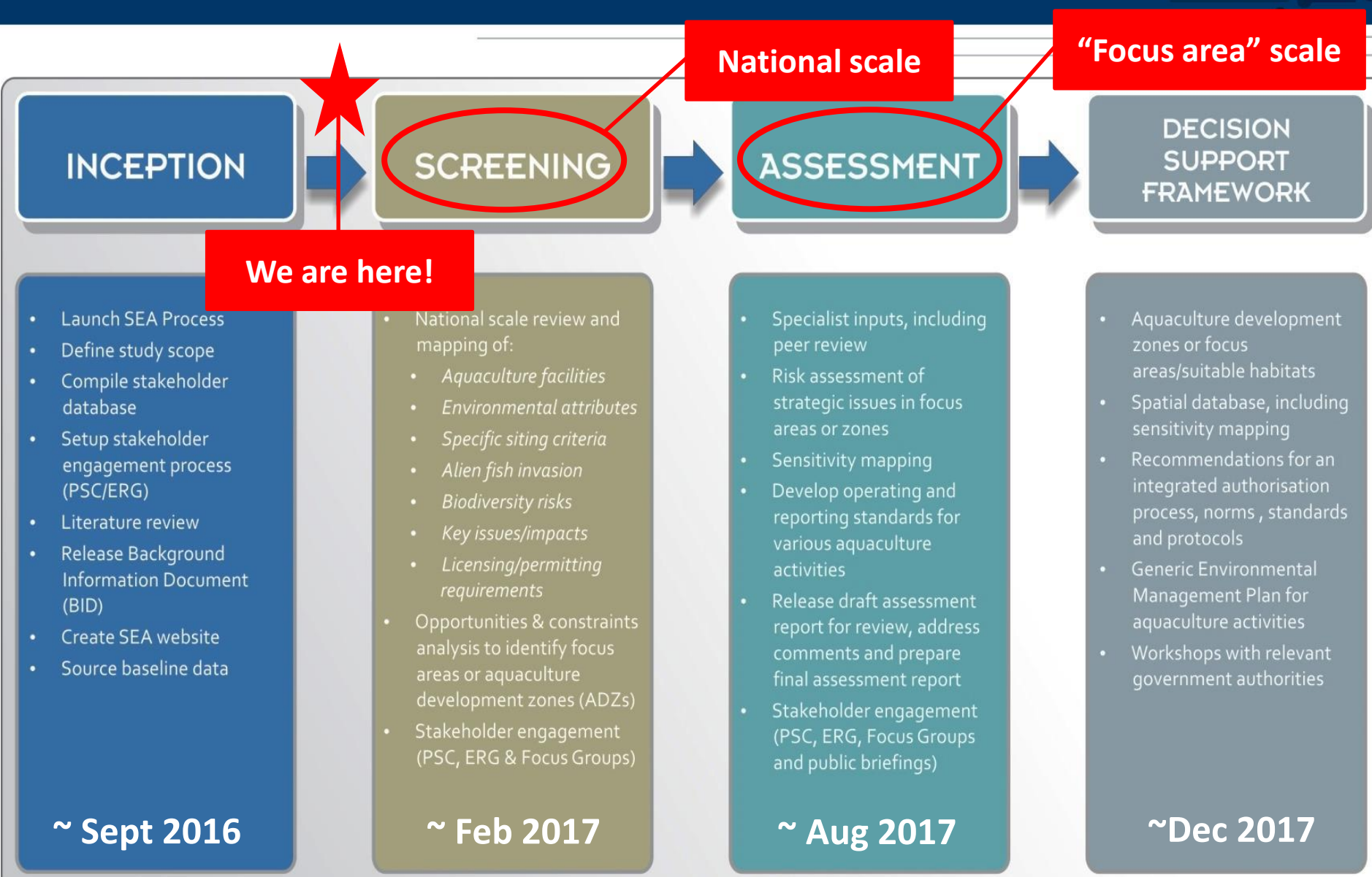


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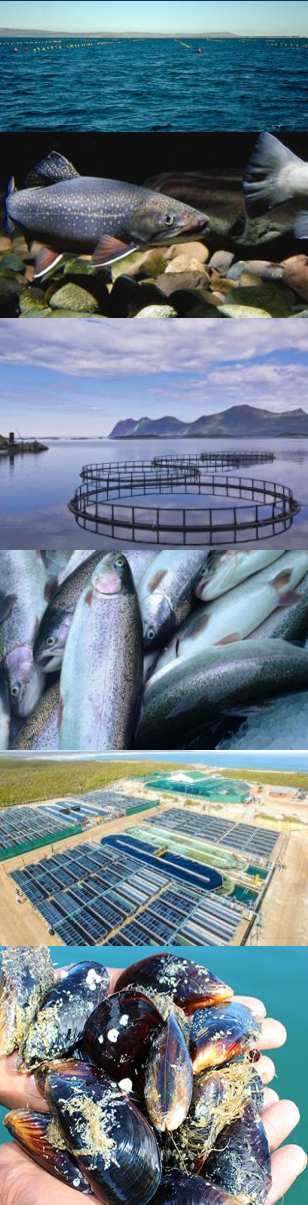
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Approach to the SEA



Key objectives of the SEA

- The SEA aims to achieve its purpose in two ways:
 - Firstly, by identifying **suitable areas** where environmentally sustainable aquaculture development can be prioritised and incentivised; and
 - Secondly, by providing a **streamlined and integrated management and regulatory framework** to reduce compliance complexities and improve decision-making processes.



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Scope of the SEA



- The SEA is being conducted at a **national & provincial scale**, including all relevant competent authorities.
- The SEA will assess the identified **environmental attributes**, specific **siting criteria** and key **impacts** associated with both marine (salt water) and freshwater related activities of aquaculture planning, development and operations.
- The assessment will consider **natural** (offshore, inshore and inland) and “artificial” or **land-based** systems operating in cold/temperate and warm waters.
- **Priority species** that will be considered during the assessment include abalone, mussels, oysters, prawns, seaweed, tilapia, trout and marine finfish (e.g. cob and salmon).
- The SEA process will also review **existing legislation**, including **licensing/permitting** and **authorisational procedures** currently governing marine & freshwater aquaculture on a national & provincial scale.



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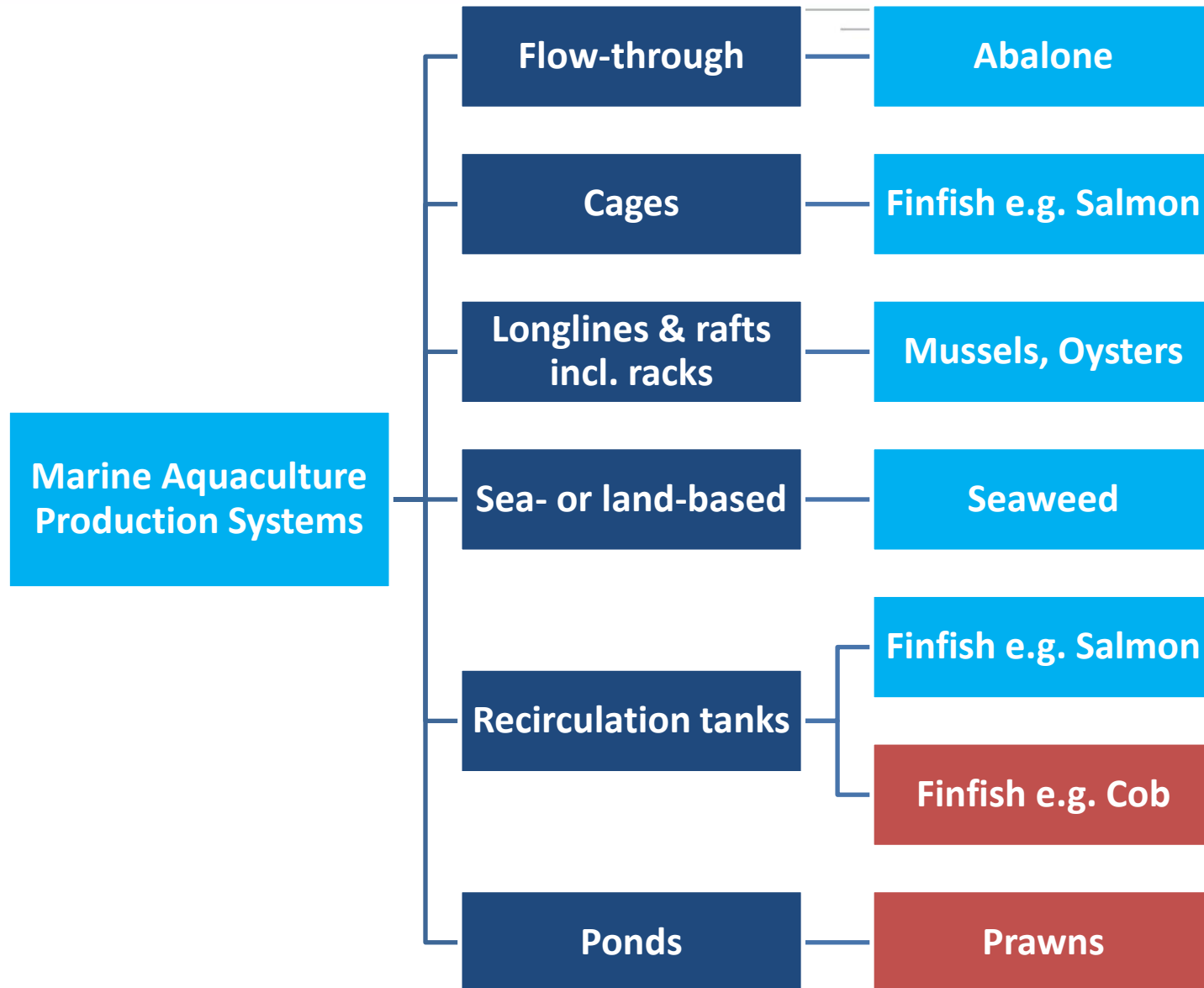


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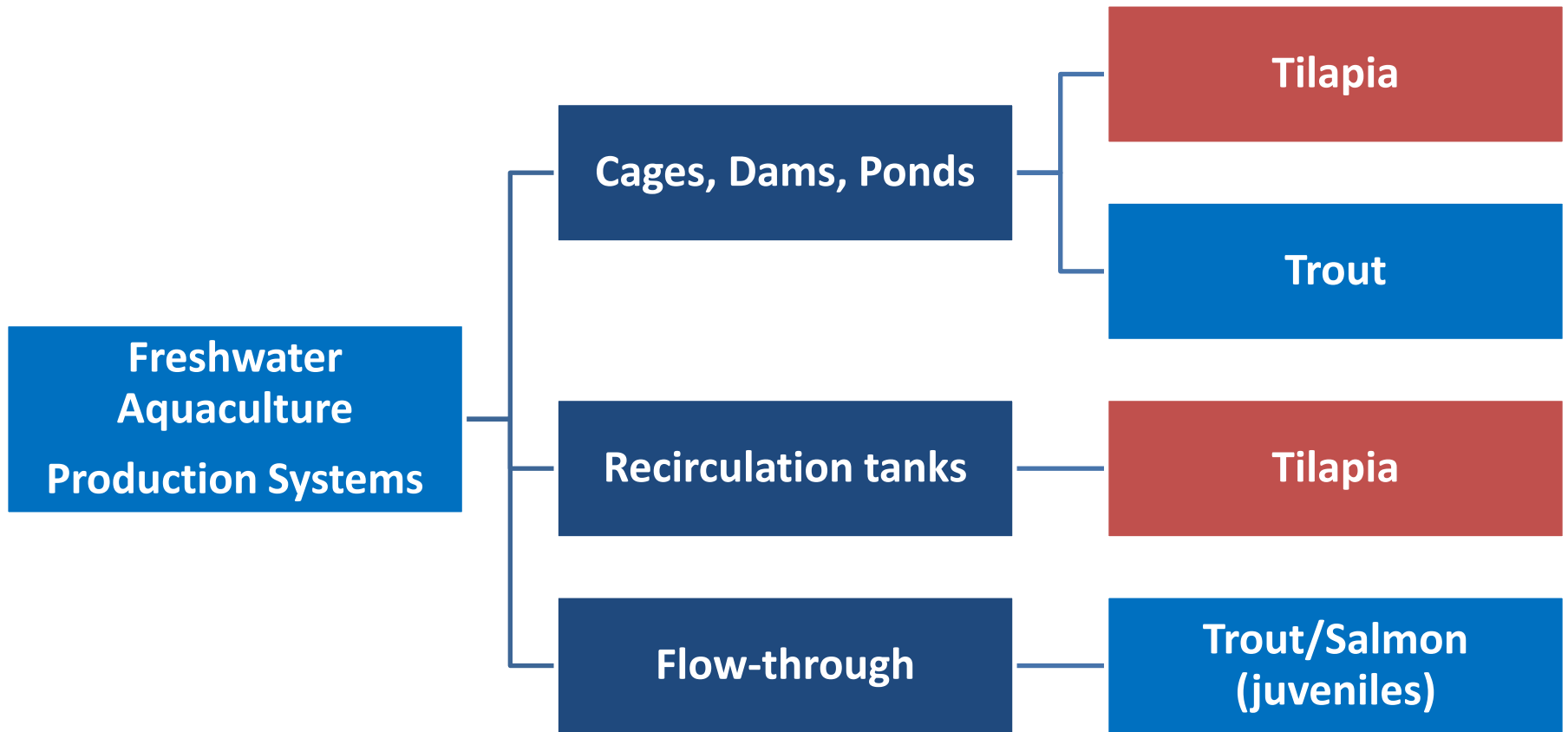
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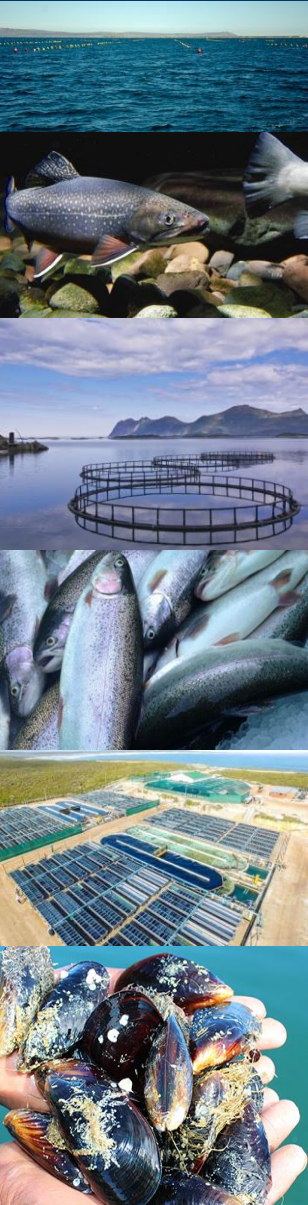
Scope of the SEA



Scope of the SEA



Key outputs of the SEA



- **Aquaculture development zones (ADZs)** or focus areas/suitable habitats in South Africa.
- **Environmental compliance framework** (standards) for streamlined & integrated decision-making to reduce (or limit) the need for permitting & authorisations.
- **Environmental screening & risk assessment** for aquaculture in SA that can be continuously updated & maintained by DEA & DAFF.
- **Generic Environmental Management Plan (EMP)** for the management of aquaculture activities in South Africa.



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Stakeholder engagement

- Setup **stakeholder engagement process**:
 - Stakeholder database (comprising authorities, NGOs, research & industry);
 - Project Steering Committee (PSC);
 - Expert Reference Group (ERG).
- Launched the **SEA process**:
 - Advert published in 4 national scale newspapers;
 - Advert/article published on CSIR, DEA & DAFF websites;
 - Created **SEA website** (<http://aquasea.csir.co.za/>);
 - Created **SEA e-mail** account (aquasea@csir.co.za);
 - Prepared and released the **Background Information Document (BID)**.



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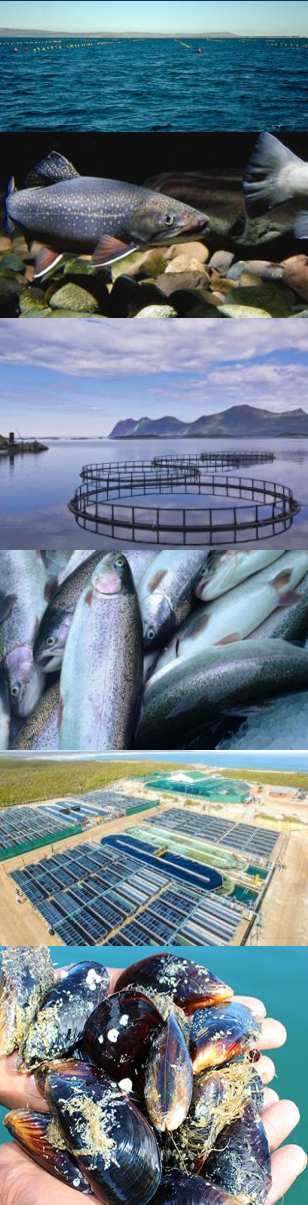
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Project Steering Committee

- The **Project Steering Committee (PSC)** comprises authorities with a legislated decision-making mandate for aquaculture development in SA (incl. DEA, DAFF, DWS, DMR, DPME, DPE, DPW, DST, DTI, DRDLR, TNPA & 9 provinces)
- The purpose of the PSC is:
 - To inform, guide and monitor the implementation of the SEA process;
 - To coordinate the mandates of all organs of state in an integrated manner;
 - To facilitate sustainable development and ensure legal compliance; and
 - To facilitate discussion on the outcomes of the SEA so that they may be adopted and implemented by government.



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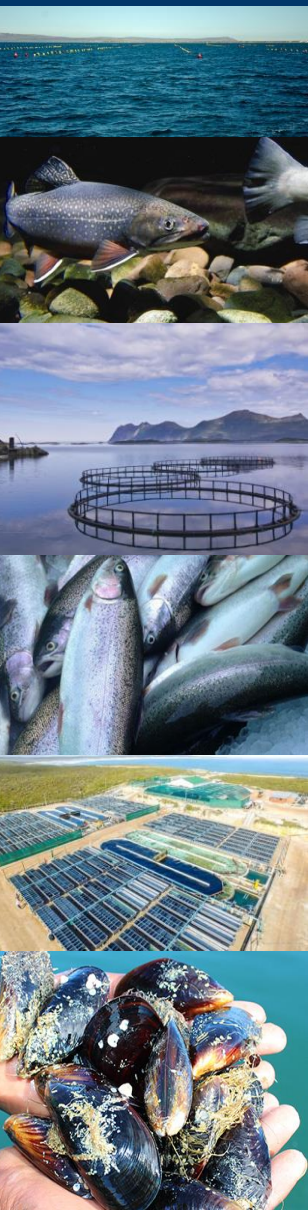


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Expert Reference Group



The ERG comprises representatives of the following:

- South African Aquaculture Industry Associations
- Directorates from the DEA Oceans and Coasts & DEA Environmental Programmes
- DAFF Fisheries Branch
- Department of Water and Sanitation (DWS)
- South African National Biodiversity Institute (SANBI)
- South African Institute for Aquatic Biodiversity (SAIAB)
- Agricultural Research Council (ARC)
- Provincial representatives (e.g. from nature conservation & planning departments)
- NGOs e.g. WWF South Africa, etc.
- Relevant research bodies and academia.



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Expert Reference Group

- The purpose of the ERG is:
 - **verify** that the process proposed at the outset of the SEA has been implemented in a fair and unbiased manner in that suitably experienced experts have been involved in the process;
 - **review** structures have been designed and implemented in a credible manner; and
 - **queries/comments** from the public have been adequately **addressed**.



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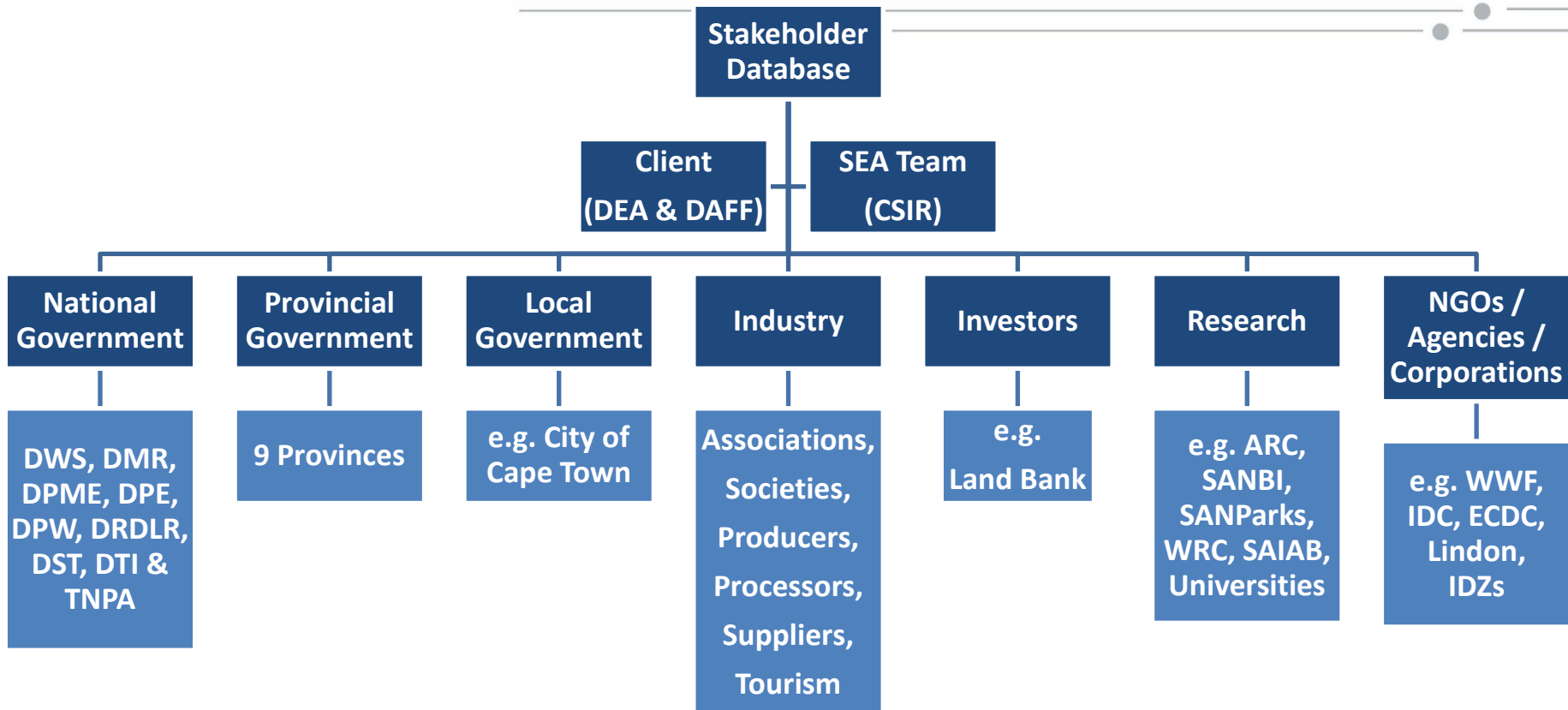


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Stakeholder database



Are there any other key stakeholders to consider?



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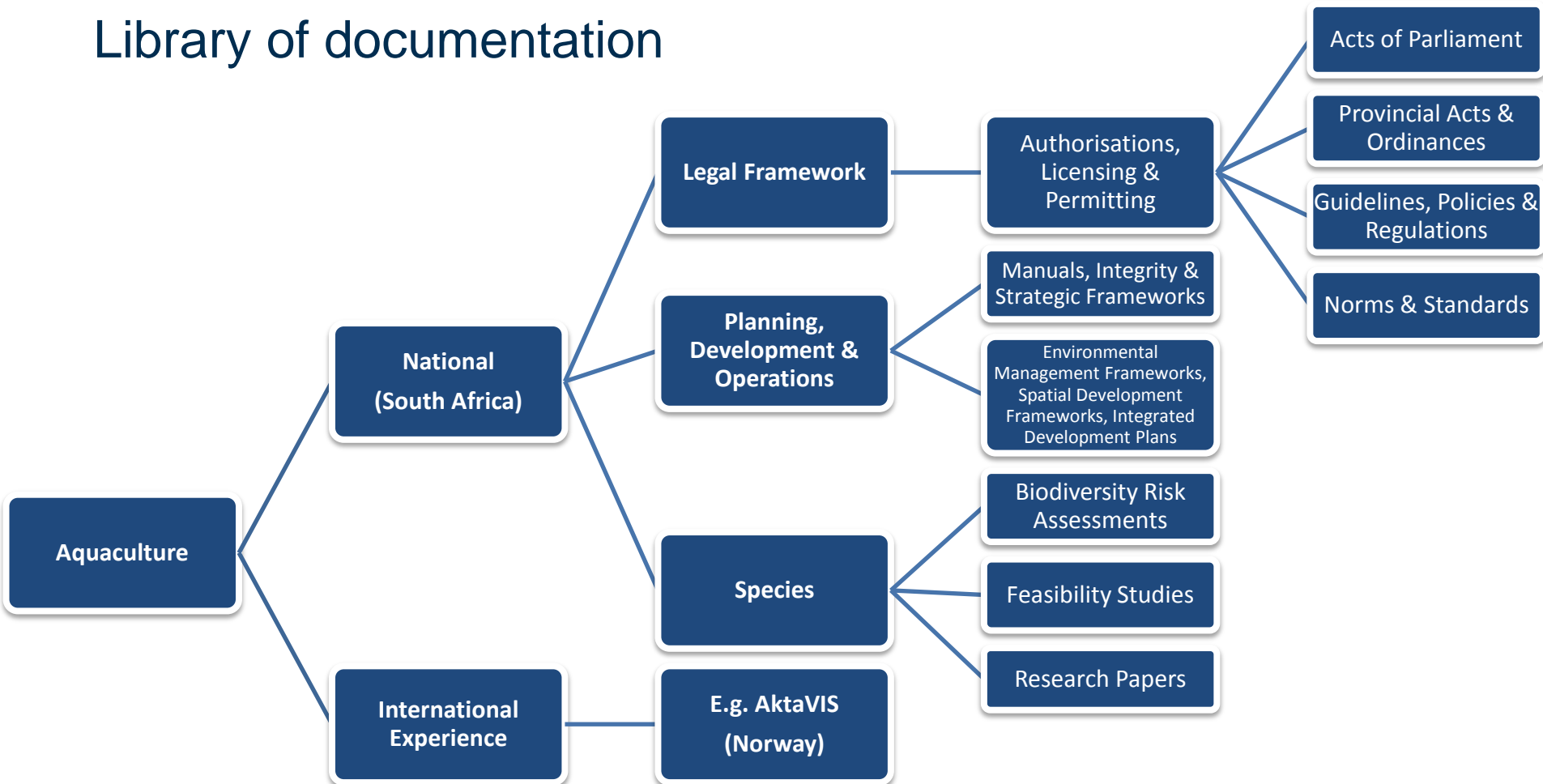
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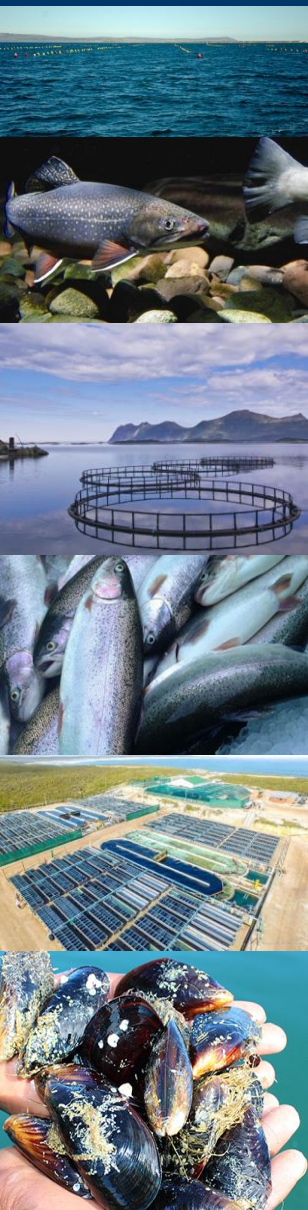
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Overview of literature and permits

Library of documentation



Important reference documents



- Aquaculture Bill, 2016
- National Aquaculture Strategy Framework, 2012
- National Aquaculture Policy Framework, 2013
- Legal Guide for the Aquaculture Sector in South Africa, 2013
- Environmental Management Guideline for Aquaculture in SA, 2011
- Environmental Integrity Framework for Marine Aquaculture, 2012
- NEMA: Environmental Impact Assessment Guideline For Aquaculture In South Africa, 2013
- Operation Phakisa: Unlocking the Economic Potential of South Africa's Oceans – Aquaculture Lab Report, 2014
- SEA - Identification of potential marine aquaculture development zones for fin fish cage culture, 2011
- Aquaculture Annual Report, 2012
- Food & Agriculture Organisation of the United Nations, 2012
 - *The State of World Fisheries and Aquaculture, 2008*



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National legislation

Department of Environmental Affairs

- National Environmental Management Act, 107 of 1998
- Environmental Impact Assessment Regulations, 2010
- National Environmental Management: Biodiversity Act, 10 of 2004
- Draft Alien and Invasive Species Regulations, GN 347 Of 3 April 2009
- Threatened or Protected Species Regulations, GNR.152 of 23 February 2007 (TOPS regulations)
- National Environmental Management: Protected Areas Act, 57 of 2003
- National Environmental Management: Integrated Coastal Management Act, 24 of 2008
- Sea-Shore Act, 21 of 1935
- Sea Birds and Seals Protection Act, 46 of 1973
- National Environment Management: Waste Act, 59 of 2008

Department of Agriculture Forestry and Fisheries

- Marine Living Resources Act 18 of 1998
- Marine Living Resources Regulations, 1998
- Genetically Modified Organisms Act, 15 of 1997
- Subdivision of Agricultural Land Act, 70 of 1970
- Animal Diseases Act, 35 of 1984
- Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 36 of 1947
- Animal Improvement Act, 62 of 1998
- Agricultural Products Standards Act, 119 of 1990
- Agricultural Pests Act 36, of 1983
- Animal Protection Act, 71 of 1962

Department of Water Affairs

- National Water Act 36 of 1998

Department of Trade and Industry

- Consumer Protection Act No.68 of 2008
- CPA Regulations (GNR 293 of 1 April 2011)
- Standards Act, 8 of 2008
- National Regulator for Compulsory Specifications Act, 5 of 2008
- International Trade Administration Act, 71 of 2002 / The African Customs Union Agreement
- Customs and Excise Act, 91 of 1964
- Broad-Based Black Economic Empowerment Act, 53 of 2003

Department of Health

- Medicines and Related Substances Act, 101 of 1965
- Foodstuffs, Cosmetics and Disinfectants Act, 54 of 1972
- Health Act, 61 of 2003

Department of Transport

- Perishable Products Export Control Act, 1983

Department of Labour

- Occupational Health and Safety Act, 85 of 1993
- Basic Conditions of Employment Act, 75 of 1997
- Labour Relations Act, 66 of 1995
- Employment Equity Act, 55 of 1998

Companies and Intellectual Property Commission/ Department of Justice

- Companies Act, 71 of 2008
- Trust Property Control Act, 57 of 1988
- Co-operatives Act, 14 of 2005

Department of Public Works

- State Land Disposal Act 48 of 1961



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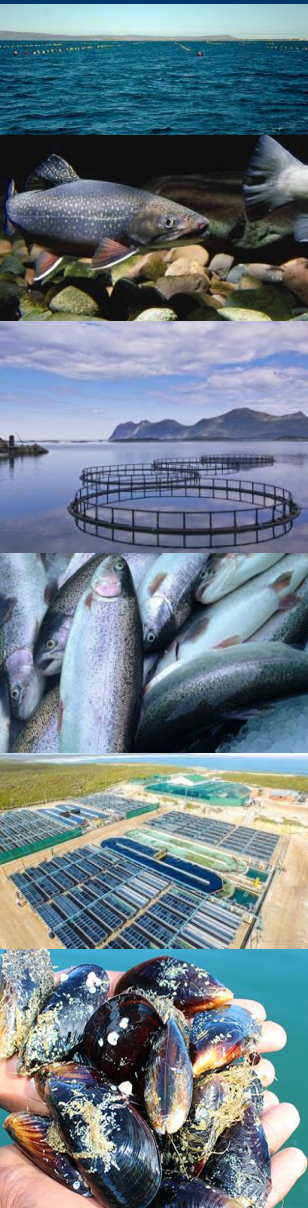
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Environmental authorisations (mostly marine)

Any other environmental permit requirements?



- 1) Environmental authorisation (DEA) – freshwater & marine
- 2) Water use license (DWS) - freshwater & marine
- 3) Marine right (DAFF)
- 4) Import permits (general & ornamentals) (DAFF)
- 5) Export permits (DAFF)
- 6) Transport permits (DAFF)
- 7) Engage in Marine Aquaculture Activities (DAFF)
- 8) Possess Broodstock & operate hatchery (DAFF)
- 9) Possess & sell Undersized Cultured Abalone obtained from right holder (DAFF)
- 10) Engage in ranching activities of marine species: Harvesting (DAFF)
- 11) Collect Broodstock for Marine Aquaculture purposes (DAFF)
- 12) Operate a fish processing establishment (DAFF)
- 13) Scientific investigations & practical experiments (DAFF)



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Provincial legislation

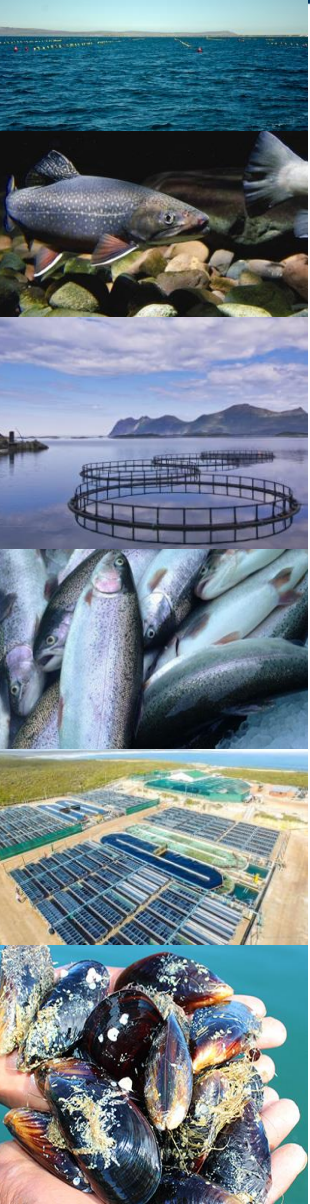
What permits are required in terms of these provincial legislation?

Province	Provincial Ordinance	Competent / Relevant Authority
Western Cape	<ul style="list-style-type: none"> Nature and Environmental Conservation Ordinance 19 of 1974 (Cape) Nature Conservation Laws Amendment Act 3 of 2000 	<ul style="list-style-type: none"> Cape Nature
	<ul style="list-style-type: none"> Land Use Planning Ordinance 15 of 1985 	<ul style="list-style-type: none"> Municipality
Eastern Cape	<ul style="list-style-type: none"> Nature and Environmental Conservation Ordinance 19 of 1974 (Cape) 	<ul style="list-style-type: none"> Eastern Cape Parks & Tourism Agency EC Department of Economic Development & Environment Affairs
	<ul style="list-style-type: none"> Land Use Planning Ordinance 15 of 1985 	<ul style="list-style-type: none"> Municipality
Northern Cape	<ul style="list-style-type: none"> Nature and Environmental Conservation Ordinance 19 of 1974 (Cape) Northern Cape Nature Conservation Act 9 of 2009 	<ul style="list-style-type: none"> Northern Cape Department of Environment and Nature Conservation
Limpopo	<ul style="list-style-type: none"> Environmental Management Act 7 of 2003 	<ul style="list-style-type: none"> Limpopo Department of Economic Development, Environment and Tourism
Gauteng	<ul style="list-style-type: none"> Nature Conservation Ordinance 12 of 1983 (Transvaal) Gauteng Nature Conservation Bill of 2014 	<ul style="list-style-type: none"> Directorate of Nature Conservation: Gauteng Department of Agriculture & Rural Development
Mpumalanga	<ul style="list-style-type: none"> Nature Conservation Ordinance 12 of 1983 (Transvaal) Nature Conservation Act 10 of 1998 	<ul style="list-style-type: none"> Department of Economic Development, Environment & Tourism
North West	<ul style="list-style-type: none"> Nature Conservation Ordinance 12 of 1983 (Transvaal) 	<ul style="list-style-type: none"> North West Department of Economic Development, Environment, Conservation & Tourism
	<ul style="list-style-type: none"> Nature and Environmental Conservation Ordinance 19 of 1974 (Cape) 	<ul style="list-style-type: none"> North West Department of Economic Development, Environment, Conservation & Tourism
	<ul style="list-style-type: none"> Land Use Planning Ordinance 15 of 1985 	<ul style="list-style-type: none"> Municipality
KwaZulu-Natal	<ul style="list-style-type: none"> Nature Conservation Ordinance 15 of 1974 Nature Conservation Management Act 9 of 1997 	<ul style="list-style-type: none"> Ezemvelo KZN Wildlife Natal Parks Board
	<ul style="list-style-type: none"> Prevention of Environmental Pollution Ordinance 21 of 1981 	<ul style="list-style-type: none"> Ezemvelo KZN Wildlife Natal Parks Board
Free State	<ul style="list-style-type: none"> Nature Conservation Ordinance 8 of 1969 	<ul style="list-style-type: none"> Free State Department of Economic Development, Tourism & Environmental Affairs

Authorisations and planning at local level

Local

- Are you aware of specific **local government legislation / legal instruments** applicable to aquaculture?
- To be investigated further in Assessment Phase of SEA when we will review IDPs and SDFs in identified focus areas



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Data capture & mapping

FACILITY NAME

LOCATION
(Lat-Long +
location/closest town)

PROVINCE

AQUACULTURE TYPE
(e.g. marine, freshwater,
offshore, inshore, inland)

PRODUCTION SYSTEM
(e.g. flow-through, re-
circulation, ponds, dams,
tanks, cages, long lines,
rafts)

CATEGORY
(e.g. mollusc, finfish,
shellfish, plants, sea
squirts, crustaceans)

**SPECIES COMMON
NAME**
(e.g. Abalone)

**SPECIES SCIENTIFIC
NAME**
(e.g. *Haliotis midae*)

SPECIES STATUS
(e.g. alien vs indigenous,
IUCN, TOPS, etc.)

FEEDING SYSTEM
(e.g. phytoplankton filter
feeding)

RIVER SYSTEM

CATCHMENT
(primary + quaternary)

SCALE
(e.g. commercial,
artisanal, subsistence)

INDUSTRY
(e.g. food production /
recreation)

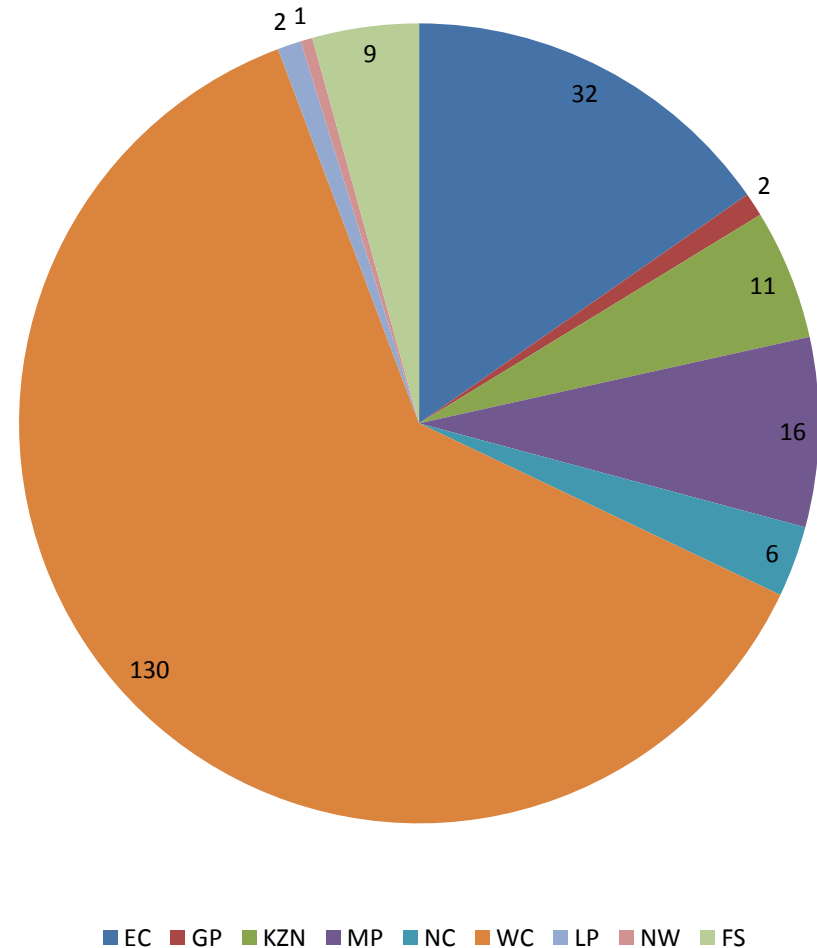
Example of dataset

FACILITY	West Coast Mussel	Hermanus Abalone
LAT	-32.2717778	-12.7162167
LONG	15.47941667	13.92163333
PROVINCE	WC	WC
LOCATION	Saldanha Bay	Hermanus
AQUACULTURE	Marine offshore	Onshore
OPERATIONAL SYSTEM	Long line	Flow-through
CATEGORY	Shellfish	Molluscs
NAME	Mussel	Abalone
SPECIES	<i>Mytilus galloprovincialis</i>	<i>Haliotis midae</i>
STATUS	Alien	Indigenous
FEEDING SYSTEM	Phytoplankton filter feeding	Detritus feeding (kelp)
RIVER SYSTEM	N/A	N/A
CATCHMENT	N/A	N/A
QUAT	N/A	N/A
SCALE	Commercial	Commercial
INDUSTRY	Food production	Food production

Data collected thus far

CATEGORIES PER PROVINCE	FACILITIES
WC	130
Sea squirts	1
Fish Processing Establishment	2
Plants	8
Mollusc	20
Shellfish	28
Finfish	71
EC	32
Finfish	21
Shellfish	7
Mollusc	2
Plants	1
ADZ	1
MP	16
Finfish	16
KZN	11
Finfish	11
FS	9
Finfish	9
NC	6
Mollusc	4
Finfish	1
Plants	1
GP	2
Crustacean	1
Finfish	1
LP	2
Finfish	2
NW	1
Finfish	1
GRAND TOTAL	209

Number of aquaculture facilities per province
(Sept 2016)



WC	130
Finfish	71
Shellfish	28
Mollusc	20
Plants	8
Fish Processing Establishment	2
Sea squirts	1

Legend



Western Cape **Aquaculture**



Crustacean



Finfish



Mollusc



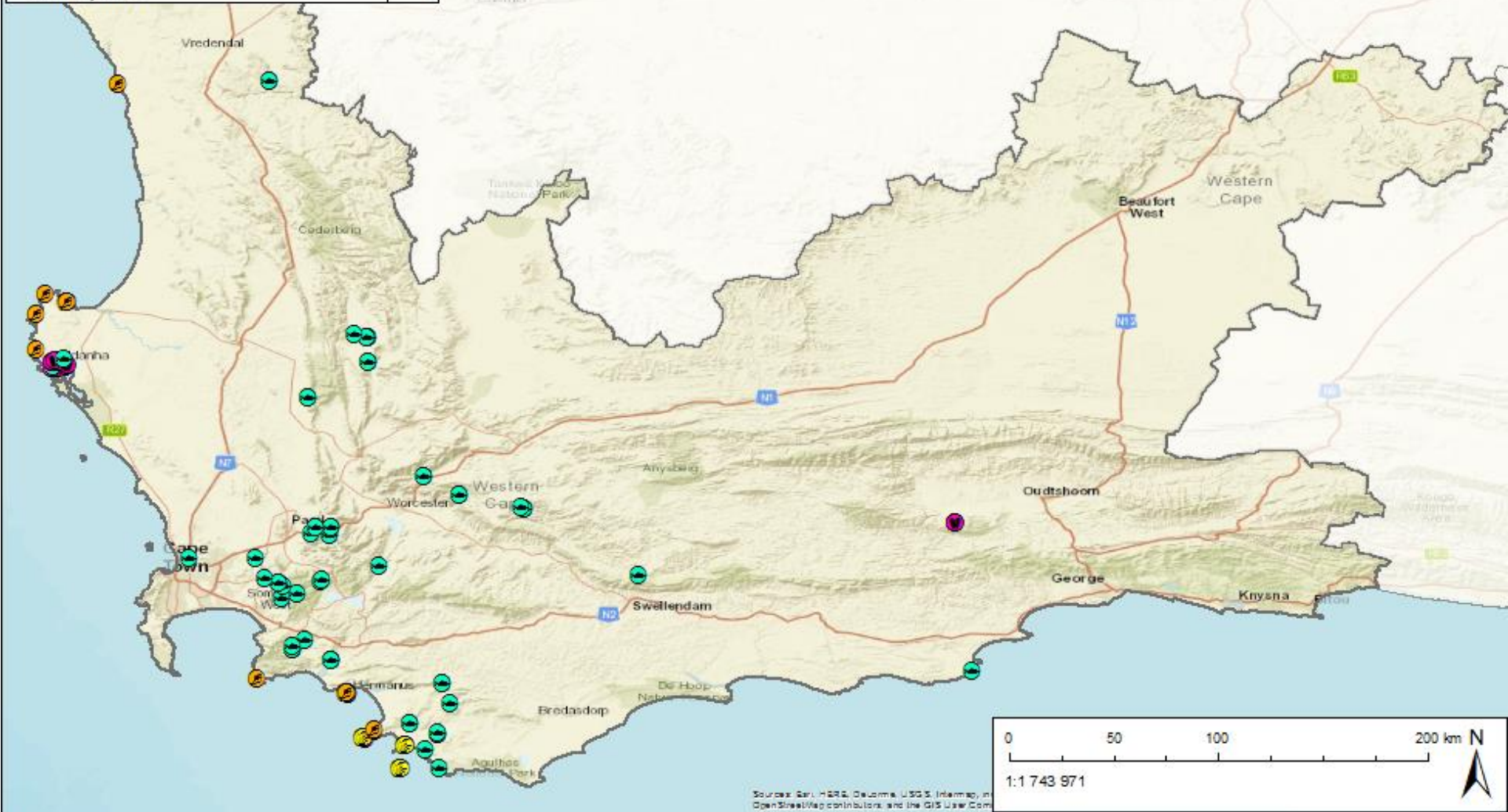
Plants



Sea squirts



Shellfish



NC	6
Mollusc	4
Finfish	1
Plants	1

Legend

Aquaculture



Crustacean



Finfish



Mollusc



Plants



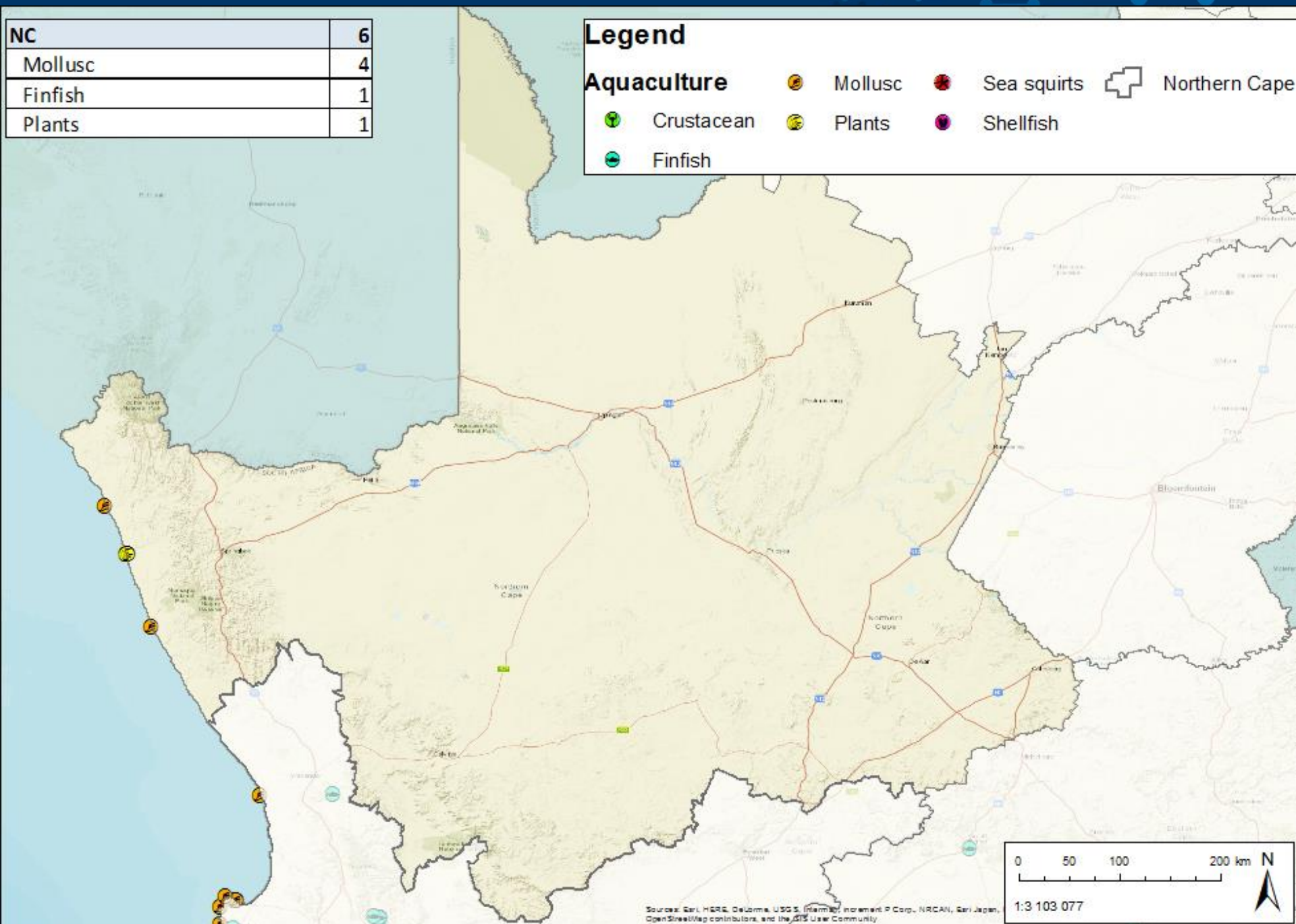
Sea squirts



Shellfish



Northern Cape



GP	2
Crustacean	1
Finfish	1

Legend

Aquaculture



Crustacean



Finfish



Mollusc



Plants



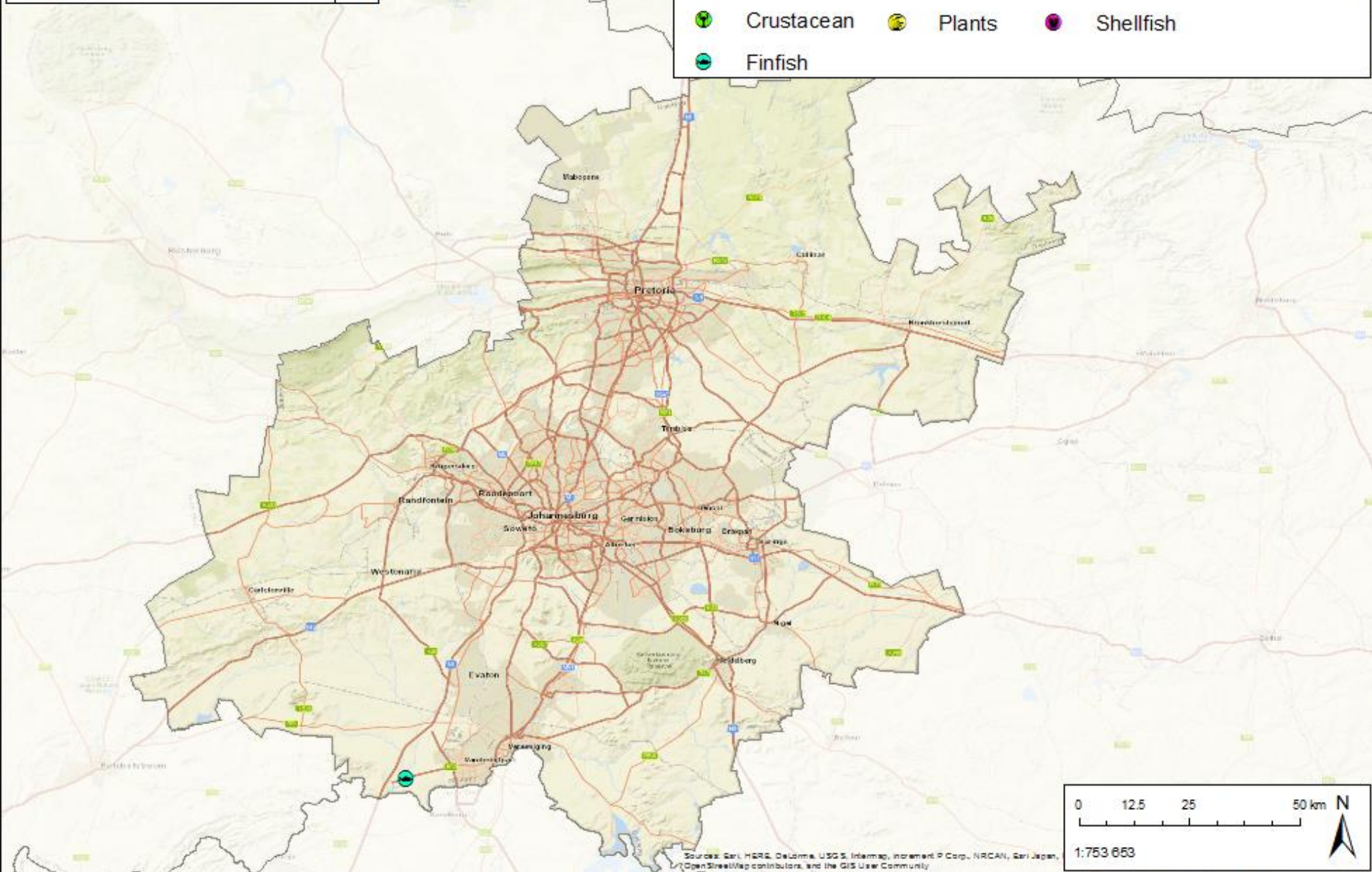
Sea squirts



Shellfish



Gauteng



LP	2
Finfish	2

Legend

Aquaculture



Crustacean



Finfish



Mollusc



Plants



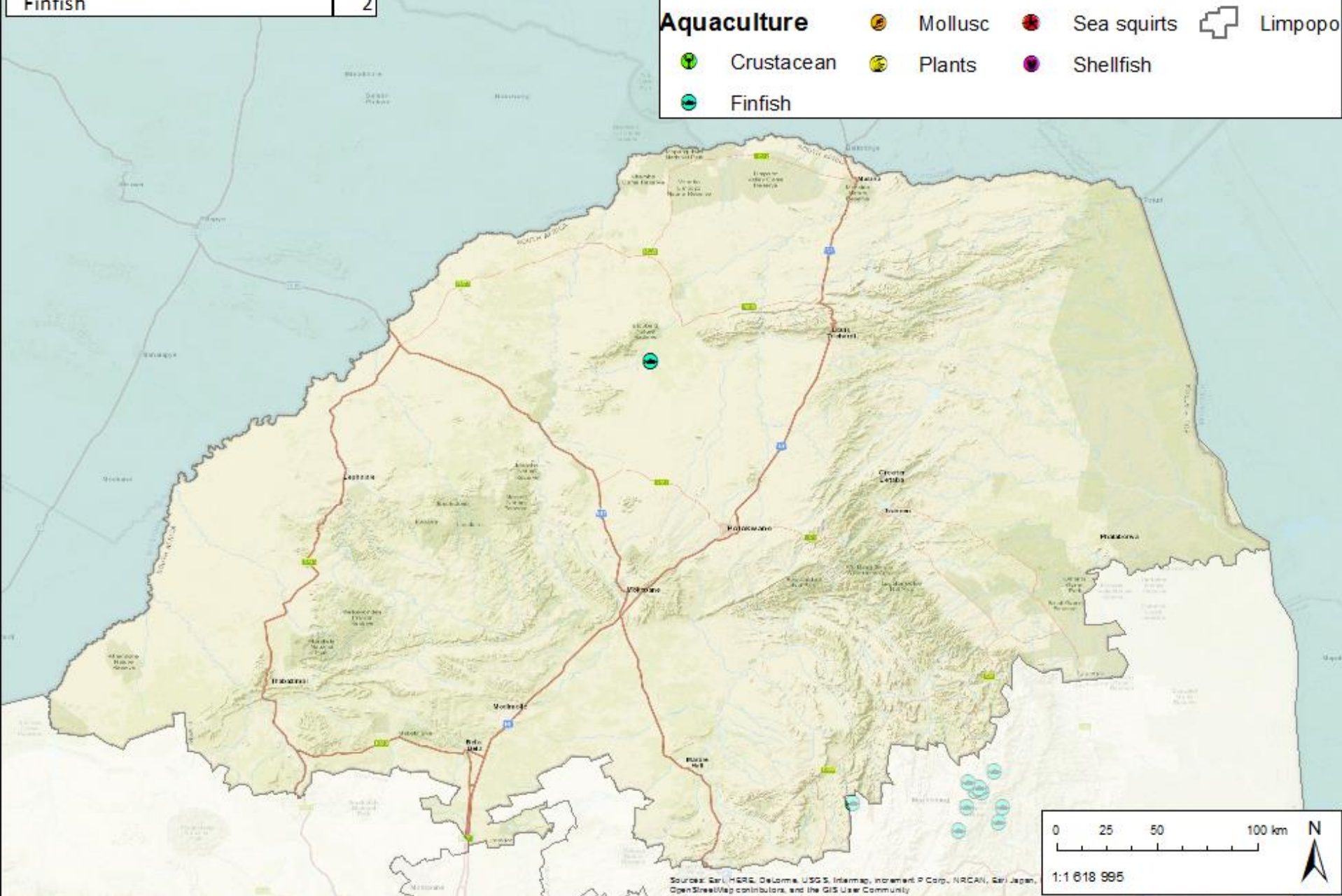
Sea squirts



Shellfish



Limpopo



MP	16
Finfish	16

Legend

Aquaculture



Crustacean



Finfish



Mollusc



Plants



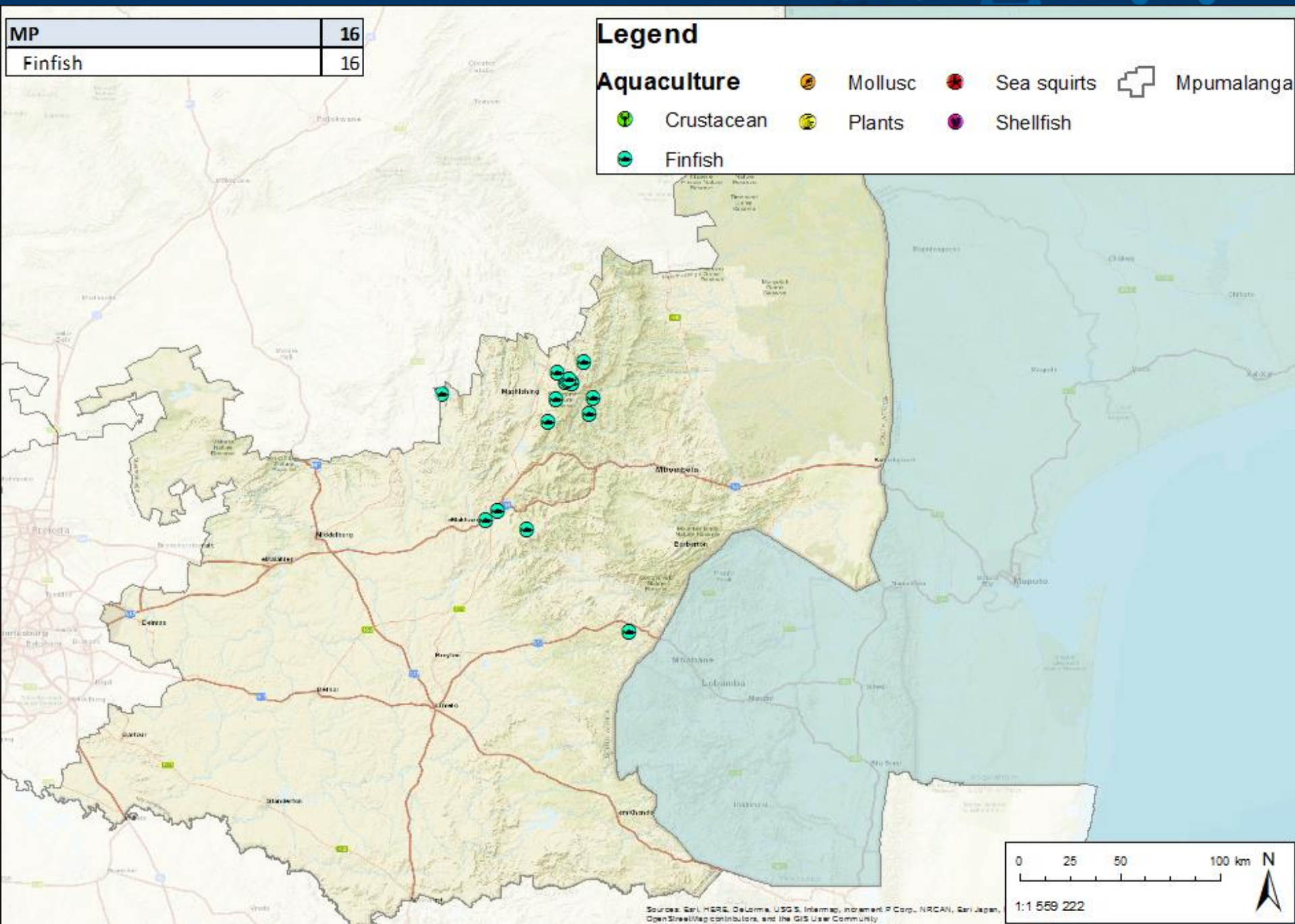
Sea squirts



Shellfish



Mpumalanga



KZN	11
Finfish	11

Legend

Aquaculture



Crustacean



Finfish



Mollusc



Plants



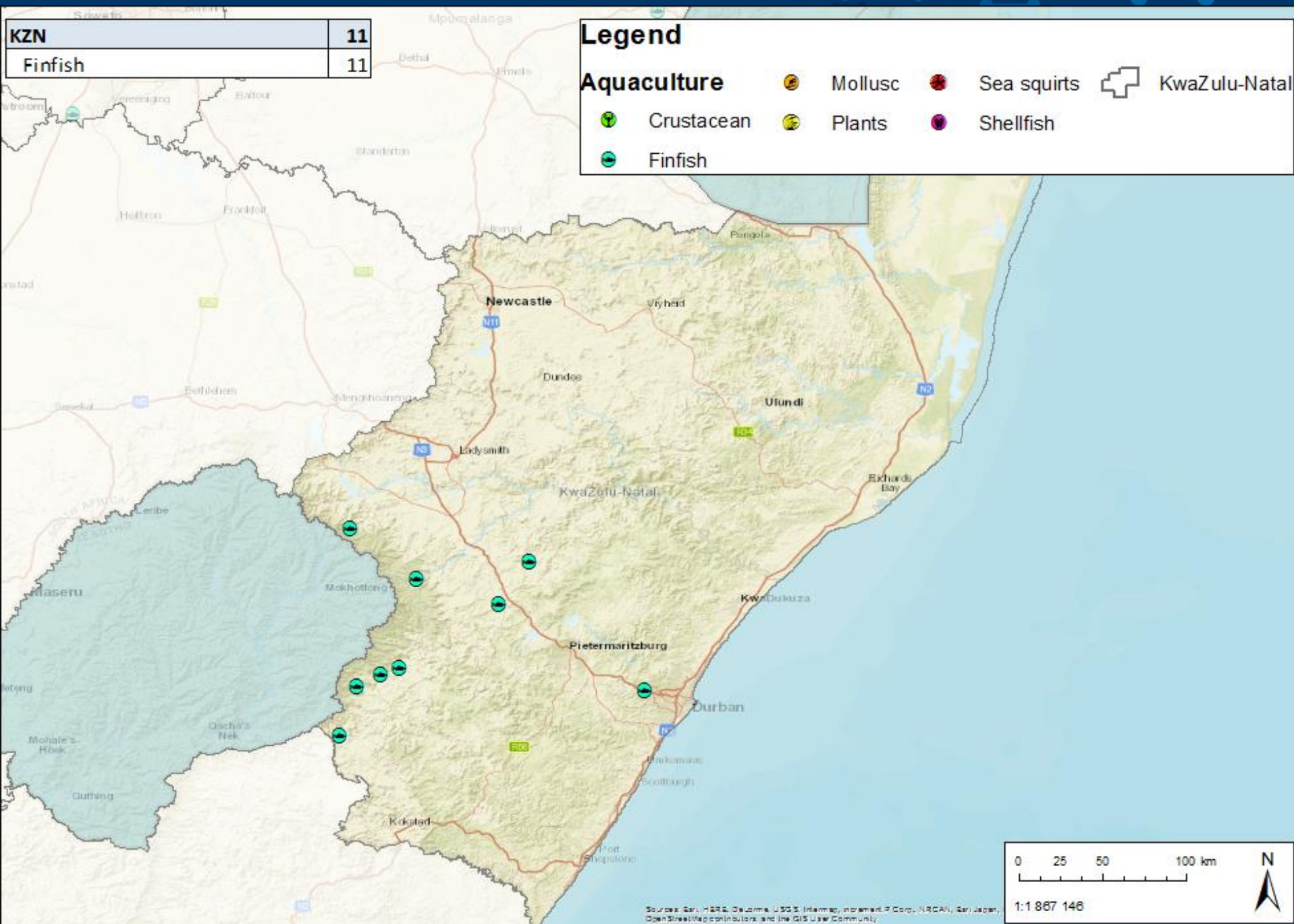
Sea squirts



Shellfish



KwaZulu-Natal



EC	32
Finfish	21
Shellfish	7
Mollusc	2
Plants	1
ADZ	1

Legend

Aquaculture



Crustacean



Finfish



Mollusc



Plants



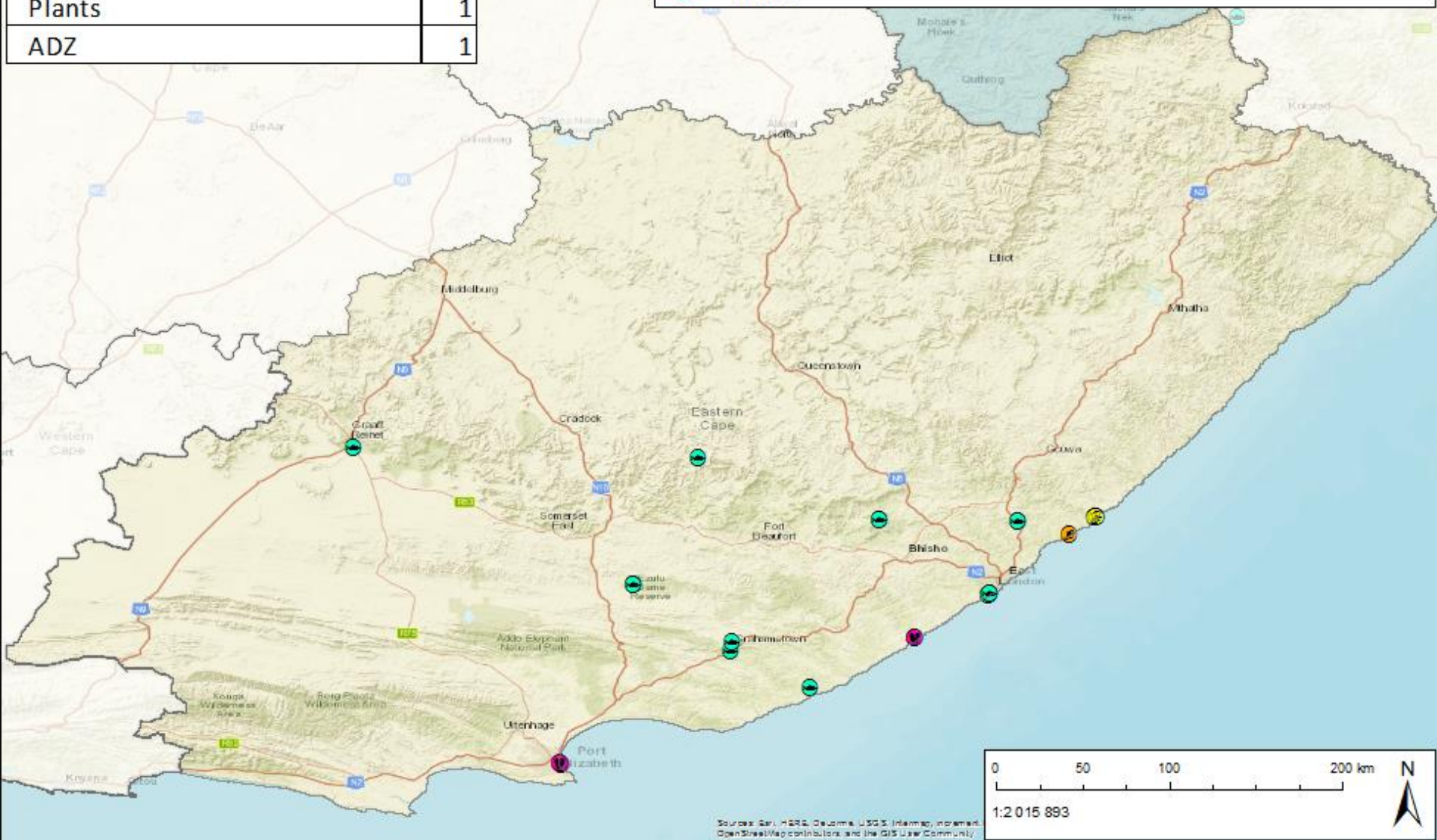
Sea squirts



Shellfish

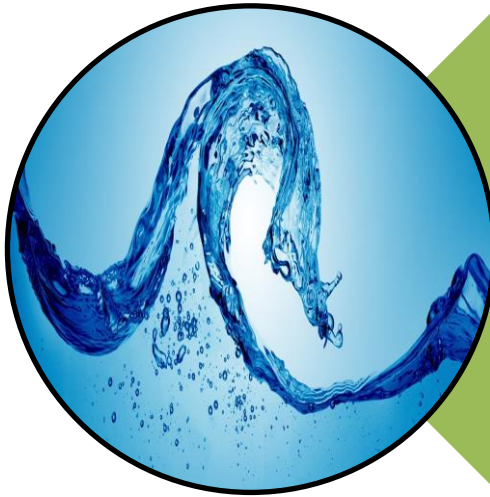


Eastern Cape



Mapping environmental attributes & siting criteria

Environmental requirements



Water source

- Ocean
- Estuaries
- Rivers
- Wetlands
- Dams & pans
- Groundwater



Water characteristics

- Quantity
- Quality
- Temperature
- Depth

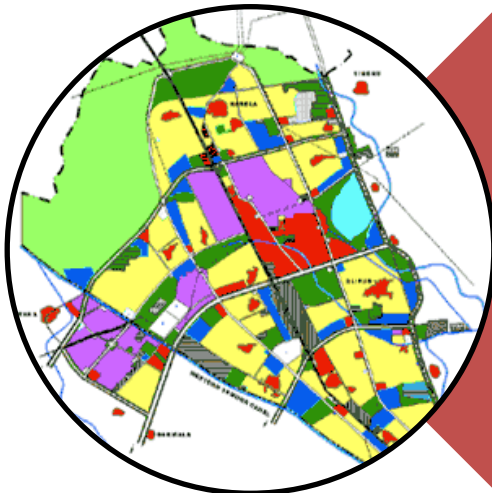
Mapping environmental attributes & siting criteria

Environmental constraints



Water

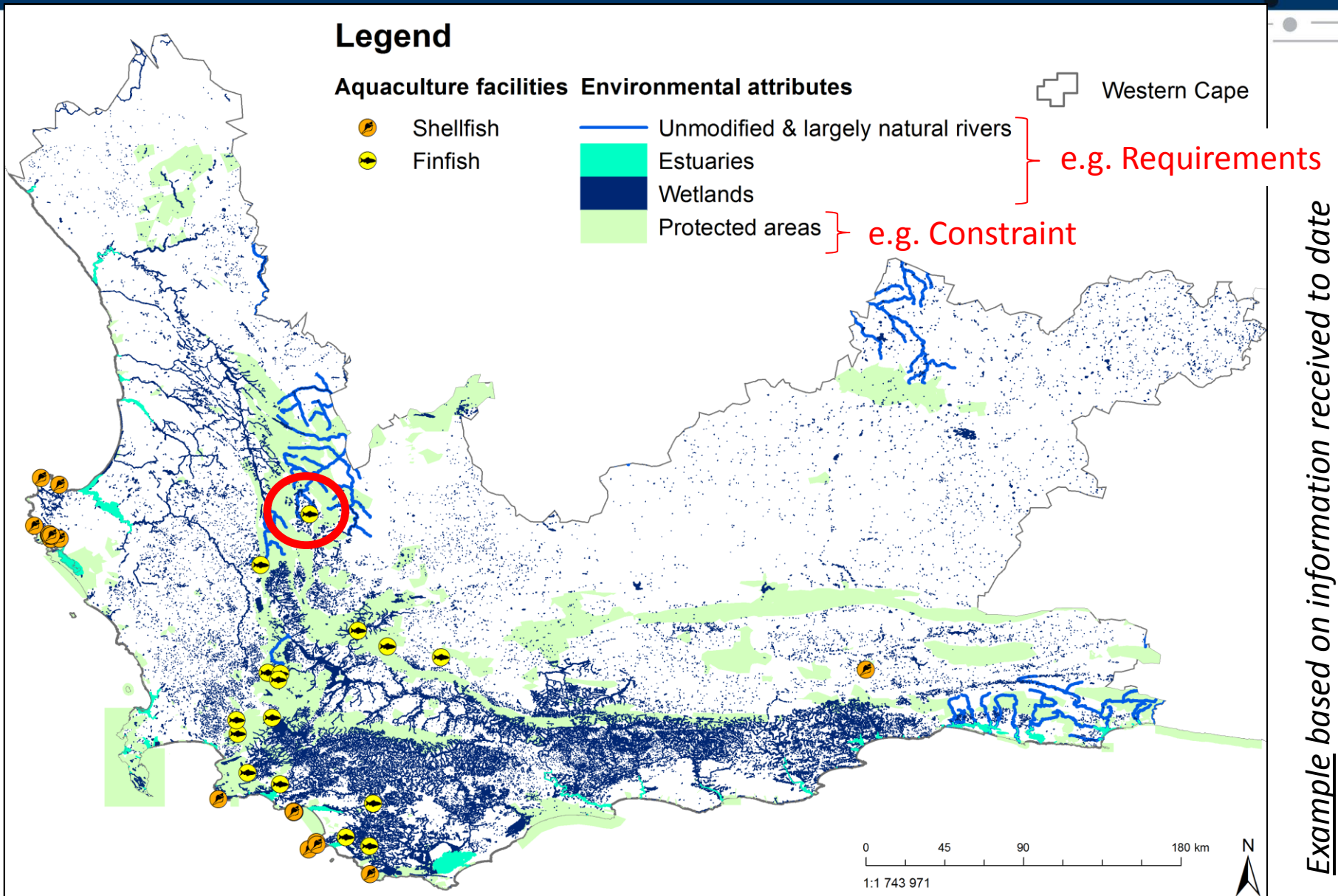
- Distance to harbour
- Salinity
- Turbidity
- Currents



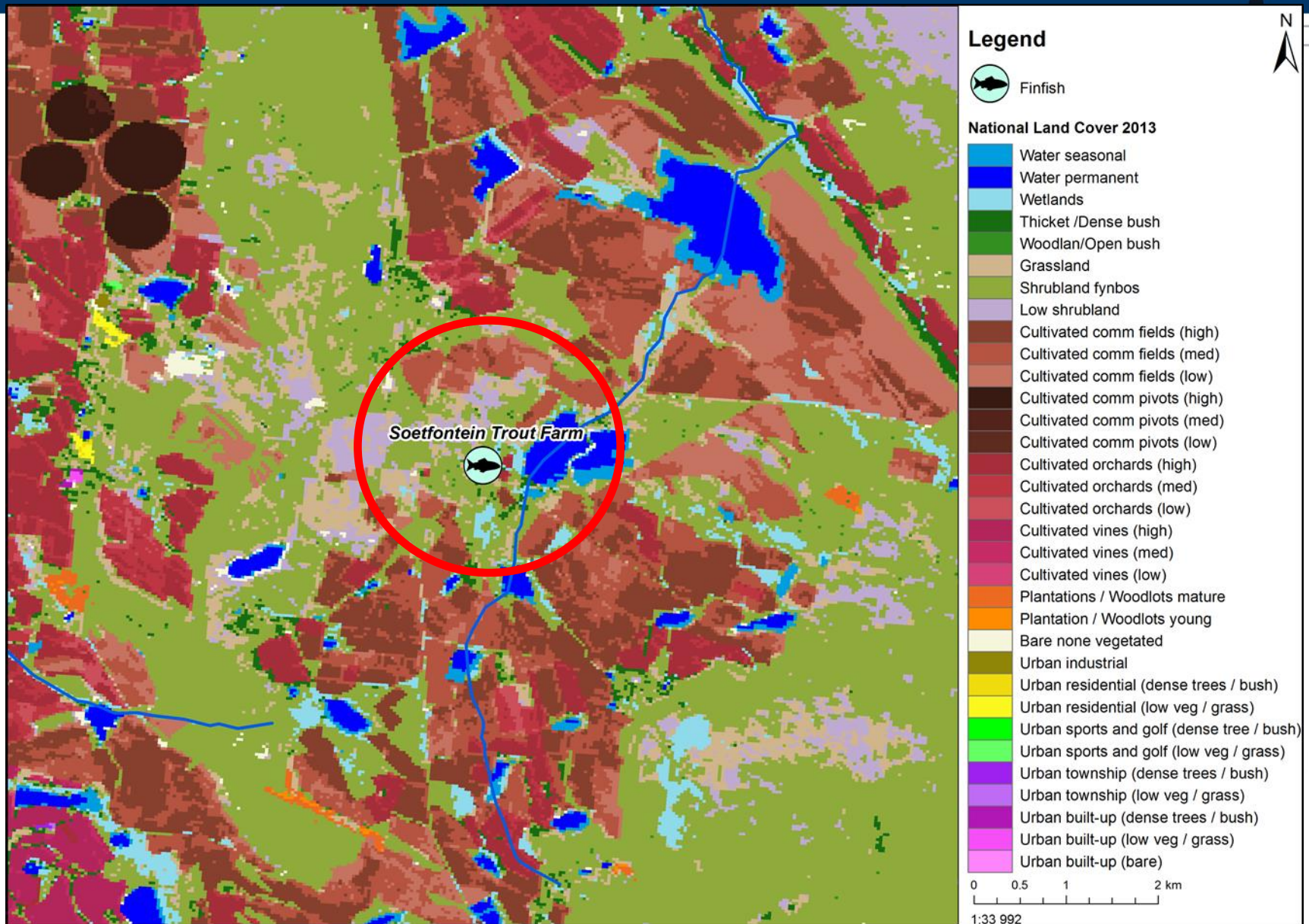
Land

- Land use and –zoning
- Tourist destinations
- Conservation planning

Mapping environmental attributes & siting criteria



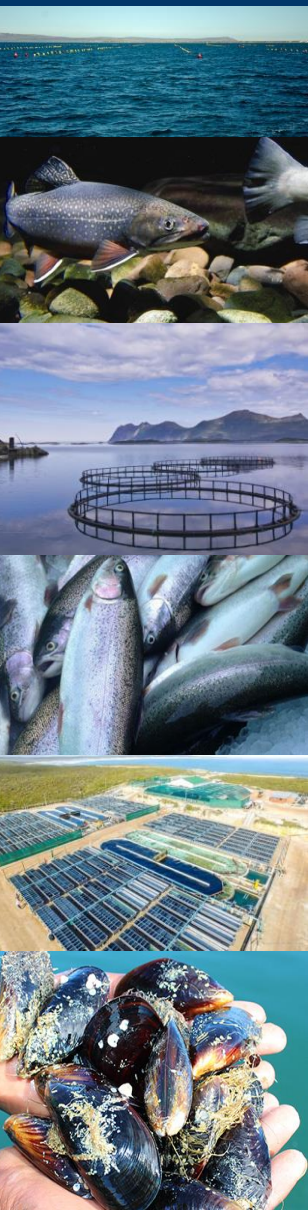
Mapping environmental attributes & siting criteria



Example based on information received to date

How can you contribute?

- Where are facilities located in each province?
- What types of aquaculture facilities (freshwater and marine) currently exist in each province?
- Which areas would you suggest/consider most suitable for further aquaculture development in each province?
- How can this SEA process benefit your department / organisation / institution / industry?



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Thank you

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National SEA for Aquaculture Development in South Africa Meeting Notes

National Strategic Environmental Assessment for Aquaculture Development in South Africa

Focus Group Meeting #1

Date: 30 September 2016
Venue: Mountain View Seminar Room, CSIR Stellenbosch
Focus areas: Northern Cape and Western Cape

Attendees:

Name	Organisation	Email
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National SEA for Aquaculture Development in South Africa Meeting Notes

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Warren Dreyer	DWS	dreyerw@dws.gov.za

Apologies / Invited but did not attend

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Pieter Van Zyl	WC DEADP	Pieter.vanZyl@westerncape.gov.za

National SEA for Aquaculture Development in South Africa

Meeting Notes

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Willem Coetzer	SAIAB	w.coetzer@saiab.ac.za;
Zaahir Toefy	WC DEADP	Zaahir.Toefy@westerncape.gov.za

List of acronyms

AASA	Aquaculture Association of South Africa
ADZ	Aquaculture Development Zone
AFASA	Abalone Farmers Association of South Africa
BCGT	Blue Cap General Trading (Pty) Ltd
BSASA	Bivalve Shellfish Farmers Association of South Africa
BSP	Blue Sapphire Pearls CC
CCT	City of Cape Town
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DBA	Deep Blue Aqua
DBAF	Doring Bay Abalone Farm (Pty) Ltd
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
ERG	Expert Reference Group
FAO	Food and Agricultural Organisation
FOSAF	Federation of South African Flyfishers
GMO	Genetically Modified Organisms
HIK	HIK Abalone Pty Ltd
JSP	Jacobsbaai Sea Products (Pty) Ltd
KMC	Kleinsee Mariculture CC
KOC	Knysna Oyster Company (Pty) Ltd
NBA	National Biodiversity Assessment
NC DENC	Northern Cape Department of Environment and Nature Conservation
NFEPA	National Freshwater Ecosystems Priority Areas in South Africa
NRE	Natural Resources and Environment (CSIR)
RU	Rhodes University

National SEA for Aquaculture Development in South Africa

Meeting Notes

SA	South Africa
SAIAB	South African Institute for Aquatic Biodiversity
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SBOC	Saldanha Bay Oyster Company Pty Ltd
SUN	Stellenbosch University
TSA	Trout South Africa
UCT	University of Cape Town
WC CN	Western Cape CapeNature
WC DEADP	Western Cape Department of Environmental Affairs & Development Planning
WC DEDAT	Western Cape Department of Economic Development and Tourism
WC DoA	Western Cape Department of Agriculture
WC TFA	Western Cape Trout Farmers Association
WDL	Wemmershoek Diagnostic Laboratory

National SEA for Aquaculture Development in South Africa

Meeting Notes

1. Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement

- Presentation by Lizande Kellerman (CSIR)
- Paul Lochner (CSIR) asked if there are any other stakeholders that are key to this process, but haven't been identified.
- Prof Mike Bruton suggested the inclusion of independent consultants and experienced research specialists at Rhodes University.
 - Paul Lochner (CSIR) responded that specialists will be consulted for evaluation of certain species and potential environmental impacts during the assessment phase of the SEA process.
 - Lizande Kellerman (CSIR) commented that the permitting requirements mainly focus on production systems, therefore both a production systems approach as well as aquaculture species will be considered.
- Kevin Ruck (BSP) asked if the aquaculture industry is informed and enquired whether the invitations went out to every relevant stakeholder. He also commented that the industry is already saturated with SEA type studies e.g. Aquaculture Development Framework, etc.
 - Lizande Kellerman (CSIR) responded stating that all stakeholders on the DAFF Marine Rights Register and heads/chairs of aquaculture associations were invited. Stakeholders in the freshwater aquaculture industry were asked to forward the invitation to other relevant interest and/or affected parties. Meeting participants were requested to provide the SEA Team with contact details of other stakeholders that are considered important for inclusion in the stakeholder database.
- Paul Luckhof asked if any fish processors are involved to bring a market perspective to the SEA process.
 - Sally Paulet (HIK) commented that the Abalone Farmers Association also represents processors.
- Ferdi Endemann (WC DoA) stated that Operation Phakisa has identified the market potential and economic viability of the aquaculture industry. He is concerned that there might be a strong environmental lobby without a counterbalance from industry.
- Gert Le Roux (SUN) commented that there are three ongoing assessments for ADZs in Saldanha Bay, Amatikulu and Algoa. He enquired if the SEA will look at economic perspectives as well or only at ADZs from location and environmental perspectives.
 - Lizande Kellerman (CSIR) responded stating that the SEA will assess the environment for suitable areas where aquaculture can be developed. There is an urgent need for location data for existing aquaculture facilities for mapping purposes since some are known but lat-long data is lacking. Location data for marine facilities are more readily available than for freshwater ones.
- Steven Nhlabathi (DWS) and Pierre de Villiers (CapeNature) asked about the SEA timelines and when the project is anticipated to be completed.

National SEA for Aquaculture Development in South Africa

Meeting Notes

- Lizande Kellerman (CSIR) responded stating that the SEA is planned as an 18-month project with anticipated completion date around December 2017.
- Steven Hlabathi (DWS) further enquired whether the identification of potential ADZs will be based on existing facilities; because there are more than 300 dams located nationally that could be considered for potential aquaculture development.
- Henk Stander (SUN) commented that alien aquaculture species can pose biodiversity and conservation concerns.
- Ferdie Endemann (WC DoA) stated that there is a document on net fisheries in freshwater research in South African Farmers Support. He further referred to Operation Phakisa documentation where work was done on aquaculture with alien species and that market potential of these species was identified, production volumes and the challenges of the marketability are also known. This should answer many questions on economic accountability.
- Khalid Salie (SUN) mentioned the massive demand for abalone and asked if the SEA will address the economic rationale.
 - Paul Lochner (CSIR) responded stating that the SEA will assess potential socio-economic opportunities and constraints. The commercial business case of aquaculture is outside the scope of the SEA.
- Pierre de Villiers (CapeNature) stated that there is a need to support aquaculture farmers.
- Ferdie Endemann (WC DoA) commented that DAFF is in the process of developing an inland fisheries policy for aquaculture.
- Pierre de Villiers (CapeNature) asked about the scope for risk assessment; will it only assess placement of aquaculture facilities or will it also consider the import of species/feeds/products and/or local harvesting i.e. upstream/downstream, supply chain, food chain, hence full aquaculture lifecycle assessment. He is also concerned about the import of contaminated water with e.g. black sea urchin. He stated that environmentally sensitive areas that have not yet been compromised should be excluded from aquaculture.
- Sally Paulet (HIK) stated that there are already areas where ADZs are priority, but some projects are not working. She asked what lessons can be learnt from these failures.
 - Lizande Kellerman (CSIR) responded that the Gansbaai aquaculture failed project is being investigated by CSIR (NRE) as part of the NBA and results will be incorporated into the SEA.
- Chris Fouche (DAFF) commented that there are strategy streams in technology for GMO sterile fish that cannot reproduce and cause environmental problems.
- Mike Bruton (RU/Imagineering) commented that aquaculture markets have been studied and the demand for aquaculture species are known, but markets and associated social aspects are dynamic and change all the time.
- Warren Dreyer (DWS) commented that it is important to include DWS in the Intergovernmental Authorisational Committee, because water is essential for aquaculture.

National SEA for Aquaculture Development in South Africa

Meeting Notes

- Simon Moganetsi (DEA) responded stating that DWS is to provide contact details of regional representatives to provide spatial data on provincial level to the SEA team.
- Additional questions/comments from participating stakeholders included the following:
 - The SEA should check aquaculture definitions of terms such as abalone ranching, wild fisheries, angling, etc. according to the FAO.
 - Wild seed supply of species into aquaculture industry is important to consider.
 - Traditional fishing methods e.g. kraals in Kosi Bay and Van der Kloof Dam should be considered.
 - Conflict of interest between introduced species, because one cannot alter the habitat to accommodate one species while destroying the habitat of another. Compatibility between different species in the same environment is important to consider.
 - In response to the question whether the ERG has been established yet, Lizande Kellerman (CSIR) responded stating that the ERG has been established and the first ERG meeting took in June 2016. The ERG consists of national and provincial scale competent authorities, NGOs, research, experts/specialists and industry. The next ERG meeting scheduled for 22 November 2016 and a wider invitation list has been developed drawing inputs from the Focus Groups and other meetings.

2. *Legislative context for the Aquaculture SEA*

- Presentation by Rudolph du Toit (CSIR)
- Henk Stander (SUN) mentioned that a consultant was asked to do a similar literary study for the Western Cape aquaculture industry and he will provide the SEA team with a copy. He further commented that there is currently very little to no policing of the aquaculture sector e.g. a student wanted to do research on Zambian Tilapia species at SUN, and experienced no checking at border controls or airports of stock brought into the country. Often people obtain permits, but nobody checks its validity.
- Ferdie Endemann (WC DoA) commented that a Western Cape permit to transport aquaculture species/products takes two to three weeks to issue, but in other provinces it could take months. He asked why permits are needed for aquaculture activities, but not for sheep and cattle farming.
- Kevin Ruck (BSP) commented that SA is very controlled and restricted by government regulation, though many people are unaware of Acts, permitting requirements, etc.
- Sally Paulet (HIK) asked why the aquaculture should be as strictly regulated or regulated at all and also used the sheep and cattle farming issue as an example. She commented that there is an urgent need to streamline and integrate current legislation.
- Paul Hardcastle (WC DEADP) commented that the SEA cannot be used to change legislation. One should be careful of stating there is “over regulation” without knowing the background

National SEA for Aquaculture Development in South Africa

Meeting Notes

on how and why the legislation was formed. Every sector is trying to emphasise its importance and thereby complicates the legislative landscape. Something like aquaculture straddles many sectors, therefore many requirements. This SEA process will not change legislation, but by integrating and streamlining the legal requirements could allow for reduction of approval processes.

- Simon Moganetsi (DEA) responded confirming that the outcomes of the SEA will not change legislation, but will provide for recommendations to streamline existing regulations. The purpose of the SEA is to try and streamline the legislation and identify priority areas to promote industry development in the ADZs.
- Henk Stander (SUN) commented that authority officials taking decisions need to have a basic understanding of aquaculture, because there they don't have the confidence to take a decision and that then drags out the process by asking for more information.
 - Rudolph du Toit (CSIR) responded that by law authority officials in charge should have some knowledge and experience of aquaculture activities.
- Mike Bruton (RU/Imagineering) commented that there is a lot to learn from Australia. Fish hybridize easily hence the threat of losing local genetic strains, which is not the case with cattle and sheep.
- Paul Hardcastle (WC DEADP) commented that the SEA should look at the different statutes and what is the typical information a regulator requires for decision making. He recommended that those information requirements should be addressed in the SEA.
- Additional questions/comments from participating stakeholders included the following:
 - The Oceans Bill should be considered in the SEA as Aquaculture should be in the Oceans Bill.
 - The SEA should closely consider Operation Phakisa documentation.
 - Asanda Njobeni (DAFF) responded that a National Spatial Planning Framework process is currently underway (which has been gazetted for review) and will inform the Aquaculture Bill, but will not substitute the SEA or the Bill.

3. Data capture and mapping exercise for aquaculture facilities

- Presentation by Luanita Snyman-van der Walt (CSIR)
- Based on discussions with participating stakeholders the following questions / comments were received:
 - It is important that the SEA team meet with provincial government and relevant industry stakeholders to gather more complete information re locality data of all marine and specifically freshwater aquaculture facilities in the Western Cape.
 - Reports compiled for the Algoa ADZ and the Gouritz catchments should be considered as an indication of the level to which data have been mapped (spatial data available from DAFF), in addition to other projects done by consultants for DEA and DAFF as there is much information available on aquaculture.

National SEA for Aquaculture Development in South Africa

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- Impacts of climate change should be considered in the mapping exercise e.g. Langebaan Lagoon; also to consider all land uses e.g. mining, conservation, IDZs, etc.
- Philip Ivey (SANBI) commented that the SEA should consider failed or decommissioned aquaculture facilities, as well as historic/closed projects and investigate reasons contributing to the failure of these projects, so we can learn from these project failures.
- The upstream and downstream impacts of an aquaculture facility on an ecosystem or water body should be considered, as well as the ecological sensitivity and current state of rivers. SANBI's Surveys and Mapping unit has a barrier layer (with natural and/or artificial barriers such as dams) that should be considered.
- Although there was a request to include Environmental Authorisation (EA) status of facilities in the SEA spatial database, Rudolph du Toit (CSIR) responded stating the CSIR does not currently know which facilities are permitted, which ones are legal and which ones are operating illegally, hence the exclusion of EA status in the spatial database at this stage.
- Will the SEA consider artificial reefs and fish parks, and if so is there spatial data available to map these features.
- Diseases of aquaculture species should be mapped and the potential risks associated with import of brood stock, etc. should be considered in the SEA process.
- The SEA should consider special planning of areas suitable for aquaculture, especially in terms of potential land use conflicts i.e. available land and sea space.
- The SEA should include the NFEPA data in the screening exercise.
- The particular feeding method at an aquaculture facility should be included as a data field.
- Provincial officials that can assist in the mapping exercise include Boyde Escott (KZN) and Mervyn Lotter (MTPA). Prof Olaf Weyl (RU) and Heather Terrapon (SANBI) would also be able to assist with spatial data such as cultural barriers and species suitability.
- Simon Moganetsi (DEA) commented that the outcomes from the SEA's spatial mapping exercise will feed into the National Environmental Screening Tool being developed by DEA.

End of Meeting

AGENDA

FOCUS GROUP MEETING

with authorities, industry associations, NGOs and research institutions

being held on 30 September 2016

for the Strategic Environmental Assessment (SEA)
for aquaculture development in South Africa

DATE	TIME	VENUE
Friday, 30 Sept 2016	09:30 – 14:30	Mountain View Seminar Room CSIR, Jan Celliers Str, Stellenbosch

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:30 – 10:00	Arrival & registration with tea / coffee	
10:00 – 10:10	Welcome and introductions	DAFF
10:10 – 10:45	Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement	CSIR
10:45 – 11:20	Applicable legislation and permits/licenses	CSIR
11:20 – 12:30	Data capture and mapping of existing aquaculture farms/projects based on national data – inputs from meeting participants	CSIR
12:30 – 13:00	Lunch	
13:00 – 14:15	Findings from literature review: key challenges and impacts, siting criteria and environmental attributes to inform the national-scale mapping of opportunities and constraints – inputs from meeting participants	CSIR
14:15 – 14:30	Way forward and closure	DEA

For any enquiries, please contact: Karabo Mashabela (CSIR), tel.: 021-888 2482 email: kmashabela1@csir.co.za



National SEA for Aquaculture Development in South Africa

Meeting Notes

National Strategic Environmental Assessment for Aquaculture Development in South Africa

Focus Group Meeting #2

Date: 03 October 2016

Venue: NCPC Training Room, CSIR Pretoria

Focus areas: Gauteng, Free State, Limpopo and North West

Attendees

Name	Organisation	Email
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National SEA for Aquaculture Development in South Africa

Meeting Notes

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Apologies / Invited but did not attend

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National SEA for Aquaculture Development in South Africa

Meeting Notes

List of acronyms

AASA	Aquaculture Association of South Africa
ADZ	Aquaculture Development Zone
ARC	Agricultural Research Council
COGTA	Cooperative Governance and Traditional Affairs
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DRDLR	Department of Rural Development and Land Reform
DWS	Department of Water and Sanitation
FS DARD	Free State Department of Agriculture and Rural Development
GA	General Authorisation
GDARD	Gauteng Department of Agriculture and Rural Development
IDC	Industrial Development Corporation
LEDET	Limpopo Department of Economic Development, Environment and Tourism
MTPA	Mpumalanga Tourism and Parks Agency
NRC	National Research Council
NW DREAD	North West Department of Rural, Environment and Agricultural Development
NWA	National Water Act 36 of 1998
NWU	North West University
RU	Rhodes University
SA	South Africa
SADC	Southern African Development Community
SALGA	South African Local Government Association
SANBI	South African National Biodiversity Institute
SPCA	Speak, Protect and Care for Animals
TSA	Trout South Africa
UL	University of Limpopo
UP	University of Pretoria
WRC	Water Research Commission
WULA	Water Use License Application

National SEA for Aquaculture Development in South Africa

Meeting Notes

1. Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement

- Presentation by Lizande Kellerman (CSIR)
- Catherine Greengrass (GAIA) asked what the terms ‘prioritise’ and ‘incentivise’ mean. She commented that these identified areas must not only be suitable from an environmental perspective, but also for supporting infrastructure, etc.
 - Paul Lochner (CSIR) responded stating that the scoping level assessment that forms part of the SEA will aim to coordinate the various authorisations and streamline the level of environmental assessment required by applicants.
- Etienne Hinrichsen (Aqua Eco) commented that processing and post-processing permits should also be considered in the SEA process.
- Heidi van Deventer (CSIR) asked about estimated timeframes of the SEA process. She also enquired whether, based on the literature review, aquaculture structures or the species pose the biggest risk or impact on the receiving environment.
 - Lizande Kellerman (CSIR) responded stating that the SEA is planned over an 18-month period with an estimated completion date in December 2017.
- Axel Tarrisse (Insect Protein) stated that the government should allow aquaculture to be developed without a permit up to 2 000 tonnes per year with regular inspections and ongoing monitoring of operations to ensure mitigation of negative impacts.
- Johan Theron (UL) commented that the biggest constraint for the aquaculture industry in SA is limited availability of freshwater.
- Etienne Hinrichsen (Aqua Eco) commented that SADC is developing aquaculture tools at a regional level upon which Asanda Njobeni (DAFF) responded asking Mr Hinrichsen to share a copy of this document with the SEA team.
- Millicent Solomons (DEA) commented that there are different branches within DEA e.g. Oceans and Coast, and representatives from all these branches should be included in the SEA stakeholder database, as well as relevant provincial representation.
 - Paul Lochner (CSIR) responded confirming that the SEA team is looking for a single entrance point into the various participating departments which can distribute communications about the SEA through the appropriate channels e.g. Simon Moganetsi for DEA.
- Valdi Pereira (TSA) suggested that SALGA be included on a local government level instead of COGTA.
- Ben Zaaiman (NWU) commented that the first question from funders of aquaculture development is usually whether an applicant has all the required authorisations in place. He provided a contact person at Land Bank, Mahindra Kara who can assist the SEA team in this regard. He also suggested that the SEA should provide feedback to funders in the industry.
- Andre Hoffman (MTPA) provided a contact person at the University of Pretoria, Dr. Johan Steyl to be included under Research in the SEA stakeholder database.

National SEA for Aquaculture Development in South Africa

Meeting Notes

- Based on further discussions about additions to the SEA stakeholder database, the following questions/comments were received from participating attendees:
 - Does the IDC play a role in the SEA process?
 - Lizande Kellerman (CSIR) responded stating that the IDC was contacted, but no response has yet been received.
 - Paul Lochner (CSIR) confirmed that financial/funding institutions are included on the SEA stakeholder database.
 - Asanda Njobeni (DAFF) commented that COGTA should be included under National Government in the SEA stakeholder database.
 - Johan Theron (UL) suggested that the SPCA should be participating in the SEA.
- The scope of species included in the SEA was discussed:
 - Johan Theron (UL) commented that ornamental fish farmers and pet shops, considered moneywise the biggest aquaculture industry in SA, are not represented on the SEA stakeholder database.
 - Michelle Pretorius (DAFF) commented that although the ornamental fish industry has a larger potential to distribute alien invasive fish species around the country than e.g. Tilapia, it is not possible to investigate all aquaculture species during the SEA process. Furthermore, there is a very wide range of ornamental species.
 - Johan Theron (UL) further commented stating that the financial gain from ornamental fish is much larger than from Tilapia of other food fish species e.g. Tilapia = R 46 per kg vs Ornamental fish = R 1 000 per kg. And ornamental fish are very efficient in terms of water use per kg fish grown.
- Johan Theron (UL) asked what impact it will have on the species whether a particular species is either included or excluded from the SEA process.
 - Paul Lochner (CSIR) responded stating that if a species does not form part of the SEA process now, it is business as usual and the existing legal processes will have to be followed. Additional species could be assessed and added later, following completion of the SEA.
- Johan Kooij (Catfish Supreme) asked that if a specific species is not included in the scope of this SEA, how that species will be affected if it is produced on large scale.
 - Asanda Njobeni (DAFF) responded stating that government is not in competition with industry, but the two are in collaboration; government is providing for both in all sectors. Development must be regulated and government is supporting industry. Operation Phakisa is also now assisting industry. DAFF has a MoU with universities on aquaculture development, hence DAFF's support to enrich the SEA project.
- Rogan Field (AASA) commented stating that in SA context aquaculture is seen as a vehicle for social development. Catfish is a hardy species which is an important characteristic when you look at unskilled labour and skills development. Catfish can also withstand mechanical failures, such as a pump breaking, for much longer periods than species like trout that are

National SEA for Aquaculture Development in South Africa

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very sensitive to water temperature.

2. *Legislative context for the Aquaculture SEA*

- Presentation by Lizande Kellerman (CSIR)
- Comments received from attending DWS officials include:
 - Based on DWS Resource Management Plans for SA dams, an applicant is required to apply for a permit before utilising a dam for aquaculture activities;
 - DWS believes that through this stakeholder engagement process the SEA will assist with job creation for rural farmers in the aquaculture industry.
 - Lizande Kellerman (CSIR) responded that the aim of this SEA is to develop a pre-assessment tool that will enable competent authorities to screen the environment for ecological sensitivity and suitability for aquaculture prior to development.
- Johan Theron (UL) commented that the WRC is tasked with researching water usage for agriculture, aquaculture and industry in general. Rhodes University is doing a big project on SA dams and how these can be used for commercial aquaculture purposes since all state-owned dams are currently off limits for commercial purposes. Contact person is Gerhard Backeberg (WRC/RU).
- Etienne Hinrichsen (Aqua Eco) commented on a possible situation of programme paralysis i.e. a great initiative gets launched and authorities say “wait until the SEA is done”; however, during this SEA process industry should clearly understand it is business as usual. He added that SPLUMA is important to get access to resources when considering permitting requirements e.g. alien invasive species, protected areas, etc.
- John Dini (SANBI) asked how the new Aquaculture Bill will influence on the industry.
 - Asanda Njobeni (DAFF) responded that harmonisation and cooperation between sister departments e.g. DEA, DAFF and DWS must occur with regards to the Aquaculture Bill.
- David Fincham (BRT) commented that currently certain aquaculture permits have a short validity period; at the time of applying for the next permit, the existing one has already expired.
 - Paul Lochner (CSIR) responded confirming that the SEA will aim to streamline and align existing legislation, in particular current permitting requirements in order to reduce compliance complexities and avoid cascading effect in permitting applications.
 - DAFF has commissioned the Lean Institute Africa to conduct a desktop study re-engineering the current aquaculture business processes to provide a better understanding of the current legal and economic environment in which aquaculture activities are governed.
- Johan Theron (UL) commented that costs associated with certain aquaculture permits are very high and with short validity periods it is costing farmers a lot of unnecessary money.
- Wietsche Roets (DWS) spoke about the National Water Act that is based on maintaining resource water quality. DWS is developing new General Authorisation (GA) regulations that could be applied, instead of requiring WULAs, in order to facilitate aquaculture development in areas that have been pre-assessed. He also confirmed that water is a scarce resource and it must be protected and regulated properly.

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- Andre Hoffman: (MTPA) confirmed the existence and application of the Mpumalanga Nature Conservation Act 10 of 1998.

3. *Data capture and mapping exercise for aquaculture facilities*

- Presentation by Luanita Snyman-van der Walt (CSIR)
- Based on discussions about the SEA mapping exercise, the following questions/comments were received from participating attendees:
 - What is defined as “commercial scale” aquaculture?
 - How to map subsistence vs “artisanal” vs commercial scale aquaculture;
 - The majority of SA farmers would fall within the “artisanal” scale;
 - Include volumes of fish production (e.g. numbers of fish per month or per year);
 - Look at other international countries for regulations on volumes per time (e.g. monthly) such as Egypt, France, Turkey, Norway, etc.;
 - Obtain all Operation Phakisa project locations from DAFF;
 - Are we looking for criteria to rate the sensitivity of the receiving environment to aquaculture development, or identifying the environmental requirements for aquaculture development;
 - Compliance mapping – where would it be easier to comply when farming certain species;
 - Identify compatible land uses to accommodate aquaculture;
 - Suitability of areas may be more of an issue in the marine environment;
 - Group types of production systems (e.g. cages, ponds, recirculation aquaculture systems, flow-through systems, ranching etc.) and facilities into impacts, rather than looking at specific species.
- Mary Jane Thaela-Chimuka (ARC) commented that Provinces are trying to compile lists of aquaculture facilities and there are many people operating informally. She enquired about what would constitute a typical aquaculture facility.
- Andre Hoffman (MTPA) asked that all failed or decommissioned aquaculture projects be mapped and the reasons for failure be investigated.
 - Johan Theron (UL) responded stating that Rohani & Brits (Rhodes University) have published a document on the failure of aquaculture projects that could be considered in the SEA process.
- Rogan Field (AASA) commented that there is a general misconception that aquaculture is water intensive, but in reality it is much less water intensive than other agricultural practices. One idea is to first use water for aquaculture and then uses the outflow water from the aquaculture facility for crop irrigation. Therefore existing agriculture (with irrigation water available) is a good attribute for siting aquaculture facilities. He further mentioned that wastewater resulting from fish farms is nitrogen-rich and useful in big irrigation schemes. It is therefore beneficial to integrate aquaculture activities with

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agriculture (conventional farming practices) e.g. Thailand and Israel.

- Mary Jane Thaela-Chimuka (ARC) commented that Limpopo has started integrating agriculture with aquaculture, commonly known as 'aquaponics'.
- Etienne Hinrichsen (Aqua Eco) confirmed that there is sufficient amount of literature available on the topic of aquaponics. However, a successful aquaculture operation is usually a farmer with access to a niche habitat. He emphasized the importance of getting the scaling right using technology that can enable any aquaculture activity anywhere in any suitable environment. He further commented on the NRC being very particular on processing of fish.
- Neville Boardman (Biocentric) commented that the aquaculture industry is looking for a guideline to understand what is required of them in terms of a regulatory framework. Problems exist with identifying opportunities and creating regulations around where opportunities are thought to be located based on a mapping exercise at a macro perspective, and then exclude permitting of certain species in other areas. For example, Tilapia may not be suitable for the Highveld in natural production systems, but it can be out engineered and environmental management plans needed to manage and monitor operations.
 - Michelle Pretorius (DAFF) responded stating that the aim is not to incentivise aquaculture in certain areas and stop it elsewhere, but rather to promote and fast-track development in identified areas.
 - Paul Lochner (CSIR) summarized the discussion stating that if only natural conditions are considered, opportunities that can be created through technology could be missed. It is important to assess the risks associated with development; whether it is an environmental risk or a socio-economic risk. However, the SEA process involves an environmental assessment, hence the focus on the environmental perspective.
 - Most important attributes/aspects to consider during the SEA include land zoning, development footprint, water quality and quantity, and whether water resulting from aquaculture activities is being introduced back into natural systems.
 - Other countries do not have specific zoning for aquaculture development, thus the SEA should focus on what is hampering the industry development and limiting job creation.
- Etienne Hinrichsen (Aqua Eco) commented that state-owned dams could show potential for aquaculture development, but dams have target quality thresholds which requires an aquaculture facility to adhere to these thresholds.
- Rogan Field (AASA) commented stating that farming a species outside of its natural distribution range mitigates the risk of escapees becoming invasive. They would not be able to survive outside the technologically controlled systems e.g. technology of trout systems. In conclusion, there are not many naturally occurring habitats suitable for farming

National SEA for Aquaculture Development in South Africa

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freshwater fish. He further commented that fish processing needs to meet general abattoir standards.

- Johan Theron (UL) commented that Prof Olaf Weyl at RU has mapped the suitability of SA natural water systems for aquaculture potential. The most important aspects relate to water quality when entering an aquaculture facility and when exiting the system through potential discharge back into a natural system. He further stated that ADZs may curb funding possibilities i.e. funding could be provided inside of an ADZ, but not when located outside the ADZ.
- Wietsche Roets (DWS) gave a presentation on the NWA and explained that DWS has a new approach to issuing a General Authorisation (GA) based on a Risk Assessment that has to be done by a SACNASP accredited scientist. If the risk is low, then the GA is adequate. If the risk is medium/high, then a WULA is required. It is likely that the low sensitivity areas from the SEA could correspond with the low risk areas.
- Wietsche Roets (DWS) stated that the SEA should consider impacts to water flow, quality, geomorphology, habitat and biota as interconnected aspects of aquatic systems.
- Neville Boardman (Biocentric) stated that the SEA should include a guideline outlining the permitting requirements e.g. GA/WULA pertaining to aquaculture activities.
- Etienne Hinrichsen (Aqua Eco) alerted the SEA team to the existence of a document, published in 2006 comparing different aquaculture types with different water uses.
- In response to a question whether the SEA will influence the WULA process and DWS is planning on doing to streamline the permitting requirements, Wietsche Roets (DWS) responded stating that it will not directly influence the process, but it will enable the identification of sensitive areas where GA may be easier to apply for.
 - Paul Lochner (CSIR) responded that in low risk areas from a water quality point of view, the SEA will seek to incorporate norms and standards which must be adhered to.
 - Asanda Njobeni (DAFF) further responded confirming that the Aquaculture Bill will seek to streamline and integrate the decision making framework.
- Paul Lochner (CSIR) summarized the discussion in the following key questions:
 - What is the sensitivity of the receiving environment to aquaculture development? If it is very high sensitivity, this could be “no go”. If it is low sensitivity, this could be suitable for aquaculture.
 - For different species, what are the different aquaculture production systems that can be used? (i.e. focus on the different production systems, rather than individual species). And what is the predicted impact of those systems on the environment?
 - What are the minimum regulatory requirements to be applied based on the sensitivity of the environment and the type of production system?
 - Based on an opportunities and constraints analysis, what areas are most suitable for aquaculture development? The point was made that most areas on South Africa

National SEA for Aquaculture Development in South Africa

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are suitable for freshwater aquaculture provided there is water available and the right technology is applied (e.g. heating/cooling of water, recycling of water).

End of Meeting

AGENDA

FOCUS GROUP MEETING

with authorities, industry associations, NGOs and research institutions

being held on 3rd October 2016

for the Strategic Environmental Assessment (SEA)
for aquaculture development in South Africa

DATE	TIME	VENUE
Monday, 03 Oct 2016	09:30 – 14:30	NCPC Training Room, Building 10 CSIR, Meiring Naude Rd, Pretoria

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:30 – 10:00	Arrival & registration with tea / coffee	
10:00 – 10:10	Welcome and introductions	DAFF
10:10 – 10:45	Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement	CSIR
10:45 – 11:20	Applicable legislation and permits/licenses	CSIR
11:20 – 12:30	Data capture and mapping of existing aquaculture farms/projects based on national data – inputs from meeting participants	CSIR
12:30 – 13:00	Lunch	
13:00 – 14:15	Findings from literature review: key challenges and impacts, siting criteria and environmental attributes to inform the national-scale mapping of opportunities and constraints – inputs from meeting participants	CSIR
14:15 – 14:30	Way forward and closure	DEA

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National SEA for Aquaculture Development in South Africa Meeting Notes

National Strategic Environmental Assessment for Aquaculture Development in South Africa

Focus Group Meeting #3

Date: 04 October 2016
Venue: Citrus Research Institute Boardroom, Nelspruit
Focus areas: Mpumalanga

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National SEA for Aquaculture Development in South Africa

Meeting Notes

List of acronyms

CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DRDLR	Department of Rural Development and Land Reform
DWS	Department of Water and Sanitation
HOD	Head of Department
KOBWA	Komati Basin Water Authority
MP DARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
MP	Mpumalanga Province
MTF	Mpumalanga Trout Forum
MPA	Mpumalanga Tourism and Parks Agency
NDP	National Development Plan
NWA	National Water Act of 36 of 1998
SA	South Africa
SANBI	South African National Biodiversity Institute
TAASA	Tilapia Aquaculture Association of South Africa
TSA	Trout South Africa
WULA	Water Use License Application

National SEA for Aquaculture Development in South Africa

Meeting Notes

1. Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement

- Presentation by Lizande Kellerman (CSIR)
- Dee Malcomess (Falls Fish Farm) suggested the Department of Labour be included as a stakeholder in the SEA process as aquaculture contributes largely to job creation.
- Further suggestions are that project funding investors e.g. Land Bank and environmental consultants, be included in the stakeholder engagement process.

2. Legislative context for the Aquaculture SEA

- Presentation by Lizande Kellerman (CSIR)
- Patricia Noku (MP DARDLEA) stated that all aquaculture permits in Mpumalanga are currently issued by MTPA as they are the permit issuing body in MP.
- Len Coetzer (MP DARDLEA) commented that the Mpumalanga Nature Conservation Act has replaced the Nature Conservation Ordinance. He also mentioned that it is difficult to obtain a permit to import Tilapia as this species is considered a hybrid.
- Stephen Goetze (MP DARDLEA) commented that Red breasted Tilapia is allowed into MP, but not Mozambican Tilapia.
- Gerrie van der Merwe (MTF/TSA) commented that permits should be for a species that can be harmful or dangerous to the environment; trout has been in the country for more than 120 years. He asked why does trout need to be regulated so strictly.
 - Asanda Njobeni (DAFF) responded stating that different provinces regulate aquaculture differently, there is no common approach. The SEA will help achieve alignment between provinces in terms of governance.
- Gerrie van der Merwe (MTF/TSA) commented that the outcome of the SEA will show if there is new investment potential in aquaculture. During the Operation Phakisa labs in Durban it was decided/ or agreed that where trout occur in the country permits will not be required, but where they do not occur all efforts will be made not to introduce them into these areas. The trout mapping by SANBI needs to be followed up with a process of assessing the environmental sensitivities. It has been agreed where trout should not occur and why they should not be there, thus there is no need for an additional layer of legislation to be created that may inhibit investment.
 - Asanda Njobeni (DAFF) confirmed that there is a market for trout in South Africa; SA is not producing enough for the present consumer demand, hence the opportunity. Legislation needs to enable the poorer farmers to be able to cultivate fish for subsistence without being criminalised and their catch confiscated. Additionally farmers are not protected in the event that they lose fish due to floods or disease. This is aimed to be achieved through the Aquaculture Bill.
- Gerrie van der Merwe (MTF/TSA) commented that the industry is not against regulation per se. For the industry, enabling means to be able to do business and yet government wants to control the industry; if there is no harmony between industry and the competent authorities there will be no potential for investment. By over-regulation, government can kill investment opportunities. He further stated that aquaculture was developed in SA as mixed farming e.g. pigs and Tilapia. There are some risks associated with aquaculture,

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especially to biodiversity, but generally low-risk activities when compared to e.g. sewage discharge in some coastal towns. The aquaculture industry is very strictly regulated and the penalties are very extreme. One transgression in terms of the norms and standards can result in an operation being ceased; therefore it is the opinion of industry that norms and standards would not be desirable. Also, rectification in terms of NEMA takes very long which is further constraining the industry.

- Len Coetzer (MP DARDLEA) said that the development of norms and standards that are properly structured and adapted according to the receiving environment are welcomed. Current legislation for conservation officials deals with economic development and tourism, but MTPA is being restructured in such a way that they will only deal with the conservation areas are within their mandate. From agriculture, one always tries to get the best product from the species one is farming with. Even if they restrict Tilapia (Mozambican) it means that when the animal is selected for performance indicators, then one is also polluting the poor genes that conservation is trying to protect. Selection of high performance species is the preferred option. He shared an example of a dam that was downgraded to “no value for conservation”, but people are prosecuted for catching fish / aquaculture activities without a permit. The issue appears to be the non-alignment of conservation and agriculture.
 - Lizande Kellerman (CSIR) responded stating that aquaculture is considered an agricultural activity with potential biodiversity/conservation risks, but in MP it is mainly governed by the department who has an environmental mandate.
- Gerrie van der Merwe (MTF/TSA) is of the opinion that current agricultural legislation is sufficient to govern aquaculture, therefore the need for a general laws amendment process instead of having a new Aquaculture Act.
 - Simon Moganetsi (DEA) responded stating that the purpose of the SEA is to coordinate approvals and reduce over-regulation of the industry and that there are also proposed amendments to the EIA regulations in this regard.
- Myron Cort (Falls Fish Farm) commented that it took five years for DWS to issue their farm with a Water Use License. There were also the issues of status change to sewage farms, e.g. water taps and pipes having to be painted like a sewage farm.
 - Lizande Kellerman (CSIR) responded stating that DWS is considering General Authorisation for aquaculture in cases where there is low risk to the water resource. Only if one would trigger activities in the NWA beyond known thresholds there would be a requirement for a WULA.
- Dee Malcomess (Falls Fish Farm) commented that the time and cost involved for the WULA requirements for their farm could have paid half an annual salary of a farm worker. Also, it should be the DWS's responsibility to do onsite monitoring and testing, because farmers are struggling to survive and paying huge taxes. This could negatively impact on emerging farmers who want to development aquaculture farms.
- Len Coetzer (MP DARDLEA) commented that Aquaculture is a renewable resource that can help government to achieve their goals in terms of the NDP re: poverty alleviation and job creation. Aquaculture development should thus be done in a proper manner with an agricultural output as focus.

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3. *Data capture and mapping exercise for aquaculture facilities*

- Presentation by Luanita Snyman-van der Walt (CSIR)
- Len Coetzer (MP DARDLEA) commented MTPA has embarked on a biodiversity impact study of MP and mapped all sensitive areas due to high density of mining operations. This mapping exercise of the province has identified all areas available for aquaculture development with lowest sensitivity. Areas of highest sensitivity have been declared after which then DRDLR allocates these pieces of land to new owners who do not know anything about the biodiversity risk of these areas. Areas that were declared as being of high endemic value have now been transformed by human settlements, hence this conflict between nature conservation and agriculture, rural development and land reform authorities.
 - Luanita Snyman-van der Walt (CSIR) responded stating that the SEA will aim to develop sensitivity screening of specific sites for aquaculture development.
- Stephen Goetze (MP DARDLEA) commented that a dataset with spatial data is available containing the biodiversity conservation map for Mpumalanga and associated sensitivity mapping done by SANBI. The conservation plan also shows buffer zones and sensitive areas. Patricia Noku (MP DARDLEA) that this data can be sourced by means of a formal written request to the HOD.
- Further inputs from participating stakeholders are as follow:
 - Important to note the development history of the aquaculture industry to understand the social-economic benefit of aquaculture.
 - Huge opportunities in utilizing Eskom and DWS-owned water bodies (dams) for aquaculture development and community empowerment.
 - The SEA should consider new, existing and decommissioned facilities.
 - Within a municipal area there is a SDF that needs to clearly state the potential for aquaculture development and the positive impact on tourism.
 - Aquaculture as a farming practice should be considered in municipal economic business plans to take advantages of the linkages aquaculture has with socio-economic development. This will enhance people's understanding of aquaculture and its potential to create employment and social equality.
 - Fish is an important source of protein; hence many people are interested in farming with e.g. Tilapia. However, the industry is struggling to compete with cheap imports from countries whose governments support aquaculture and have less legislative requirements. As a result the sustainability of aquaculture as an industry is threatened.
 - Production volumes should be included as data field in the mapping exercise.
 - National DEA and DAFF have legislative frameworks which provincial nature conservation departments must adopt instead of developing its own legislature for the development of aquaculture, for inland provinces in particular. Consequently,

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the mapping exercise will be easily adopted, updated and maintained moving forward.

End of Meeting

AGENDA

FOCUS GROUP MEETING

with authorities, industry associations, NGOs and research institutions

being held on 4th October 2016

for the Strategic Environmental Assessment (SEA)
for aquaculture development in South Africa

DATE	TIME	VENUE
Tuesday, 04 Oct 2016	09:30 – 14:30	Citrus Research International Boardroom 2 Baker Street, Nelspruit

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:30 – 10:00	Arrival & registration with tea / coffee	
10:00 – 10:10	Welcome and introductions	DAFF
10:10 – 10:45	Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement	CSIR
10:45 – 11:20	Applicable legislation and permits/licenses	CSIR
11:20 – 12:30	Data capture and mapping of existing aquaculture farms/projects based on national data – inputs from meeting participants	CSIR
12:30 – 13:00	Lunch	
13:00 – 14:15	Findings from literature review: key challenges and impacts, siting criteria and environmental attributes to inform the national-scale mapping of opportunities and constraints – inputs from meeting participants	CSIR
14:15 – 14:30	Way forward and closure	DEA

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National SEA for Aquaculture Development in South Africa Meeting Notes

National Strategic Environmental Assessment for Aquaculture Development in South Africa

Focus Group Meeting #4

Date: 06 October 2016
Venue: Queen Elizabeth Park Theatre, Ezemvelo KZN Wildlife, Pietermaritzburg
Focus areas: KwaZulu-Natal

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List of acronyms

AASA	Aquaculture Association of South Africa
ADA	Agribusiness Development Agency
ADZ	Aquaculture Development Zone
AQD	AquaFarm & Design CC
BRT	Bushman's River Trout
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FOSAF	Federation of South African Flyfishers
IDP	Integrated Development Plan
KZN	KwaZulu-Natal Province
KZN DARD	KwaZulu-Natal Department of Agriculture and Rural Development
KZN DEDTEA	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs
KZN FFA	KwaZulu-Natal Fly Fishing Association
MFF	Mtunzini Fish Farm
PSC	Project Steering Committee
SACRAA	South African Consolidated Recreational Angling Association
SAFFA	South African Fly Fishing Association
SAIAB	South African Institute for Aquatic Biodiversity
SANBI	South African National Biodiversity Institute

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SDF	Spatial Development Framework
SPLUMA	Spatial Planning and Land Use Management Act 16 of 2013
TAASA	Tilapia Aquaculture Association of South Africa
TNPA	Transnet National Port Authority
TSA	Trout South Africa
TSFF	The Spirit of Fly Fishing
UKZN	University of KwaZulu-Natal

National SEA for Aquaculture Development in South Africa

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1. *Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement*

- Presentation by Lizande Kellerman (CSIR)
- Ilan Lax (AASA/TSA/FOSAF) commented that the tourism component of the aquaculture value chain is not expressed in this SEA process. He further suggested that it is important to consider municipal IDPs e.g. in KZN there is a strong drive to link IDPs to biodiversity, industry and optimal land use. The local and district municipalities need to be included in the SEA process so they can understand the opportunities for aquaculture development and can plan accordingly. He also suggested that engineers responsible for construction of aquaculture infrastructure, and environmental consultants working in the aquaculture industry be included in the stakeholder engagement process. He is of the opinion that votary services need to feed into the province to create a general expectation where one includes all different categories from different spheres in the aquaculture sector.
 - Lizande Kellerman (CSIR) responded stating that local and district municipalities will be involved during the assessment phase in the SEA process once the SEA team has narrowed down the study area and excluded areas that are unsuitable for aquaculture.
- Ilan Lax (AASA/TSA/FOSAF) commented that there are essentially three major risks associated with aquaculture i.e. development and operational footprint, water use (quality & quantity), and biodiversity risks (e.g. hybridization and distribution of alien fish species). He further commented that processing of aquaculture products for food production should not be included in the SEA process as it is a different activity and industry and is separately regulated. Processing is unrelated to producing (farming) the animal species. The only reason why it should be included is when a production facility is located in close proximity of the fish farming operations. These facilities are not interconnected. The considerations around pollution and health are completely different.
 - Lizande Kellerman (CSIR) responded stating that processing was originally not included in the scope of the SEA, but there are various requests to include the processors as stakeholders in the SEA process. This is a matter for reconsideration by the SEA team as not all producers are processors, and not all processors are producers. Producers that also process, especially on their own land thus need to be considered.
 - Asanda Njobeni (DAFF) responded stating that processing is considered to be related to aquaculture (farming/production) just as hatchery is related to a grow-out facility, especially if both facilities are located on the site, hence the identification and development of ADZs where all aquaculture related activities can be integrated and regulated simultaneously.
 - Pat Morant (CSIR) agreed with Ilan Lax that processing should not be part of the scope of the SEA process. He is of the opinion that there is no reason to include

National SEA for Aquaculture Development in South Africa Meeting Notes

processing as there need to be two different sets of rules regulating two sets of totally different types of activities.

- Krish Govender (Lindon Corporation) commented that the value chain for aquaculture is very long and Lizande Kellerman (CSIR) responded confirming there is a need to determine what part of the aquaculture value chain is concerned with the SEA process.
- Ilan Lax (AASA/TSA/FOSAF) stated there is a requirement from industry to be represented on the PSC of the SEA project; and also to include investors and veterinary services in the aquaculture sector in the stakeholder engagement process.
- Krish Govender (Lindon Corporation) commented that in Eastern Cape, Limpopo, Mpumalanga and KZN there are various tribal authorities e.g. Ingonyama Trust, who own large portions of land, that also need to be included in the stakeholder engagement process.
- Geoff Griffiths (ADA) commented that the eThekweni Local Municipality is involved in aquaculture development.
- Regarding the selection of priority species to be included in the scope of the SEA, the following comments were received from participating attendees:
 - Trout are currently not considered an invasive species in SA and is an exempted species in terms of regulatory requirements. However, the majority of trout imports are cheaper than local production.
 - Vast majority of trout in KZN is rainbow trout. Brown trout needs colder water. (a pure gene pool of brown trout from Loch Leven are in the Bushman River – there is the opportunity to export back to Scotland where their fish are dying from disease).
 - Trout can generally tolerate colder water, but not easily when the water is warmer than their maximum body temperature.
 - Rainbow trout is produced mainly for food products and stocking. Brown trout is produced mainly for stocking for recreational fishing.
 - There are some Tilapia growers in KZN but it is unknown how many are commercial scale producers. SEA team to contact Danie Steenkamp of the Tilapia Growers Association for more information.
 - The Lindon Corporation is funding a study investigating the potential for catfish farming in KZN; however, proposed catfish farming was discouraged and no funding could be obtained. There used to be a non-commercial catfish farm in the Pietermaritzburg area.
- Jeff: Sharptooth catfish has a reddish brown meat, white flesh catfish in Vietnam is not allowed in SA, invader.
- Jeff: Catfish stock at high capacities of 700 kg/m³, and tilapia at 50 kg/m³. From an economic point of view catfish are 10 x better than tilapia. Fillet out rate for tilapia 30%, you waste most of the fish. Catfish have cartilage not bones with a fillet out rate of 75%. Tilapia is not a good fish to farm from an economic point of view.

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Legislative context for the Aquaculture SEA

- Presentation by Lizande Kellerman (CSIR)
- Geoff Griffiths (ADA) suggested that the separation of marine and freshwater regulation should be considered.
 - Asanda Njobeni (DAFF) responded stating that the Aquaculture Bill provides for both marine and freshwater, hence no need to separate legislation.
 - Lizande Kellerman (CSIR) responded stating that there are generalised activities commonly practiced throughout the aquaculture industry, but there are some activities and certain environmental aspects that only apply to either marine or freshwater aquaculture.
 - Simon Moganetsi (DEA) responded stating that recommendations on splitting marine and freshwater aquaculture resulting from the SEA process may be considered in other branches/units of DEA to develop appropriate tools such as norms and standards.
- Ilan Lax (AASA/TSA/FOSAF) commented that the aim of the SEA is to analyse aquaculture in SA to understand where current operations are, and look at the risks, benefits, and optimum areas where aquaculture can be prioritised. Ultimately the EIA and EMP will be different for different aquaculture species in different areas. He urged the SEA team to keep an open mind and not make assumptions on the environmental requirements, but rather analyse in an unbiased manner the true impacts and risks. In his opinion the NEMA EIA regulations are overkill and are considered over-regulated as it is currently impossible for rural aquaculture facilities to be established whilst trying to comply with the current aquaculture regulation. He further commented that marine aquaculture is premised on the Marine Living Resources Act, based on harvesting and exploitation of wild stocks. Farming of fish and other species is not the same thing. One may take some of the feed stock from the wild and get the appropriate permit, but rearing the fish until it can be processed is an agriculture approach and not an exploitation approach.
 - Simon Moganetsi (DEA) responded stating that it is the objective of the SEA to relax the legislation related to aquaculture. By developing protocols specific to the environmental sensitivity, it will assist in lessening aquaculture requirements in least sensitive areas.
- Ilan Lax (AASA/TSA/FOSAF) alerted the SEA team to the existence of the KZN Conservation Plan and to consider the Trout mapping exercise conducted by SANBI. Land use planning applications need to be planned for the entire country as it will largely intersect with the IDPs and SDFs of the provincial municipalities. The use of biodiversity risk assessments are also to be considered. He also mentioned that there are plans to develop a new provincial Act to replace the existing KZN Nature Conservation Act of 1997 as this Act does not provide for the introduction of fish, but only for the protection of fish. He suggested the SEA team contacts Boyd Escott (Ezemvelo KZN Wildlife) regarding available spatial data on the KZN Conservation Plan and other useful land coverage for different land-uses (SPLUMA). Heather Terrapon (SANBI) could also assist with the mapping of trout in the province.
- Krish Govender (Lindon Corporation) commented that the 2016 State of the World Fisheries Report is currently available. He further suggested that the SEA should consider

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developing countries in the literature review e.g. Egypt, India, Turkey and Vietnam and not only developed countries such as Norway.

2. *Data capture and mapping exercise for aquaculture facilities*

- Presentation by Luanita Snyman-van der Walt (CSIR)
- Rechi Dlamini (ADA) enquired when the DEA screening tool will be available as it will affect some pending decisions on environmental authorisations in the medium term.
 - Lizande Kellerman (CSIR) responded that it will be business as usual in the interim. The outcome of the SEA will feed into the development of the screening tool, but the tool will only be finalised at a later stage following the conclusion of the SEA.
- Based on various questions from participating stakeholders the following environmental attributes and siting criteria will be included as data fields for purposes of the national-scale screening exercise:
 - alien vs indigenous status per species;
 - IUCN/TOPS/SASS status per species;
 - land tenure/uses per facility;
 - catchment details i.e. sub-quaternary scale;
 - conservation status in terms of biodiversity areas;
 - scale of production e.g. the producers that produce only for personal use or “recreation”, excluding subsistence, artisanal or commercial;
 - funding source of a facility i.e. private funding vs government funding;
 - size of labour/work force employed at each facility;
 - a facility status i.e. developing phase, operational phase, decommissioned (failed) phase (SEA team to contact Prof Tom Hecht at DAFF for more information);
 - market localities and potential in proximity of the facility;
 - investment potential of a facility/project;
 - production volumes to indicate production capacity of each facility in a financial year;
 - import and export capabilities of each facility;
- Ilan Lax (AASA/TSA/FOSAF) commented on the importance of including failed project/facilities e.g. hatchery at Lydenburg that were closed. Reopening of these businesses can contribute to new economic potential. Also, he stated that aquaculture is still possible in protected areas, although it will need proper mitigation and management.
- Krish Govender (Lindon Corporation) commented that training capacity and capability on aquaculture can be acquired through research institutions, universities, etc.
- Geoff Griffiths (ADA) commented that there is the potential of using existing facilities to renovate and re-establish aquaculture operations for purposes of community development.
- Ilan Lax (AASA/TSA/FOSAF) commented that five years are too little time to establish a successful aquaculture business and do proper skills development; it will require long term

National SEA for Aquaculture Development in South Africa

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socio-economic investment into a specific community project. A solution can be private-public partnership to mentor, train and oversee long term sustainability once implementation and funding agents have exited the project.

- Based on discussions around environmental requirements and constraints for aquaculture development in KZN, it was suggested that Umgeni Water be included in the assessment although it will require water treatment, because the chlorine content in the water is too high and mostly kills fish. Luanita Snyman-van der Walt (CSIR) responded stating that all areas (available water bodies) will be screened for its aquaculture potential, areas will then be assessed in terms of its sensitivity (risk rated), most probably resulting in certain areas to be classified as “no-go areas”. This screening will be informed by specific siting criteria which will assist in developing the ADZs. Results from the sensitivity analysis will feed into DEA pre-assessment screening tool.

End of Meeting

AGENDA

FOCUS GROUP MEETING

with authorities, industry associations, NGOs and research institutions

being held on 6th October 2016

for the Strategic Environmental Assessment (SEA)
for aquaculture development in South Africa

DATE	TIME	VENUE
Thursday, 06 Oct 2016	09:30 – 14:30	Queen Elizabeth Theatre Ezemvelo KZN Wildlife, Pietermaritzburg

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:30 – 10:00	Arrival & registration with tea / coffee	
10:00 – 10:10	Welcome and introductions	DAFF
10:10 – 10:45	Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement	CSIR
10:45 – 11:20	Applicable legislation and permits/licenses	CSIR
11:20 – 12:30	Data capture and mapping of existing aquaculture farms/projects based on national data – inputs from meeting participants	CSIR
12:30 – 13:00	Lunch	
13:00 – 14:15	Findings from literature review: key challenges and impacts, siting criteria and environmental attributes to inform the national-scale mapping of opportunities and constraints – inputs from meeting participants	CSIR
14:15 – 14:30	Way forward and closure	DEA

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National SEA for Aquaculture Development in South Africa Meeting Notes

National Strategic Environmental Assessment for Aquaculture Development in South Africa

Focus Group Meeting #5

Date: 07 October 2016
Venue: EC DEDEA Boardroom, Port Elizabeth
Focus areas: Eastern Cape

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National SEA for Aquaculture Development in South Africa Meeting Notes

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List of acronyms

ADZ	Aquaculture Development Zone
COEGA DC	Coega Development Corporation
COEGA IDZ	Coega Industrial Development Zone
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DRDLR	Department of Rural Development and Land Reform
DWS	Department of Water and Sanitation
EC BCP	Eastern Cape Bioregional Conservation Plan
EC DEDEA	Eastern Cape Department of Economic Development and Environmental Affairs
EIA	Environmental Impact Assessment
EL IDZ	East London Industrial Development Zone
EMPR	Environmental Management Programme
GMO	Genetically Modified Organisms
KOC	Knysna Oyster Company (Pty) Ltd
NEMA	National Environmental Management Act 7 of 1998
NMBM	Nelson Mandela Bay Municipality
RDPs	Resource Development Plans
RU	Rhodes University
SAIAB	South African Institute for Aquatic Biodiversity

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SANParks	South African National Parks
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SPLUMA	Spatial Planning and Land Use Management Act 16 of 2013
SUN	Stellenbosch University
TNPA	Transnet National Ports Authority

National SEA for Aquaculture Development in South Africa Meeting Notes

1. Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement

- Presentation by Lizande Kellerman (CSIR)
- Ricky Hannan (EC DEDEA) asked if the SEA is considering the Nile Tilapia, *Oreochromis niloticus* and the Mozambican Tilapia, *Oreochromis mossambicus*.
 - Lizande Kellerman (CSIR) responded stating that both these Tilapia species will be considered during the SEA process.
- Ricky Hannan (EC DEDEA) stated that stakeholders were asked to comment on a DAFF-funded pilot study on Barramundi (Asian sea bass), European catfish and Siberian sturgeon. He asked why these species are not included in the SEA.
 - Asanda Njobeni (DAFF) responded stating that there are other projects happening concurrently with the SEA process and that this SEA does not stop other projects and development from going ahead. It will be business as usual until the SEA outputs are implemented.
- Ricky Hannan (EC DEDEA) commented stating that *Cherax* species should be included in the list of species considered during the SEA as there is a large viable industry in the country for this freshwater crayfish species.
 - Michelle Pretorius (DAFF) responded stating that a decision had to be made on which species to include in the SEA to ensure the goals of the project will be achieved within approximately 18 months.
- Jeff Govender (EC DEDEA) asked what does the term “incentivize” mean. Does it imply that DEA and DAFF will be securing environmental authorisations for the aquaculture industry?
 - Simon Moganetsi (DEA) responded that government is trying to be pro-active and streamline the current authorisational processes looking to stimulate the development of the aquaculture industry in South Africa.
 - Asanda Njobeni (DAFF) responded that this SEA is directly linked to the legislative reform process that has come out of recommendations from Operation Phakisa. It aims to develop a screening or pre-assessment tool to be used by regulating authorities (e.g. DEA and DAFF) to avoid proposing development in areas that are not suitable for aquaculture. This will help the governing authorities to make informed decisions and be investment enablers of the industry.
- Quintus Hahndiek (EC DEDEA) asked if the term “incentivize” includes marketing aspects.
- Jeff Govender (EC DEDEA) asked if this will be a ‘plug and play’ solution – once you have your norms and standards you will only have to do certain things.
- Thembinkosi Tyali (EC DEDEA) stated that there was a big drive for aquaculture in the 1980s, but it seems the industry has never really picked up since. He asked what the causes of these failures are. He further stated that there is a need to feed the nation, and most of the aquaculture species being considered during the SEA will not be easily accessible to the people who really need it, it will only be accessed by a few.

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- Godfrey Murrel (NMBM) stated that when considering aquaculture there is a split into food production and economic viability in terms of job creation. Food production could be done with low impact, low cost catfish or tilapia species, but if one wants to focus on the economic aspects of the industry then consider high value species, exports, etc. These two approaches are very different.
 - Lizande Kellerman (CSIR) responded stating that the SEA aims to capture information available re: economies of scale of existing facilities, thus both these aspects will be considered.
- Ricky Hannan (EC DEDEA) mentioned that ranching processes are involved with both abalone and various other species e.g. freshwater mullet, and that natural water bodies in South Africa are being used for ranching of indigenous fish species. He asked if ranching included in the SEA process.
 - Lizande Kellerman (CSIR) responded to confirm that ranching is considered in the SEA process.
- Jeff Govender (EC DEDEA) commented posing a scenario where one individual have an aquaculture authorisation and another individual wants to start a new project, but the person with the existing authorisation sees the new project as a threat and then appeals by default. He suggested that the SEA needs to address a way on how to facilitate conflicting industries in the same space.
- Jeff Govender (EC DEDEA) mentioned that regarding additional inputs into the SEA stakeholder database, objections received from the Interested and/or Affected Parties (I&APs) on the EIA application for an aquaculture facility by DAFF in Algoa Bay should be considered during the SEA process as it is a good start for collecting stakeholders from a wider range of sectors.
- Ricky Hannan (EC DEDEA) commented that Dr. Dawood at DRDLR, who deals with import and export requirements for aquaculture species/products should be included as a stakeholder; however, this perhaps applies more to some species that currently fall outside of the scope of the SEA process e.g. Barramundi and European catfish.
- Mari Wolmarans (CDC Consultant) asked if the SEA is also considering the feed suppliers for the aquaculture industry.
 - Lizande Kellerman (CSIR) responded that feed suppliers will also be included in the stakeholder engagement process.
- Margantha Cox (DWS) wanted to know why some aquaculture facilities are unsuccessful and subsequently failed.
 - Lizande Kellerman (CSIR) responded stating that failed and/or decommissioned projects will be investigated to determine the reasons/criteria for closure.
- Aban Padayachee (SANParks) queried if the SEA process will consider the farming of more than one species at a particular facility at the same time e.g. abalone and fish fry raising. He also questioned if hydroponics together with aquaculture (i.e. aquaponics) will be

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considered during the SEA process.

- Rosa Blaauw (NMBM) suggested that the following stakeholders be included in the stakeholder database:
 - Animal rights traditional organisations / leaders;
 - Fishermen association groups;
 - Local business groups (generally beneficiary communities).

2. *Legislative context for the Aquaculture SEA*

- Presentation by Lizande Kellerman (CSIR)
- Jeff Govender (EC DEDEA) confirmed that permitting requirements for marine aquaculture in the Eastern Cape also includes a coastal discharge permit.
- Ricky Hannan (EC DEDEA) offered to provide the SEA team with copies of the Eastern Cape Nature Conservation Ordinance 19 of 1974 and Nature Conservation Act 10 of 1987.
- Ricky Hannan (EC DEDEA) further mentioned the existence and applicability of the Sea-shore Act 21 of 1935, as amended, for extracting seawater or pipes crossing the high tide line.
- Jeff Govender (EC DEDEA) mentioned the impact of SPLUMA on the development of the aquaculture industry due to the way it is structured as an applicant needs to have every single permit that it required to plan, construct and operate an aquaculture facility before he/she goes to the tribunal.
 - Simon Moganetsi (DEA) responded that DEA will screen proposed projects very early on to identify minimum information requirements that will be included in the SPLUMA SDFs. This will take effect through SPLUMA, not NEMA. This is another attempt to streamline and be pro-active about environmental decision-making.
- Paul Martin (Coega IDZ Eco) conveyed to the SEA team that generic norms and standards, conditions of approval streamlining (i.e. integrated authorisations) and a generic EMPR are supported. However, at project level there will still be a requirement for an EIA type process and public participation to take the project specific impact mitigation into account. He urged the team to make documents available for comments, because local knowledge can fill gaps e.g. existing development plans for different aquaculture projects.
- Rosa Blaauw (NMBM) commented on the following local municipal legislation that is relevant to the SEA process:
 - Public Permits By-Law;
 - Boat Launch Permit.
- Ricky Hannan (EC DEDEA) stated that there was a request for information regarding applicable legislation in the Eastern Cape. Apart from the normal requirements in terms of National Legislation such as the EIA Regulations, NEMBA Alien & Invasive Species Regulations and the coastal discharge permits required in terms of the NEM: ICMA,

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detailed below is a list of Provincial Legislation that may have an impact on any aquaculture venture in the Eastern Cape:

- Nature & Environmental Conservation Ordinance, 1974 (Ordinance 19 of 1974)
- Nature Conservation Act, 1987 (Act 10 of 1987 – former Ciskei)
- Environmental Decree, 1992 (Decree 9 of 1992 – former Transkei).

He explained that the above legislation largely deals with placing of organisms into impoundments & rivers, catching of fish in both impoundments and rivers, in other words any aquaculture that uses impoundments and rivers. In both the former Transkei and Ciskei there is a declared “Coastal Conservation Area” extending along the entire coast, from the high water mark of the sea and tidal rivers 1000m inland and any activity that disturbs the soil or vegetation, including driving off a proclaimed road requires a permit from this Department. In addition to the above, most mariculture ventures will also require permits in terms of the following legislation if there is any infra-structure (pipelines, etc.) that will extend below the high water mark:

- Sea Shore Act, 1935 (Act 21 of 1935)
- Ciskei Nature Conservation Act, 1987 (Act 10 of 1987 – former Ciskei)
- Transkei Sea Shore Act, 1979 (Act 17 of 1979 – former Transkei).

He stated that both the Sea Shore Act and the Nature Conservation Act are administered by this Department; however, it is not clear who is responsible for administering the Transkei Sea Shore Act as EC DEDEA has no record of it ever having been assigned to the Province to administer. He noted that Michelle Pretorius (DAFF) is well aware of this problem as it is a major stumbling block for the Qolora Mariculture project.

3. *Data capture and mapping exercise for aquaculture facilities*

- Presentation by Luanita Snyman-van der Walt (CSIR).
- Jeff Govender (EC DEDEA) suggested that one of the siting criteria be the power requirements of an aquaculture facility i.e. which facilities would require electricity and which would not?
- Ricky Hannan (EC DEDEA) commented that the Eastern Cape sits in a no-man’s land that is too warm for optimal cold water species, and too cold for some warm water species. He asked if appropriate temperature zones for optimal aquaculture will also be mapped.
- Ricky Hannan (EC DEDEA) enquired about the types of aquaculture facilities which have been mapped in the Eastern Cape. He also asked if the SEA will also consider the failed projects, as well as the state-owned hatcheries.
- Jeff Govender (EC DEDEA) commented that the SEA should consider provincial infrastructure capacity for aquaculture e.g. Karoo facility that has been managed very closely to ensure compliance with environmental mitigation measures, because there is a need to understand the current status of the infrastructure on the ground.

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- Margantha Cox (DWS) commented that orange-rated dams in the Eastern Cape cannot be used for aquaculture. She also stated that no aquaculture activities are allowed within 200m of a dam wall. She mentioned that DWS is in the process of developing Resource Management Plans for Eastern Cape dams with zonings indicating where aquaculture development can take place. She confirmed that further information on this and the RDPs can be obtained from DWS offices.
- Margantha Cox (DWS) asked about impacts/risks associated with aquaculture activities in dams to be used for aquaculture and who will be responsible for the management of these activities. She further stated that it is of noticeable importance how aquaculture structures and associated infrastructure are or will be situated within these dams.
- Margantha Cox (DWS) subsequently commented that in the Western Cape aquaculture activities are typically located close to local communities e.g. Lakensvallei and Klein Plasie (Jonkershoek). She mentioned that Mr Danie Brink (SUN) implementing a pilot study went from research to commercial aquaculture that led to problems in management of said dams.
 - Luanita Snyman-Van der Walt (CSIR) responded to confirm that the SEA will consider land tenure and land zoning during the national/provincial scale mapping exercise, because access to dams is an important siting criteria in the development of the ADZs. She further raised the issue of capacity in DWS for monitoring, evaluation and mitigation.
- Rosa Blaauw (NMBM) commented that the SEA should consider the risks associated with GMOs relating to brood stock, as well as disaster management especially in terms of alien invasive species. Siting criteria is important especially in the coastal zones, location of ocean outfalls, and impact of major natural climatic events e.g. floods and droughts, close proximity to metro areas, and the potential impact of pollution in water bodies. The SDF for NMBM was recently updated with spatial planning considering aquaculture development. She also added stating that locally the MPA and offshore areas in proximity to the Coega IDZ should be excluded from potential development. She urged the use of the NMBM SDF, coastal development / setback lines and bioregional plan during the mapping exercise.
- Margantha Cox (DWS) asked if there will be standardized specifications for a specific aquaculture facility e.g. water quality, quantity, temperature, etc.
 - Asanda Njobeni (DAFF) responded stating that the environmental authorisation will bind an investor to certain requirements.
 - Luanita Snyman-Van der Walt (CSIR) responded saying that during an environmental impact assessment an applicant needs a detailed project description in order for stakeholders and competent authorities are aware of specifications etc.
- Jeff Govender (EC DEDEA) raised the issue of large dams e.g. Vaal Dam with a current water level of approximately 35%; he asked what effect the status of dam water level will have on aquaculture activities in that particular dam.

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- Jeff Govender (EC DEDEA) stated that it is important for the SEA process to consider and understand the legislative requirements in terms of the Integrated Coastal Management Act e.g. when an aquaculture facility is placed in areas within the 5m contour line of wetlands.
- Ricky Hannan (EC DEDEA) mentioned that the DEA Coastal Sensitivity Atlas should be incorporated into the SEA process. This follows from his comments on major issues around suitable sites for aquaculture in the East London area due to the location of marine outfall pipes.
- Godfrey Murrel (NMBM) suggested that colour-shaded icons are used to indicate where small-scale fishing rights have been awarded. This location data can then be overlaid with environmental, economic and social attributes. He commented on the influx of small-scale subsistence fishing in the NMBM area because there is a need for food security (protein) and businesses.
- Zanele Hartmann (Coega IDZ) stated that the Coega IDZ was undertaking an EIA for the development of an ADZ during which spatial planning tools were used to identifying suitable aquaculture areas. She has indicated that this data can be obtained from her office.
- Zanele Hartmann (Coega IDZ) further commented that the ECBCP is currently being reviewed and that the new plan will incorporate information from the IDZ and the bioregional plan.
- Ané Oosthuizen (SANParks) stated that the marine environment is different to freshwater environment and there are currently no regional plans. She suggested that the NBA will be the best source of information on the marine environment for purposes of the SEA process. She indicated that SANParks can share national and marine park plans with the SEA Team.
- Jeff Govender (EC DEDEA) suggested that the CDC Consultants' investor list be used to obtain insight into the user conflicts that arose from the Algoa Bay ADZ EIA process.
- Ané Oosthuizen (SANParks) stated that conservation and the aquaculture industry can co-exist, but conservation only asks for common sense and consideration of the region/habitat where aquaculture activities are proposed for.
- Ané Oosthuizen (SANParks) wanted to know how the SEA process will influence on current EIA applications.
 - Lizande Kellerman (CSIR) responded saying it is business as usual; no one can be stopped from making an application for a new aquaculture facility. In fact, some aspects of developing projects may benefit from the SEA, if timelines are aligned.
 - Simon Moganetsi (DEA) commented that when it comes to implementing the outcomes of the SEA, there will be a transitional arrangement as is the case with all legislation. He reminded the stakeholders that the SEA is only a decision support process, not a decision making process.
- Mari Wolmarans (CDC Consultants) suggested that a list of existing aquaculture facilities, specific requirements and environmental constraints be made available to stakeholders for review and comment.

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- Lizande Kellerman (CSIR) responded confirming that this information will be shared with stakeholders for comments.

End of Meeting

AGENDA

FOCUS GROUP MEETING

with authorities, industry associations, NGOs and research institutions

being held on 7th October 2016

for the Strategic Environmental Assessment (SEA)
for aquaculture development in South Africa

DATE	TIME	VENUE
Friday, 07 Oct 2016	09:30 – 14:30	EC DEDEA Boardroom (Ground floor) c/o Belmont Terrace & Castle Hill, Port Elizabeth

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:30 – 10:00	Arrival & registration with tea / coffee	
10:00 – 10:10	Welcome and introductions	DAFF
10:10 – 10:45	Overview of Aquaculture SEA – approach, objectives, scope, key outputs & stakeholder engagement	CSIR
10:45 – 11:20	Applicable legislation and permits/licenses	CSIR
11:20 – 12:30	Data capture and mapping of existing aquaculture farms/projects based on national data – inputs from meeting participants	CSIR
12:30 – 13:00	Lunch	
13:00 – 14:15	Findings from literature review: key challenges and impacts, siting criteria and environmental attributes to inform the national-scale mapping of opportunities and constraints – inputs from meeting participants	CSIR
14:15 – 14:30	Way forward and closure	DEA

For any enquiries, please contact: Karabo Mashabela (CSIR), tel.: 021-888 2482 email: kmashabela1@csir.co.za



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Additional inputs to Focus Group Meetings #1 to #5

These additional inputs were made in writing by participants at the Focus Group meetings #1 to #5 held from 30 September to 07 October 2016, using the cards provided.

List of acronyms

AFASA	Abalone Farmers Association of South Africa
ARC	Agricultural Research Council
CPUT	Cape Town University of Technology
CSIR NRE	Natural Resources and Environment
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DRDLR	Department of Rural Development and Land Reform
DWS	Department of Water and Sanitation
DWS: IWU	Department of Water and Sanitation: Integrated Water Use
FS DARD	Free State Department of Agriculture and Rural Development
GDARD	Gauteng Department of Agriculture and Rural Development
LEDET	Limpopo Department of Economic Development, Environment and Tourism
MP DARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
MTPA	Mpumalanga Tourism and Parks Agency
NC DENC	Northern Cape Department of Environment and Nature Conservation
NEPAD	New Partnership for Africa's Development
NMBM	Nelson Mandela Bay Municipality
NW DREAD	North West Department of Rural, Environment and Agricultural Development
NWU	North West University
RU	Rhodes University
SAIAB	South African Institute for Aquatic Biodiversity
SANBI	South African National Biodiversity Institute
SEA	Strategic Environmental Assessment
SUN	Stellenbosch University
TSA	Trout South Africa
UFH	University of Fort Hare
UL	University of Limpopo
WWTW	Wastewater Treatment Works

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Stellenbosch – Friday, 30 September 2016		
Person	Organisation	Comments
Sally Paulet	AFASA & HIK Abalone Farm Pty Ltd	<ul style="list-style-type: none"> Willing to help where possible regarding aquaculture facilities & their respective information. On the freshwater side, I think that private /independent consultant would be a good source of information as they are typically aware of many of the schemes. Academic institution can help with list consultants in this space. DAFF: should have a comprehensive list and any marine based facilities. I suggest that a feedback happen where, if details are changed, this data is fed back to the source of origin (e.g. DAFF, DEA) to improve general data integrity.
Louise Geldenhuys	NC DENC	<ul style="list-style-type: none"> Northern Cape Nature Conservation Ordinance gives regulation for import, export, transport of live fish, also to buy specially protecting fish, spawn and prohibit the sell /buy of exotic species. Location of aquaculture projects in Northern Cape: <ul style="list-style-type: none"> - Abalone in old Hondeklip bay fish factory - Port Nolloth Sea farms - Abalone at Kleinsee - Oysters at Kleinsee - Ranching of abalone A source of info on location can be the discharge permit applications received by DEA. Northern Cape has a new conservation plan. A constraint to development of aquaculture in the Northern Cape coastal region is the distance to water quality testing labs.
Henk Stander	SUN	<ul style="list-style-type: none"> Trout farming is restricted to only certain areas in South Africa for which permits/licences are required. Small-scale farmers must be included in SEA.
Brynn Simpson	DBA (Deep Blue Aqua)	DBA supplies technology to a large portion of the existing aquaculture operations in South Africa.
Pierre De Villiers	CapeNature	<ul style="list-style-type: none"> Please map the historical systems, many of which were setup in the 80s and 90s e.g. Barbell Tilapia recirculation systems in Limpopo, KwaZulu-Natal, Mpumalanga, etc. There are some Tilapia farms in the Northern Cape along the Vaal River that were setup by Stellenbosch University. Government hatcheries need to be mapped.

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		<ul style="list-style-type: none"> • Need to map all FEPAs. • Environmental conditions that are similar need to be linked to distance from market. • Bloemfontein – Dr Reinach – freshwater crayfish. • Need to link SEA to DWS catchments classification systems process. • Need to link SEA to catchment management agency strategy. • Cape Nature to insert FEPAS', Alien zones, permit requirements – Dr Martine Jordaan. • estuaries@capenature.co.za • DEA provincial SEA • DAFF climate change strategy to be included. • Link DEA, SANBI and NBA spatial data plan to SEA. • Mining prospecting rights all over South Africa. • It could be good to list willing local communities – Hermanus where farming of abalone is done in cages including ranching.
Mike Bruton	RU	<ul style="list-style-type: none"> • Please include Nick Davies of Grahamstown as an ornamental fish farmer to the stakeholder database. • If you want to include enterprises on estuary ecology you should also add Prof Alan Whitfield from SAIAB.
Carly Cowell	SANParks Scientific Services - Cape Region	SANParks has marine scale climate change models, this include the buffer zones up to 20km around parks. This includes rainfall increase, decrease, frequency, temperature increase (No of days per year above 35°C), sea temperature, salinity and acidity.
Dr Philip Ivey	SANBI Invasive species programme	<ul style="list-style-type: none"> • Scope of risk assessment must include source of propagules, eggs, fingerling spray, etc. as well as risk of other species introduced into contaminated water (disease, pathogens, invasive species) • Feed stock for aquaculture has knock on impact on environment. • Examine why aquaculture facilities have failed- check with SAIAB • Barriers upstream from facilities could limit species movement • Work on mapping of introduced fish for SAIAB, SANBI 2009 • Possible overlap of two introduced species and conflicts

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Livhuwani Nnzeru	DEA Biosecurity	<ul style="list-style-type: none"> Please request the facilities approved by DEA or permitted for listed invasive species e.g. Grass carp, <i>Cherax</i> species and Mozambican Tilapia for aquaculture. Please engage provincial authorities and they must advise which species they support for farming in their provinces. Screening of diseases of imported fish species.
Kevin Ruck	Blue Sapphire Pearls CC	<ul style="list-style-type: none"> Need to share industry comments of Aquaculture Bill during consultation process. Industry is quite concerned about number of items. Ballast water imports. On top of an already overburdened industry in terms of red tape e.g. see South Africa on list of economic freedom report 105/159. General burden of operatory business in South Africa is high now in Aquaculture specifically there are more to deal with thus for me particularly a huge challenge DAFF has farm data e.g. latitude and longitude on production species.
Maxhoba Jezile	DAFF	The years in which an operator has been planning need to be assessed, mapped to be able to identify the impacts that are cumulative on the environment.
Pretoria – Monday, 03 October 2016		
Johan Theron	UL	How can the amount of time and permits be reduced for the perspective fish farmer: <ul style="list-style-type: none"> - Internally between government department - Integrating different permits into one /less permits
Johan Kooij	Catfish Supreme / Catfish Growers Association	I would like to see that catfish is included to the SEA species list. Current legislation makes it impossible to import broad stock as different departments interpret laws differently. Capital was identified as the phase one implementation projects Phakisa in 2004.
Rogan Field	Pangrow / Aquaculture South Africa	<ul style="list-style-type: none"> Alien invasive species: Bio-secure technology can mitigate these risks. Technology also allows aquaculture to be practiced anywhere. Why no focus on Catfish not widely accepted but most suitable fish for farming in an African context. Integration with Agriculture identify large irrigation scheme. Land use zoning may not help, rather zone the discharge as suggested by Johan Theron. Where is the community in all this focus of aquaculture development as viable for social development and creation of food security? Farms should be owned and

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		<p>operated by local people in rural areas. How do the current regulations account for this. What about processing/packaging and distribution.</p> <ul style="list-style-type: none"> • Focus on reducing complicated and enabling environment for aquaculture development. • Get some aquaculture experts on the team. These meetings should be a platform to discuss basic principles of aquaculture; rather there are bigger issues such as poor regulation systems. • I think it is important that it is clearly defined what the objectives are exactly and prioritize them accordingly. • To create a more enabling environment for private enterprise to enter the market. • To create a more attractive market for investors (local and international). • To promote aquaculture as vehicle for social development - community projects/business development. • To facilitate and promote sustainable farming practices • These are but a few examples, obviously there are many overlaps between them, but important to differentiate between them, for example: <p>If we are talking about mariculture then it is clear that we need maps to identify key sites where it would be both possible and appropriate, these decisions should be based on temperature profiles and site acceptability (for cage culture there needs to be a combination of suitable temperature where the site is naturally protected from heavy seas and surges, but still has a good water exchange) Since we have a very high energy coast line most of our coast is not suitable for cage culture, there are a few exceptions such as Port Elisabeth, Mossel Bay and Saldanha Bay. Alternately land based systems can be considered, then maps would need to identify abstraction points for water and temperature profiles. Also if we are talking about mariculture then the capital to set up a farm is going to be in the region of R50-R100 Million, and the focus is on private enterprise and investment.</p> <p>If we are talking about community development then freshwater aquaculture is more pertinent and integrated re-circulation systems should be prioritized. In this instance maps are not so important and the focus should be on where the development is needed most. Things to consider would be access to markets, power availability, although</p>
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		<p>water is important it is the least concern. A large commercial operation would cost in the region of R5-R20 Million depending on the project.</p> <ul style="list-style-type: none"> • I wanted to reiterate some of my concerns regarding the SEA. I understand that mapping is essential for understanding and managing any industry and aquaculture more so than most, that said we need to be careful not fall into the trap of "excursions" these have the tendency to use up a lot of time and at considerable cost, therefore careful consideration should be given to such trips. You should also find that much of this work has been done - Contact SAIAB for details. • It is clear, I think, that the largest single stumbling block for aquaculture development is the current legislation and the complications that arise from difficulties in obtaining permits, EIA's and transport. This should be the focus! • Catfish is likely to become one of the most important farmed fish globally and therefore need to be considered. • Fresh water aquaculture offers a sustainable farming opportunity in so far as it relies less in wild caught fish for feed and the water can be reused in irrigation, in addition the tech allows for farms to be situated anywhere regardless of climate. These are also the farms that can make meaningful differences in the context of community development, job creation and food security. • Cage farming in South Africa in terms of fresh water is a non-starter, there are no real suitable site for cage culture other than Katse Dam in Lesotho and Van der Kloof in the Norther cape/OFS. Regarding Van der Kloof, I have already compiled a fairly comprehensive assessment and report on potential cage farming in the Dam and would like to be involved in any development there. • Regarding dams in South Africa in general, there are massive opportunities for the development of capture fisheries on many of these dams, I have worked closely on a number of such projects and with great success. This is without doubt where the focus should be. I am happy to talk around this point any time.
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Sharif Pandor	Pangrow / Aquaculture South Africa	<p><i>Observation</i></p> <ul style="list-style-type: none"> We thank the organisers for the initiative We have a concern for sustainability of this process so that it is not open ended or does not resolve outstanding bottle necks. Operating systems methods of government a big problem non continuity as a result of staff movement plus loss of focus and interest. <p><i>Recommendations</i></p> <ul style="list-style-type: none"> Include and consider SADC initiatives that RSA is already signatory of There is a need for consultant's Government department to assist community based initiatives. <p><i>Marketing</i></p> <ul style="list-style-type: none"> Use already successful models such as veg community methods to establish as part of Phakisa community fish market. <p><i>Permitting</i></p> <ul style="list-style-type: none"> Assistance with long periods it takes to get permits and short validity periods.
Super Naidoo	Mission Enviro	Do you intend regulating end-users consumption of farmed fish finished products (fish figures)?
Heidi van Deventer	CSIR NRE	<ul style="list-style-type: none"> Data capture and mapping List invasive species in attributes List river condition for NBAs. Put the draft maps on your website as a web map application and we can circulate it to the NBA 2018 stakeholder list for review and feedback. CSIR has ArcGIS pro software to facilitate it. To assess dams for suitability consider downstream impacts to river reaches that may have been in a good condition.
David Fincham	Rydawi PYT LTD	<ul style="list-style-type: none"> All are invited to www.tilapiafarming.co.za and to visit the farm. Aquaculture is a Maller's doft. SEA purpose/understanding/vision/implementation. Aquaculture is a permit managed industry. Implementation is confusing and slow. Permits EIAs also costly unnecessary. Participants from industry are dedicated and

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		<p>passionate about what we do. Most we have 20 years active involvements against most odds to drive and develop the industry.</p> <ul style="list-style-type: none"> • AIS has a low impact. Environments at greater risk from other threads. Tilapia farms will all be RAS. Trout Africa is not conducive to open systems farming of Tilapia. Tilapia farming is no different to farming chickens. • Training of government entities regarding permit process, to serve the industry. • The SEA process must enable the industry; • Industry has been actively engaged with government for decades. Process must be made with action and implementation. • This is farming- look into comparison to the poultry industry. • The timing processes, validity of permits are often in conflict. One permit is granted on another e.g. import e.g. imports and transport which AIS permit fish can only be farmed in good quality water aquaculture is not a problem with water use or pollution. • Comments portion to Tilapia farmed in RSA systems. • Production limits to be increased before strict regulation and permitting comes into play. • Lowes after use per kg protein produced • Waste water 100% recoverable • Zoning criteria, must not limit the opportunity • Any farm organisation using water has potential to farm Tilapia using Republic of South Africa • Farm in a Box- No rivers, no dams just fish we pose and risk why overregulate the industry.
Wietsche Roets	DWS: IWU	<ul style="list-style-type: none"> • New GA 509 26 any 2016 for Section 21 and water uses- Risk matrix determine entitlement WULA or GA • Risk posed to resource quality: • Flow regime • Water Quality ecosystem drive • Geomorphology • Habitat • Biota • How will proposed modify/pose risk above resource quality characteristics • Nutrient enrichment- escaping alien fish paradises and pathogens

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Meeting Notes

Nontokoza Mahlala	GDARD	In mapping existing aquaculture the authorisation permits must be used. CAs usually keep records database of the EA permit, the database have locations.
Andre Hoffman	MTPA	<ul style="list-style-type: none"> • Mpumalanga Nature Conservation Act No 10 of 1998 • Species for example Tilapia that can be farmed with without any restrictions should be listed. • The concept of “if it is in the system, let us farm with it” is wrong. This lead to species being introduced illegally. • Mpumalanga Province is on the receiving end of what happens in Gauteng. The same with Mozambique which is on the receiving end from what is done in South Africa. Aquaculture should be done responsibly and environmental legislation should be respected. • In Western Cape 90% of its indigenous fish is endangered with the main reason alien fish such as Trout Bass (3 species) and lately <i>Clarias gariepinus</i> (African sharptooth catfish).
Nelspruit – Tuesday, 04 October 2016		
	Department of Labour	<ul style="list-style-type: none"> • Province mostly governs aquaculture via nature conservation instead of agriculture • Trout mapping by SANBI- Tilapia (biodiversity assessment) • Include project funding investors e.g. land bank and EAPs • Pragmatic approach to trout – Operation Phakisa • Volumes of production and risk assessment • Scales of economics important
Dee Malcomess	Falls Fish Farm	<ul style="list-style-type: none"> • Need a one-step shop for relevant licences. • Should be job of government department of Aquaculture to facilitate this for the farmers, so they can concentrate on the operation plus job creation. • Government should do any monitoring required and pay for it not the farmers or emerging farmers. At the moment these XPS are costing jobs- the other way they should be creating jobs from our taxes.
Granny Mahlare	DWS: NWRI- Usutu River GWS	<ul style="list-style-type: none"> • Creation of fresh water fish market. The opportunity that will encourage job creation. • Sustainability of Aquaculture as an industry is very much threatened. Food sustainability on proteins and fish marketing the fish as the source of protein. • Legislative control- on the freshwater fishing and marine aquaculture, licencing and permits. Streamlining the legislation for different departments

National SEA for Aquaculture Development in South Africa

Meeting Notes

		nationally and provincially.
Patricia Noku	MP DARDLEA	DEA and DAFF at national level have legislative framework that provinces conservation departments must adopt and not come up with their own legislature for the development of aquaculture (Inland provinces particular). The mapping exercise will then be easy to be adopted moving forward.
Additional comments received following the roadshow until 26 Oct 2016		
Rogan Field	Pangrow / AquacultureSA	<ul style="list-style-type: none"> Firstly, you mentioned that it would be possible that we get a seat in the steering committee, I would personally very much like to be involved at all levels. Given my experience in aquaculture development in the context of rural development I have unique insight into some of the challenges and believe that I would be a valuable asset on this committee. Secondly, I think it is important that it is clearly defined what the objectives are exactly and prioritize them accordingly. To create a more enabling environment for private enterprise to enter the market. To create a more attractive market for investors (local and international). To promote aquaculture as vehicle for social development - community projects/business development. Economic and environmental impact tradeoffs and risks associated with ocean based versus land based aquaculture, land based aquaculture should be prioritised due to the obvious lower risks to the environment. If ocean based aquaculture to be considered the key identification of Locality alternatives, having undertaken oceanographic current dispersion modelling as well as sensitivity analysis of reefs and critical biodiverse areas in proximity of the currents most likely of being impacted upon. Intensive aquaculture will generate a concentration of organic and inorganic wastes, the waste management and the recycling of such wastes as byproducts to be considered, and appropriate management of waste prior to release to the environment. Feed and nutrient inputs required for the aquaculture farms, should be derived sustainably not at the expense of depleting natural ocean based resources

National SEA for Aquaculture Development in South Africa

Meeting Notes

		<p>and associated localised ecosystems.</p> <ul style="list-style-type: none"> • The principles and objectives of sustainable development in terms of core environmental legislature in South Africa (e.g. National environmental management act, national environmental waste management act, integrated coastal management act etc) as well as internationally to be considered in the Design, construction and operation tentative especially in respect of ocean based aquaculture, considering all oceans globally are interlinked. • Who are the intended beneficiaries of the projects, assumed to address long term affordable protein security for South Africans, and not to be export. • If water circulation through the respective farms is required during operations to maintain optimal aquaculture conditions, land based aquaculture could consider in the design make up, simultaneously generating hydro-electricity. • The species to be housed in the aquaculture farms should be species that are indigenous and representative of the area (if ocean based farming considered), to ensure that exotic / alien pests and microorganisms are not introduced into natural systems through water circulation and waste discharge. • Locality alternatives to take cognisance of visual (unsightly) impacts on geographical areas that have benefit to our recreation (e.g diving) and tourism sectors presently and potentially in future. • It is imperative that juristic organs of state including parastatals and local municipalities through the cooperative governance and public participation processes contribute informed comment, in order to ensure the stream-lining of any legislature processes and environmental applications likely to be required in respect of the outputs derived from the sea process. • It would also be important to obtain an informed understanding on on-going repair and maintenance techniques required to the facility during operations, and the potential impacts associated with such in the determination of feasible localities for ocean based facilities. • The thermal (e.g temperature) disparity or properties of the discharged water from the facility into the immediate oceanic environment, and the potential
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National SEA for Aquaculture Development in South Africa

Meeting Notes

		impacts associated therewith in terms of upsetting / unbalancing natural systems.
Shannon Wilsnagh	Seawise	<ul style="list-style-type: none"> I would like to register as a stakeholder for the SEA planning for aquaculture. My interests lie in mollusc aquaculture and the phytoplankton community of Saldanha Bay - the most feasible aquaculture development zone in the Western Cape. My main concerns include the number of proposed mining operations around the bay. Heavy metal mining releases various waste chemicals into the environment. The draining of freshwater aquifers that feed the lagoon and supply drinking water will have serious long term effects on the integrity of the Bay. Furthermore, the expansion, trade and handling of heavy metals at the inner bay iron ore terminal are non-compliant. The risk of various heavy metal contaminations in Saldanha Bay is a reality. Estuaries are the most productive ecosystems on earth - their gross primary productivity are equal to that of reefs and tropical rainforests.
Kenneth Hutchings	Anchor Environmental Consulting	<ul style="list-style-type: none"> Site selection is extremely important and often the only feasible mitigation of impacts. Environmental suitability (from aquaculture industry perspective, e.g. shelter, water temp, bottom type, water supply, HABs etc) Environmental sensitivity (Impacts of aquaculture on the environment) Must consider ecologically sensitive habitats, processes and species. introduction of aliens species, parasites and disease and the impacts thereof are critical considerations. Economic viability. Must consider operational costs, services, infrastructure, market, employment etc. Social desirability. Is it needed, do benefits outweigh costs?
Conrad Sparks	CPUT	<ul style="list-style-type: none"> Research for funding of viable fish species to be farmed; Training and education (formal and informal); Business models for communities to farm; Small-scale aquaculture for rural communities; Markets for aquaculture in SA.

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Niall Vine	UFH	<ul style="list-style-type: none"> Short-comings and what we've learnt from the failure of the marine finfish industry; Proposed Transformation strategy for developing aquaculture specialists at middle and senior management levels; Proposed Research strategy for the industry as a whole.
Bernice Mclean	NEPAD	<ul style="list-style-type: none"> Environmental and social impacts and opportunities of not only the aquaculture production facilities but all associated infrastructure and resources used along the value chain. Risks and opportunities associated with environmental degradation; local socio-economic development; impacts of climate variability and change; water availability and pollution etc. In open production systems, risks associated with escapism, disease and genetic pollution from the exposure of farmed individuals to wild organisms.
Godfrey Murrel	NMBM	<ul style="list-style-type: none"> Do not lose sight of the fact that Tom Shepton at RU: Dept of Fisheries in Grahamstown conducted site selection for suitability studies for mari-culture in NMBM area. There is vast difference between "protein for masses (food security)" and production for economic financial gain with possible spin off of job creation. The study must clearly differentiate. The vast majority of peoples in RSA do not readily eat fish or related products. Harvesting of catfish from sewage works maturation ponds is a readily available small scale fisheries option. Overlay on GIS system areas where daff has placed emphasis on small scale fisheries and associated rights granted. These areas surely give indication of need for social uplifting. Thus these areas should be investigated as priority mari-culture nodes. If memory serves me DAFF too stated where they cannot give rights they will implement alternative programs.
Catherine Greengrass	Greengrass Environmental Consulting	<ul style="list-style-type: none"> The recent investigations on Aquaculture Feasibility for Gauteng, done by GDARD was not included (sorry if I missed it), but this study looked at market for various species in Gauteng which are significant for species like Tilapia and catfish, so catfish should be included. There is also a database and map of Gauteng facilities which might be of use.

National SEA for Aquaculture Development in South Africa

Meeting Notes

		<ul style="list-style-type: none"> They are also linking to some work by World Fish which is looking at the movement of fish across Africa and into and out of Africa, which is highlighting that siting of farms should consider access to transport/export facilities (e.g. OR Tambo, major roads, markets) and services (electricity, borehole water, even bulk potable water, waste water and waste services, processing) in order to be feasible. Perhaps these aspects could be considered to ID areas with good potential for aquaculture development.
Andrew Barker	ICON	<ul style="list-style-type: none"> Aquaculture opportunities in urban areas, particularly large metropolitan areas where unemployment, poverty and food security issues are dominant, need to be fully explored. Of particular concern is the quality and quantity of water coming out of metropolitan areas and the need to clean up these streams and rivers to enable aquaculture opportunities to be explored by local communities. A particular example in this regard is the Klip River and Jukskei rivers originating in Johannesburg where extremely high and unacceptable levels of pollution, particularly of E. coli, are found. This is largely due to infrastructural capital, operating and management issues particularly relating to the sewer system and WWTW. It is our contention that catchment management plans are required was water quality and quantity is the focus of the strategies and plans which are then implemented, monitored and managed properly. Related to this catchment management plans the opportunities for social and economic goods and services, such as aquaculture can then be properly considered.
Lebogang Mokonyane	Envirovators	<ul style="list-style-type: none"> Mainly the objectives are to challenge the problems we face as South Africans and the world at large such as Water problems. I believe that one way of growing our economy would be through fisheries. But one big question that stands is how will we be able to maintain aquaculture (especially freshwater) in a country that lacks skills in most sectors and a shortage of water as fish thrive in oxygenated water and at certain temperatures.



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National Strategic Environmental Assessment for Aquaculture Development in South Africa

2nd Project Steering Committee Meeting

22 November 2016

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Agenda



TIME	ACTIVITY/PRESENTATION	PRESENTER
08:30 - 09:00	Registration with tea and coffee	
09:00 - 09:10	Welcome and introductions	DAFF: Zimasa Jika
09:10 – 09:45	Overview of Aquaculture SEA – approach, impacts, objectives, scope & key outputs	CSIR: Lizande Kellerman
09:45 – 10:50	Feedback on completion of the <u>Inception Phase</u> (stakeholder engagement, focus group meetings roadshow, literature review and baseline information, key impacts identified and review of scope of SEA)	CSIR: Lizande Kellerman
10:50 – 11:50	Feedback on <u>Screening Phase</u> progress (data capture & national-scale mapping of existing aquaculture facilities, environmental attributes, siting criteria & identification of areas most suitable for aquaculture)	CSIR: Luanita Snyman
	Approach to remainder of <u>Screening phase</u>	CSIR: Lizande Kellerman
11:50 – 12:00	Way forward & closure	DEA: Simon Moganetsi
12:00 – 13:00	Lunch	



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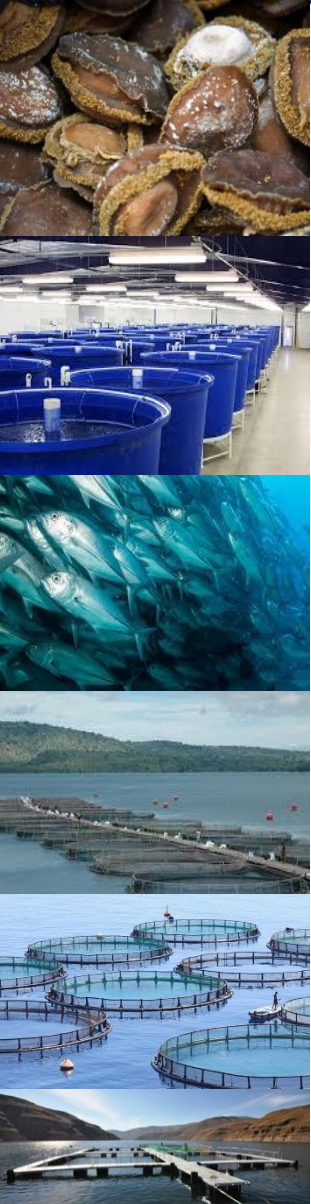


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Purpose of the meeting



- Bring new stakeholders up-to-speed on the SEA (this is the second round of PSC and ERG meetings)
- Present outcomes of *Phase 1: Inception*
- Provide feedback from the national roadshow in Sept/Oct 2016
- Present initial progress on *Phase 2: Screening* and confirm way forward for remainder of Phase 2
- Confirm composition and operating model for the PSC and ERG



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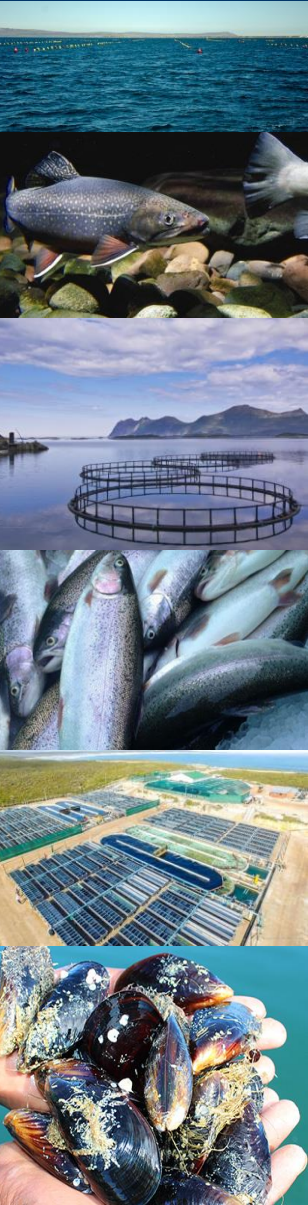


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Overview to the Aquaculture SEA



- Aquaculture includes the breeding, rearing and harvesting of plants and animals in salt or fresh water.
- Aquaculture is the fastest growing food production sector in the world.
- An additional 50 million tonnes of fish is required to feed the world population by 2030 - production will come mainly from aquaculture.
- Operation Phakisa, 2014 – promotion of Oceans Economy
 - ✓ Aquaculture is one of the priority focal areas for implementation
- DEA, in collaboration with DAFF has commissioned the CSIR to conduct a Strategic Environmental Assessment (SEA) for aquaculture development in South Africa.
- The overall purpose of the SEA is to **promote** and **support** the responsible **growth** of the aquaculture industry in South Africa.



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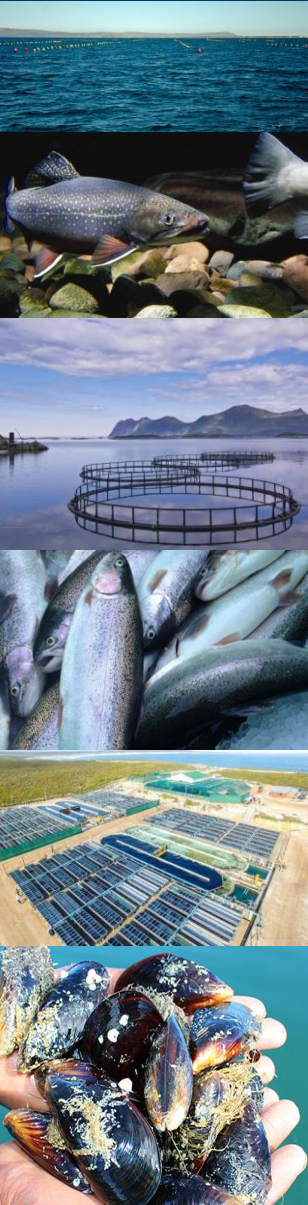


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Key challenges of the aquaculture industry in SA



- Over regulation of the sector;
- Market demand favours high-value species more than food supply;
- Scarcity of adequate freshwater and a harsh marine environment;
- Unpredictability associated with climate change;
- Vast difference between winter and summer temperatures;
- Difficulty in accessing project funding;
- Limited pool of skills and support services;
- Challenges with access to sufficient land and sea space; and
- Perceived competition with the tourism and conservation sectors.



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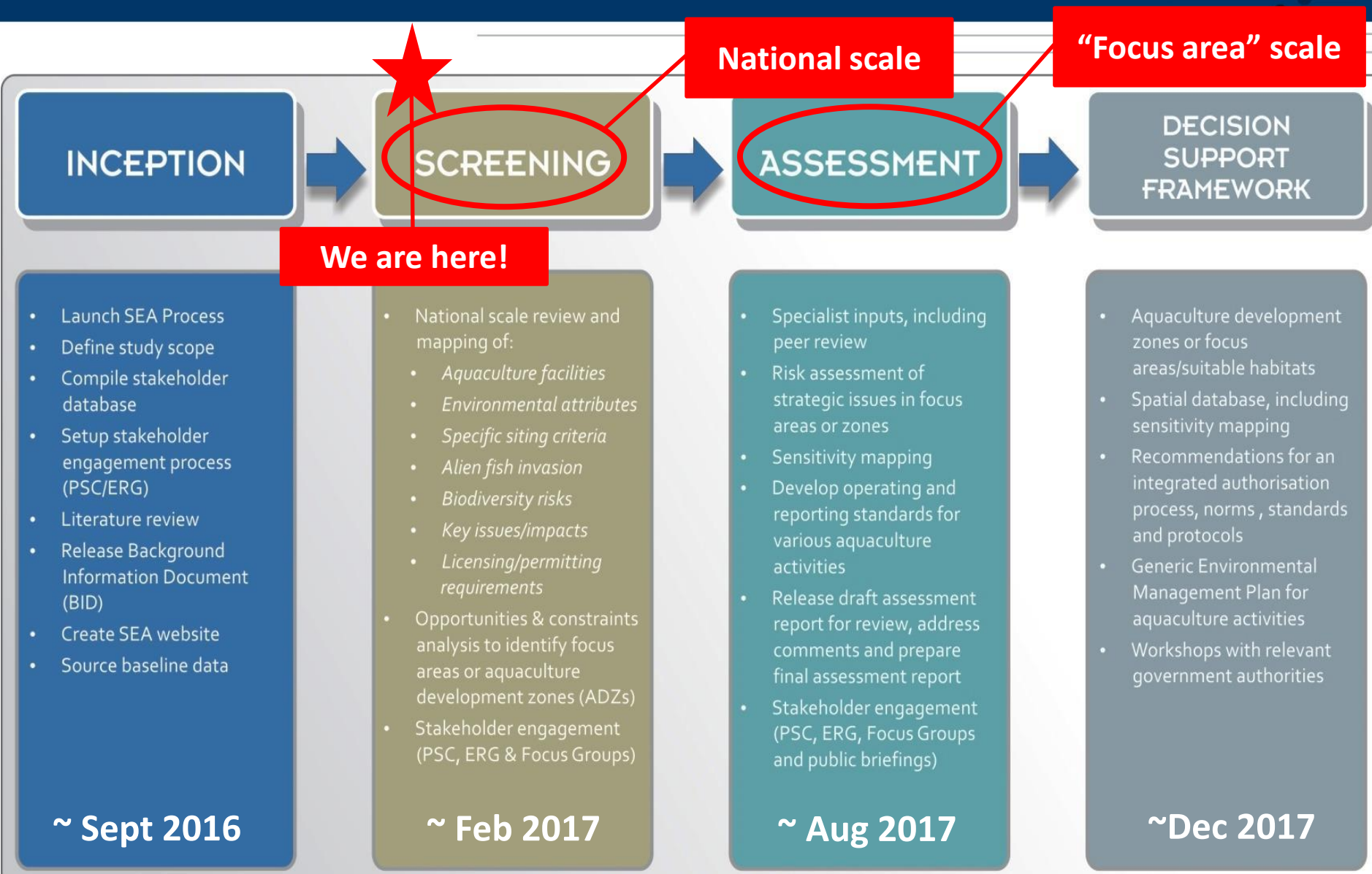


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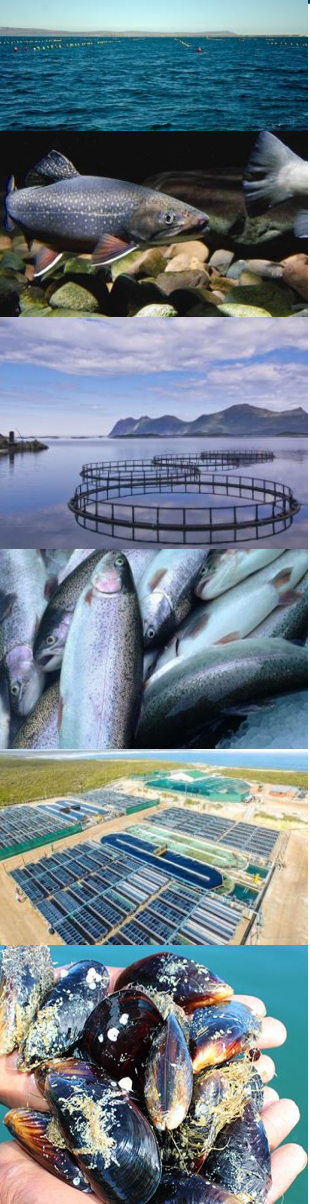
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Approach to the Aquaculture SEA



Key objectives of the Aquaculture SEA



- The SEA aims to achieve its purpose in two ways:
 - Firstly, by identifying **suitable areas** where environmentally sustainable aquaculture development can be prioritised and incentivised; and
 - Secondly, by providing a **streamlined and integrated management and regulatory framework** to reduce compliance complexities and improve decision-making processes.



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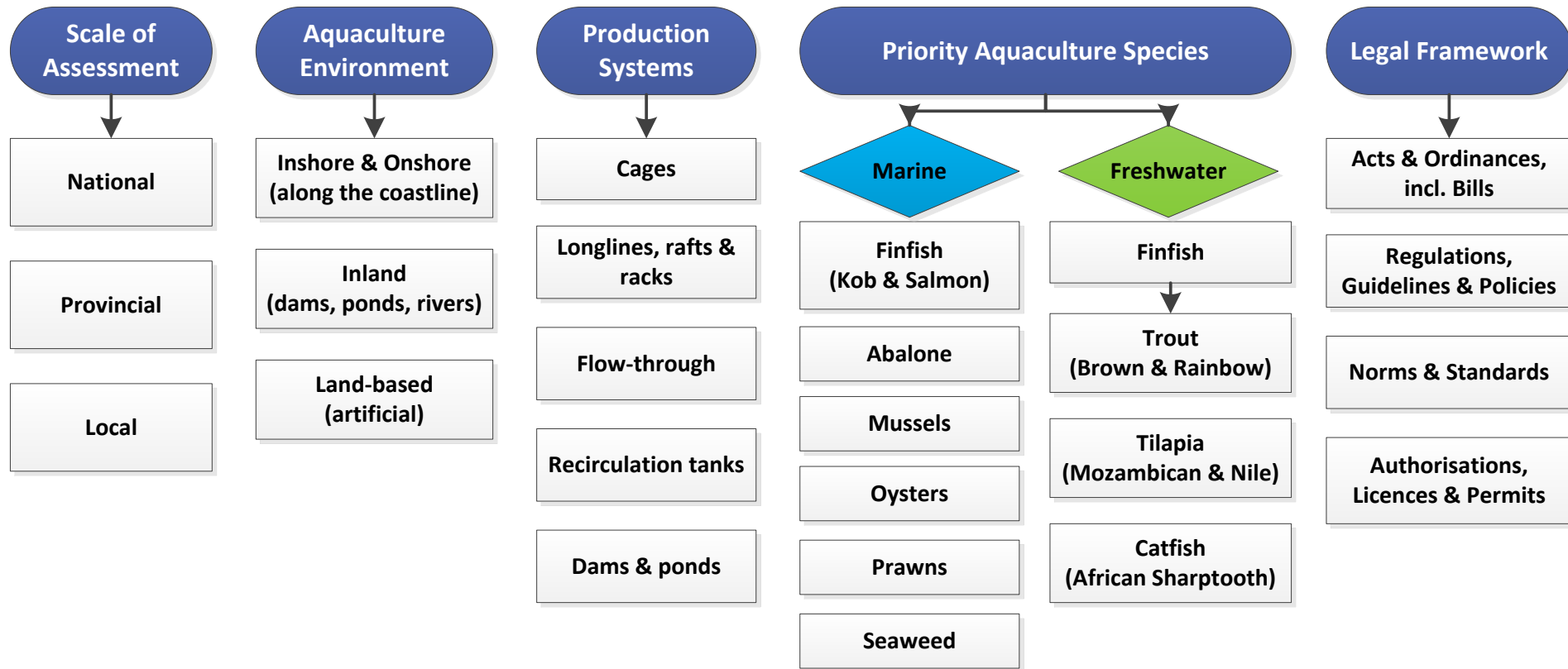


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Scope of the SEA



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Refinement of Scope during Inception phase



Based on the roadshow and Focus Group meetings, literature review, inputs from DAFF and other stakeholders, the following are excluded from the scope of the SEA:

- **Offshore** (open ocean, typically > 3 km offshore) as a suitable aquaculture environment for development

Reason: SA offshore coastline is a high risk for aquaculture development due storm severity, very high capital costs, etc.

- **Freshwater crayfish:**

- *Cherax quadricarinatus* (Redclaw)
- *Cherax tenuimanus* (Marron)

Reason: These species are highly invasive (NEMBA Category 1b & 2), compete with indigenous species & are carriers of parasites.



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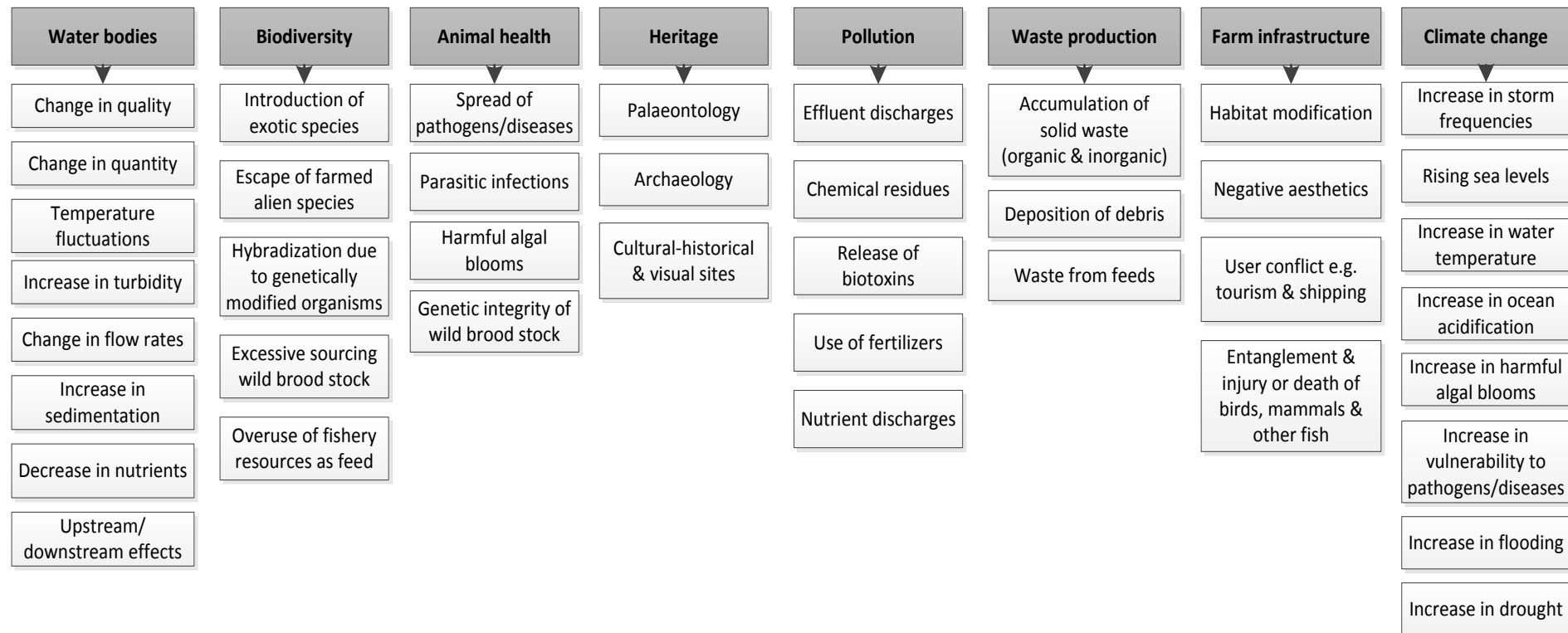
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Key environmental impacts / risks identified

Applicable to marine and/or freshwater aquaculture activities:



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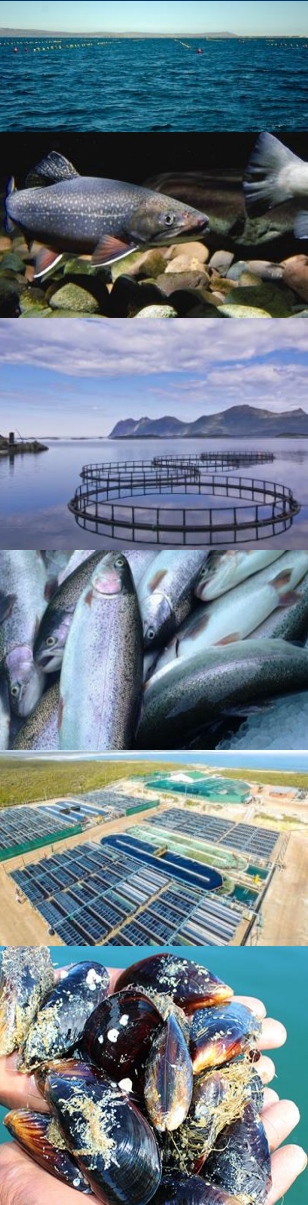


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Key outputs of the SEA



- **Optimal aquaculture areas/habitats** in South Africa.
- **Environmental compliance framework** (standards) for streamlined & integrated decision-making to reduce (or limit) the need for permitting & authorisations.
- **Environmental screening & risk assessment** for aquaculture in SA that can be continuously updated & maintained by DEA & DAFF.
- **Generic Environmental Management Plan (EMP)** for the management of aquaculture activities in South Africa.



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Stakeholder engagement

- Setup **stakeholder engagement process**:
 - Stakeholder database (comprising authorities, NGOs, research & industry);
 - Project Steering Committee (PSC);
 - Expert Reference Group (ERG).
- Launched the **SEA process**:
 - Advert published in 4 national scale newspapers;
 - Advert/article published on CSIR, DEA & DAFF websites;
 - Created **SEA website** (<http://aquasea.csir.co.za/>);
 - Created **SEA e-mail** account (aquasea@csir.co.za);
 - Prepared and released the **Background Information Document (BID)**.



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Project Steering Committee

- The **Project Steering Committee (PSC)** comprises authorities with a legislated decision-making mandate for aquaculture development in SA (incl. DEA, DAFF, DWS, DMR, DPME, DPE, DPW, DST, DTI, DRDLR, TNPA & 9 provinces)
- The purpose of the PSC is:
 - To inform, guide and monitor the implementation of the SEA process;
 - To coordinate the mandates of all organs of state in an integrated manner;
 - To facilitate sustainable development and ensure legal compliance; and
 - To facilitate discussion on the outcomes of the SEA so that they may be adopted and implemented by government.



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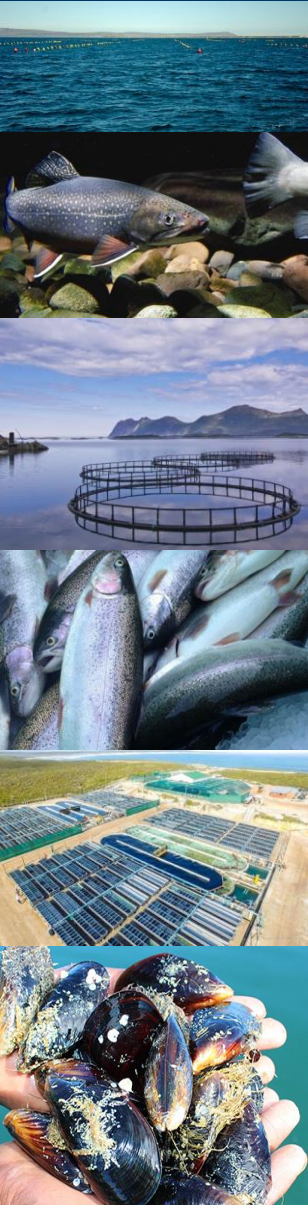
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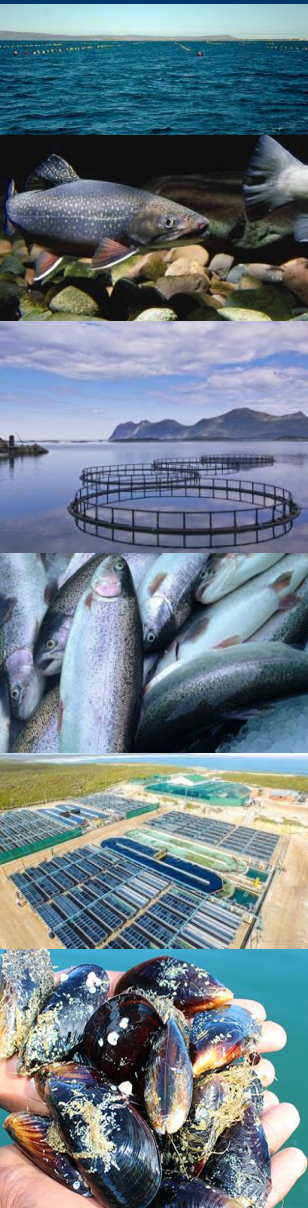
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Expert Reference Group



The ERG comprises representatives of the following:

- South African Aquaculture Industry Associations
- Directorates from DEA Oceans and Coasts, Biodiversity & Conservation, Environmental Programmes & Integrated Environmental Authorisations
- DAFF Fisheries Branch
- Department of Water and Sanitation (DWS)
- South African National Biodiversity Institute (SANBI)
- South African Institute for Aquatic Biodiversity (SAIAB)
- Agricultural Research Council (ARC)
- Provincial representatives (e.g. from nature conservation & planning departments)
- NGOs e.g. WWF South Africa
- Relevant research bodies and academia.



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Expert Reference Group

- The purpose of the ERG is:
 - **verify** that the process proposed at the outset of the SEA has been implemented in a fair and unbiased manner in that suitably experienced experts have been involved in the process;
 - **review** structures have been designed and implemented in a credible manner; and
 - **queries/comments** from the public have been adequately **addressed**.



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Discussion: PSC and ERG model



- Composition of the PSC and ERG? refine the representation from different government branches and directorates
- Should the future PSC and ERG meetings be combined into one meeting?



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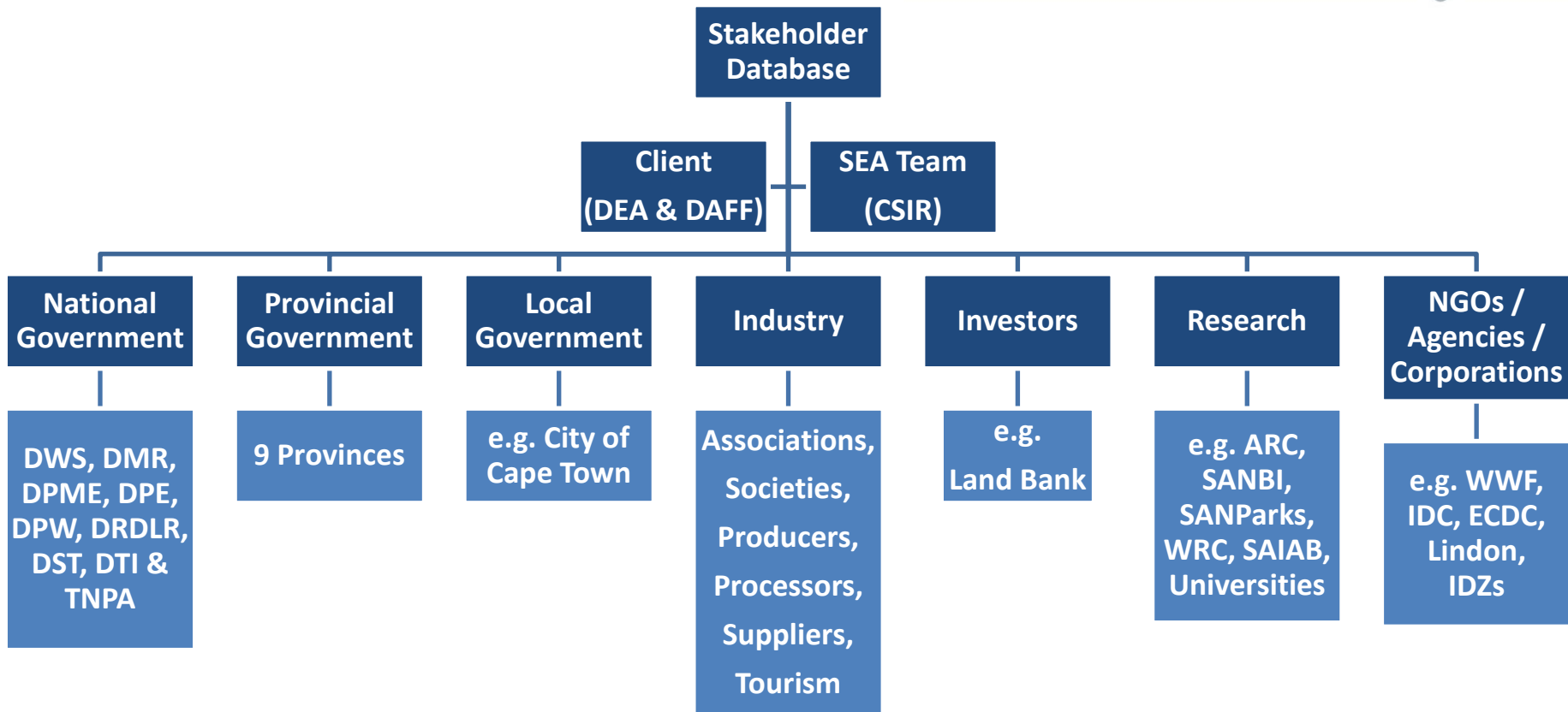


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Stakeholder database



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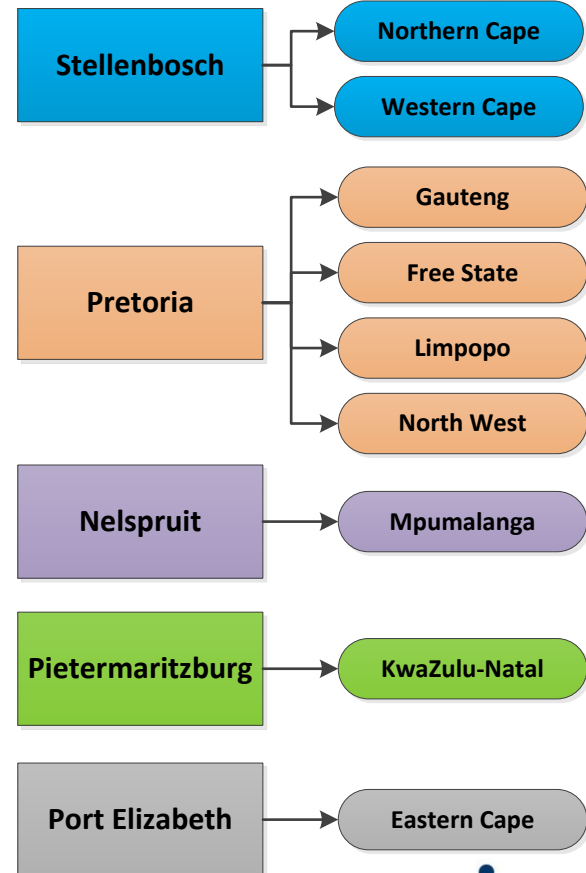
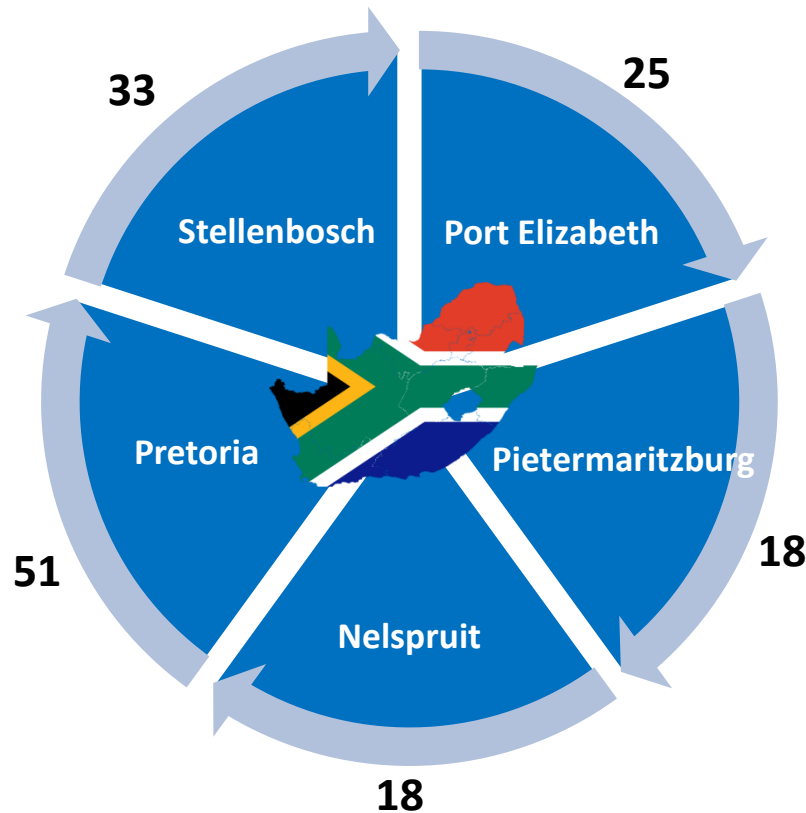
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Focus Group Meeting Roadshow

30 Sep – 7 Oct 2016



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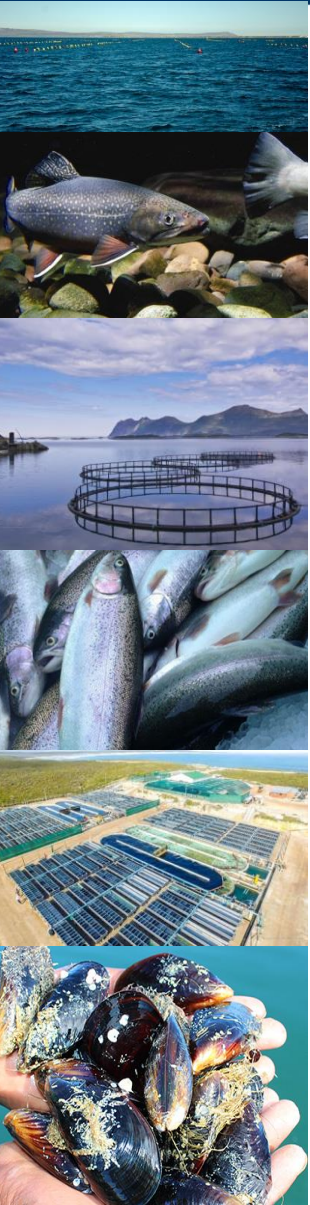


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Key points from Focus Group Meetings



- Ornamental fish species should be included in the scope.
response: capturing in existing facility database, not being included in SEA due to vast diversity of species, different production focus, etc.
- Processing and post-processing activities should be included in the scope.
response: downstream processing moves into different domain of legislation for food processing (as for other food industry activities) and outside scope of this SEA
- Freshwater aquaculture is currently being governed through provincial nature conservation legislation and not through national agriculture & fisheries legislation.
- DWS is developing new General Authorisation regulations for aquaculture.
- SEA to consider different economies of scale, i.e. small scale (subsistence & artisanal) versus large scale commercial production.
- Include mapping and review of existing aquaculture facilities should include the decommissioned and failed/closed projects, incl. state-owned hatcheries, as these can provide learning as to why they did not work out.



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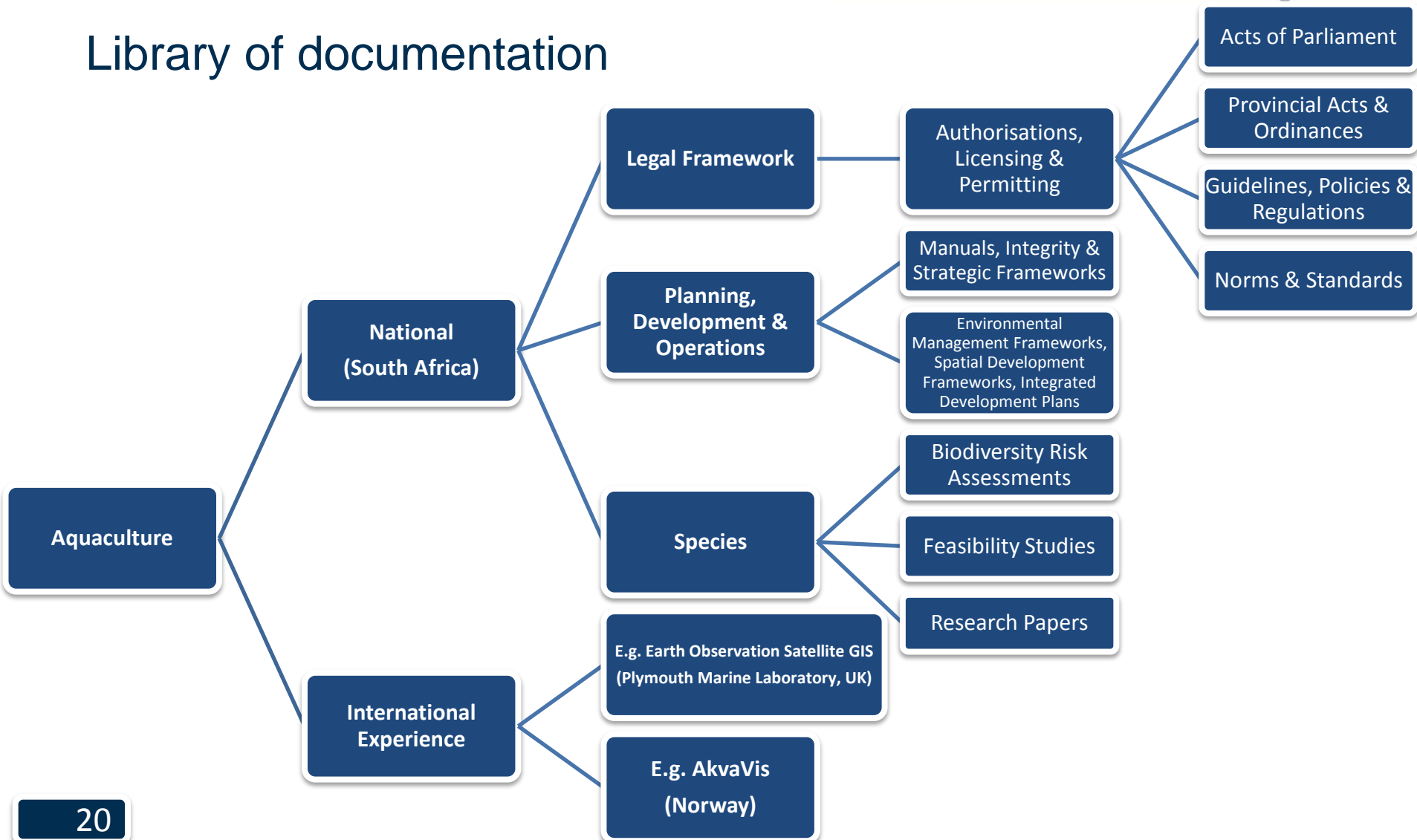
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Overview of literature & regulatory requirements

Library of documentation



Summary of Phase 1 outcomes



Key tasks completed for Phase 1:

- SEA website, Background Information Document, Announcements
- Stakeholder engagement programme and database
- PSC and ERG established (meetings 07 June and 22 Nov 2016)
- Road show and focus group meetings across provinces
- Refinement of scope of SEA
- Literature review and collation of relevant base information

Additional task (conduct during Phase 2: Screening)

- Collate a project description for aquaculture in marine and freshwater environment, in consultation with stakeholders and for review by PSC and ERG → inform the assessment phase



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Phase 2: Screening - Data capture & mapping

FACILITY NAME

LOCATION

(Lat-Long + province +
closest town)

AQUACULTURE TYPE

(e.g. marine, freshwater,
offshore, inshore, inland)

OPERATIONAL SYSTEM

(e.g. flow-through, re-
circulation, ponds, dams,
tanks, cages, long lines,
rafts)

CATEGORY

(e.g. mollusc, finfish,
shellfish, plants, sea
squirts, crustaceans)

SPECIES COMMON NAME

(e.g. Abalone)

SPECIES SCIENTIFIC NAME

(e.g. *Haliotis midae*)

Feed (e.g. commercial
feed, phytoplankton
filterfeeding)

SPECIES STATUS

(e.g. alien / indigenous)

RIVER SYSTEM & CATCHMENT

(primary + quaternary +
subquat)

SCALE

(Small-scale/Artisanal <
20 000 kg/yr;
Commercial/Industrial >
20 000 kg/yr)

NUMBER OF PEOPLE EMPLOYED

INDUSTRY

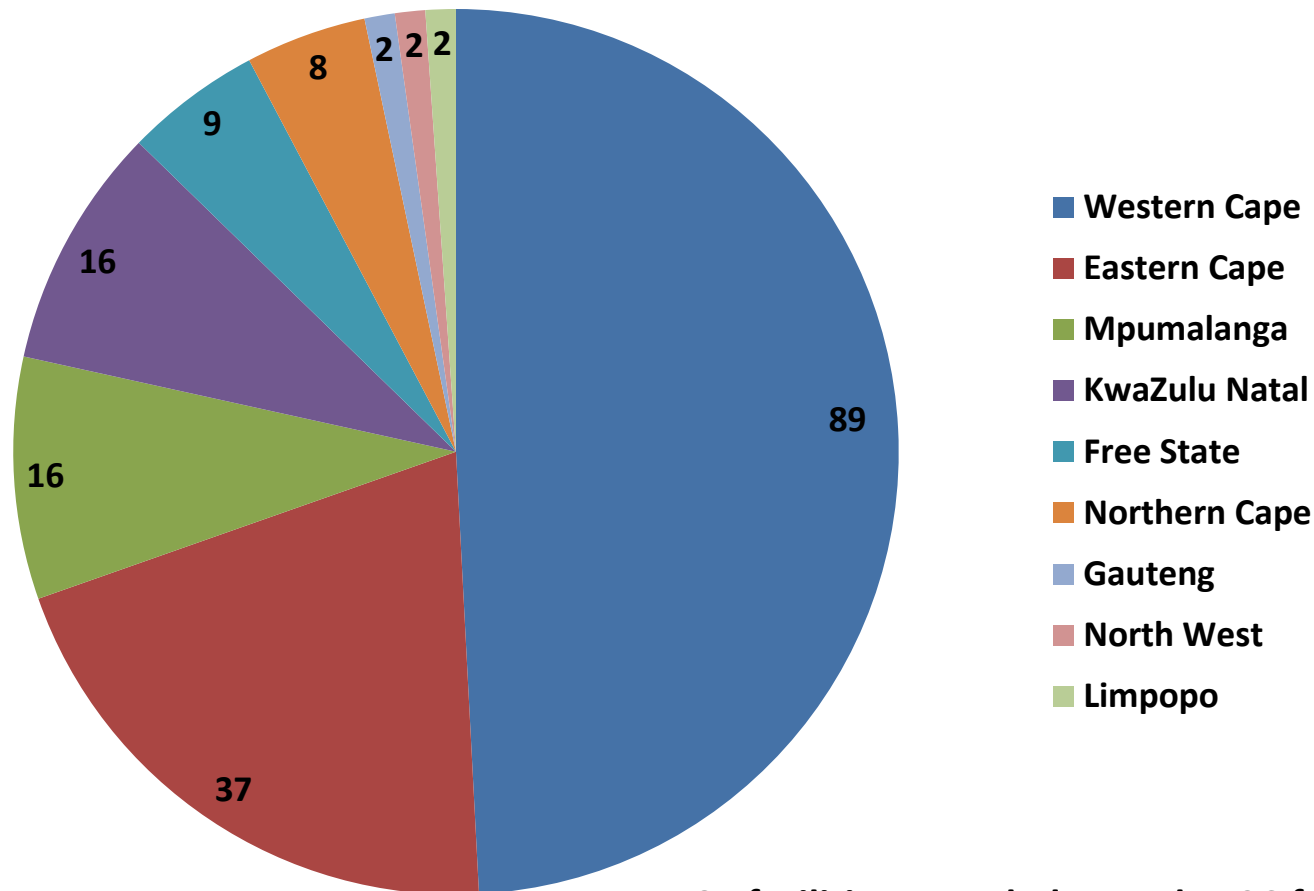
(e.g. food production /
recreation)

FACILITY STATUS

(operational, non-
operational, proposed)

Existing facilities data collected thus far

Number of aquaculture facilities per province (Nov 2016)



181 facilities recorded vs. only 136 facilities in Sept '16
However, data still very porous w.r.t. other data fields

Legend

Aquaculture



Mollusc



Sea squirts



Finfish

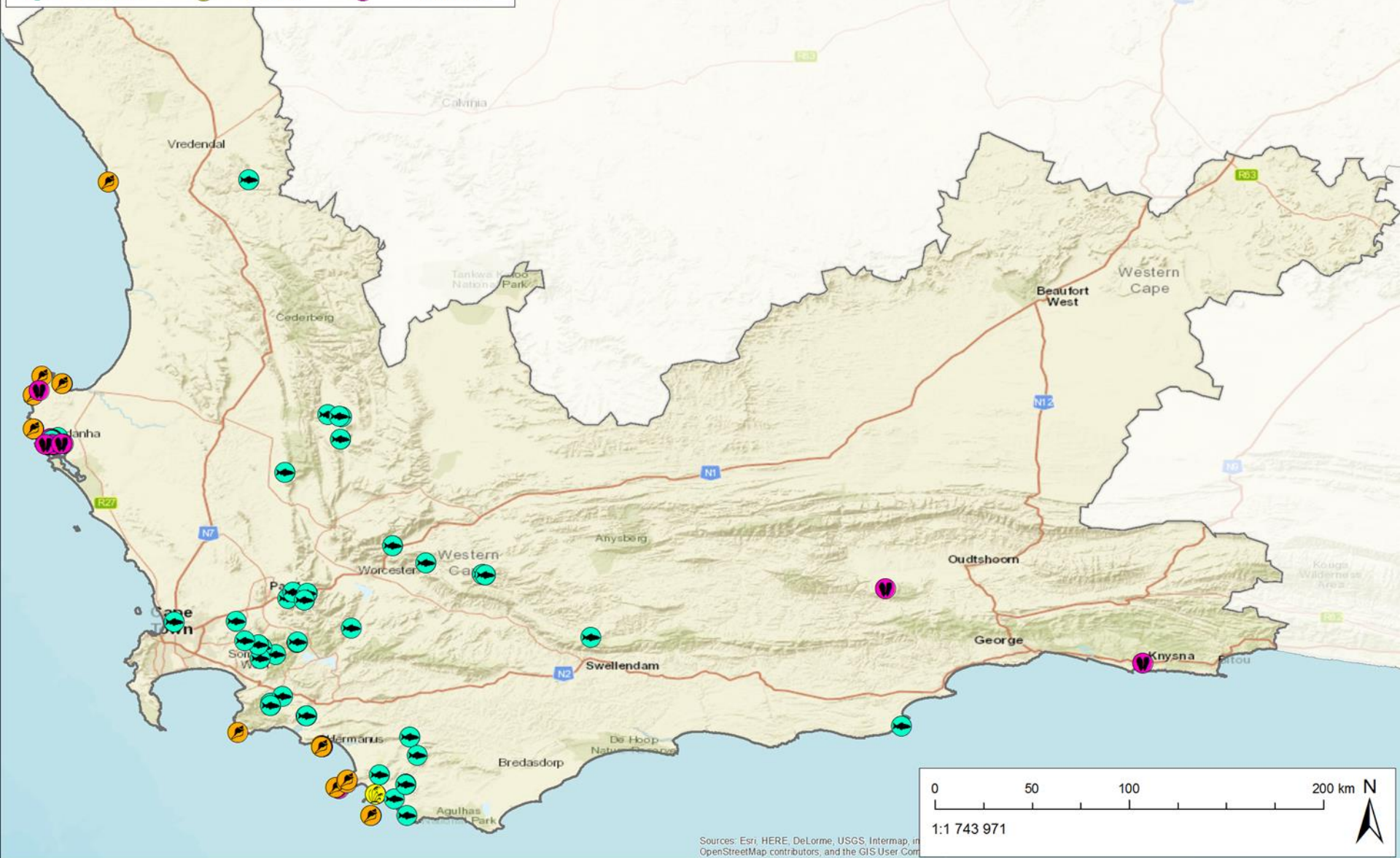


Plants



Shellfish

14/89 missing locations



Legend

Aquaculture



Mollusc



Sea squirts



Finfish

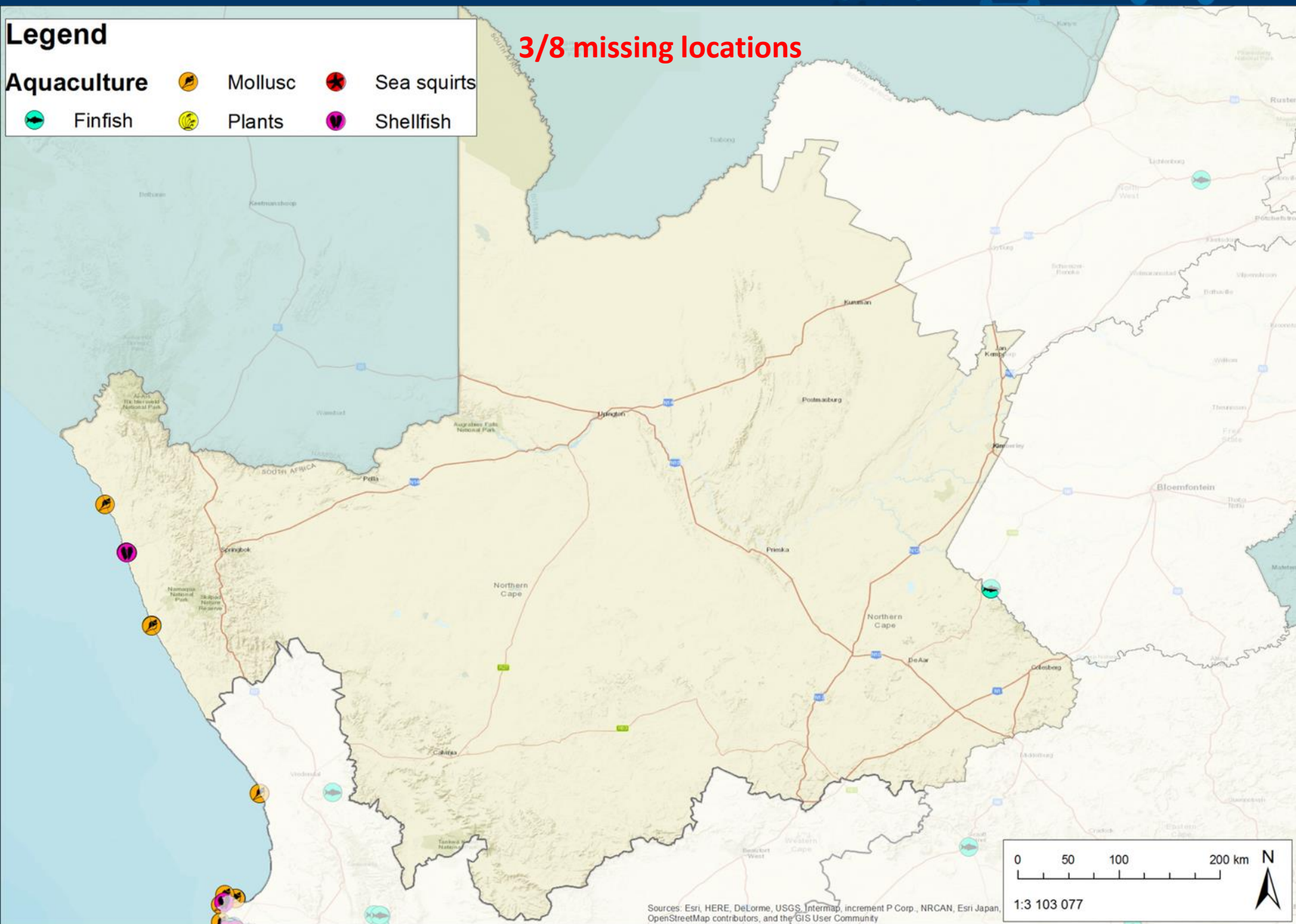


Plants



Shellfish

3/8 missing locations



Legend

Aquaculture



Mollusc



Shellfish

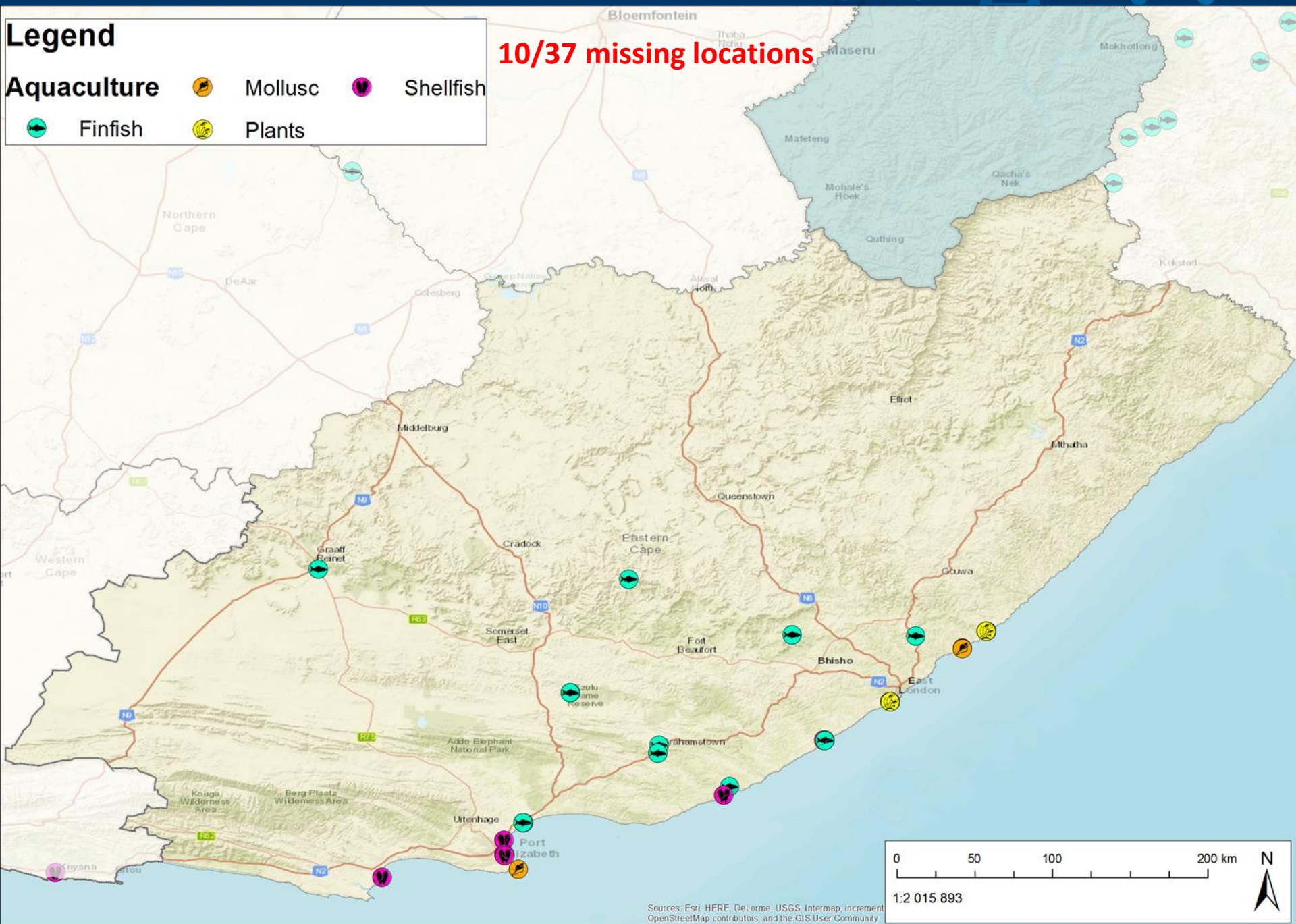


Finfish



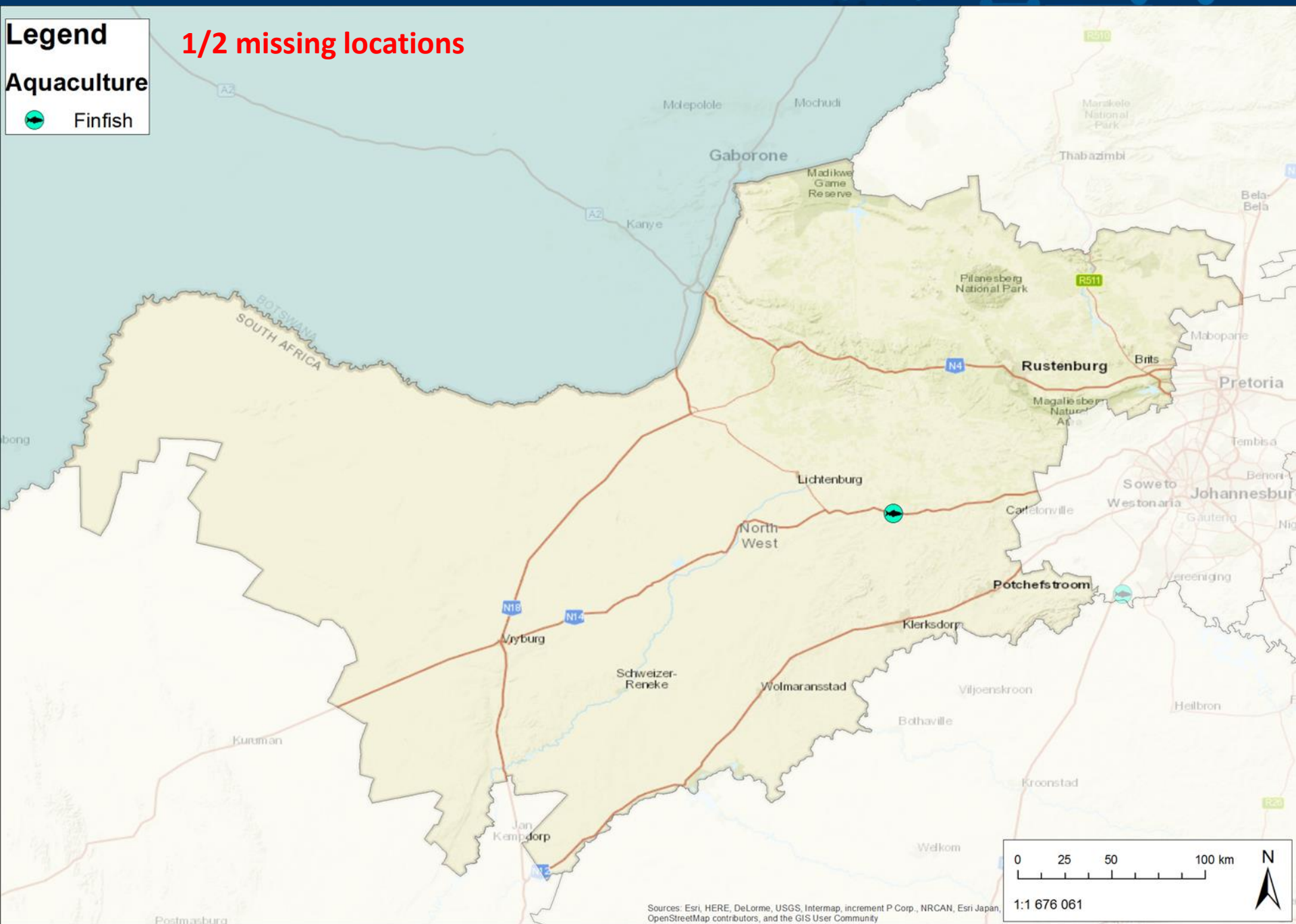
Plants

10/37 missing locations



Aquaculture

Finfish

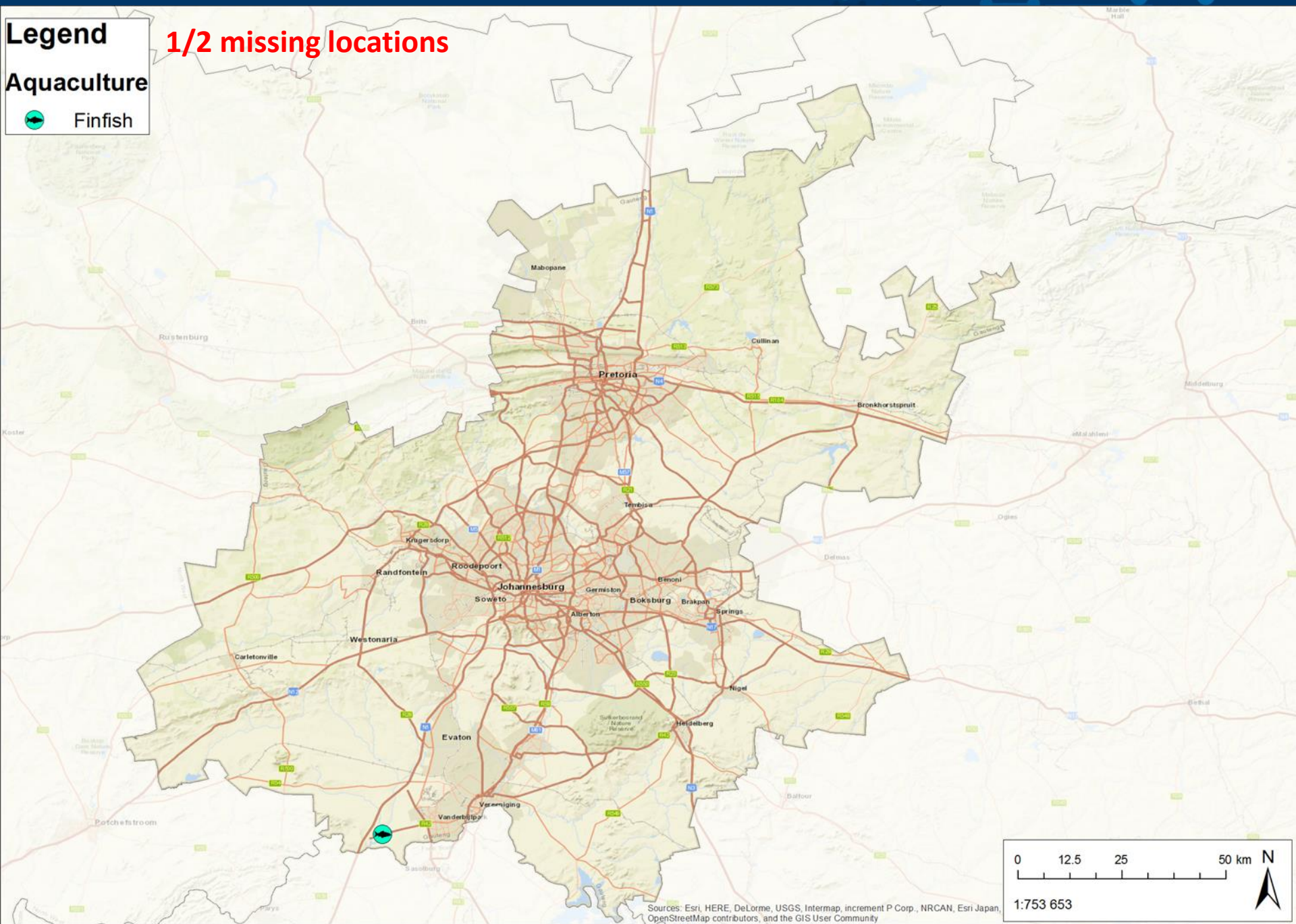


Legend

Aquaculture

- Finfish

1/2 missing locations



Legend

Aquaculture



Crustacean

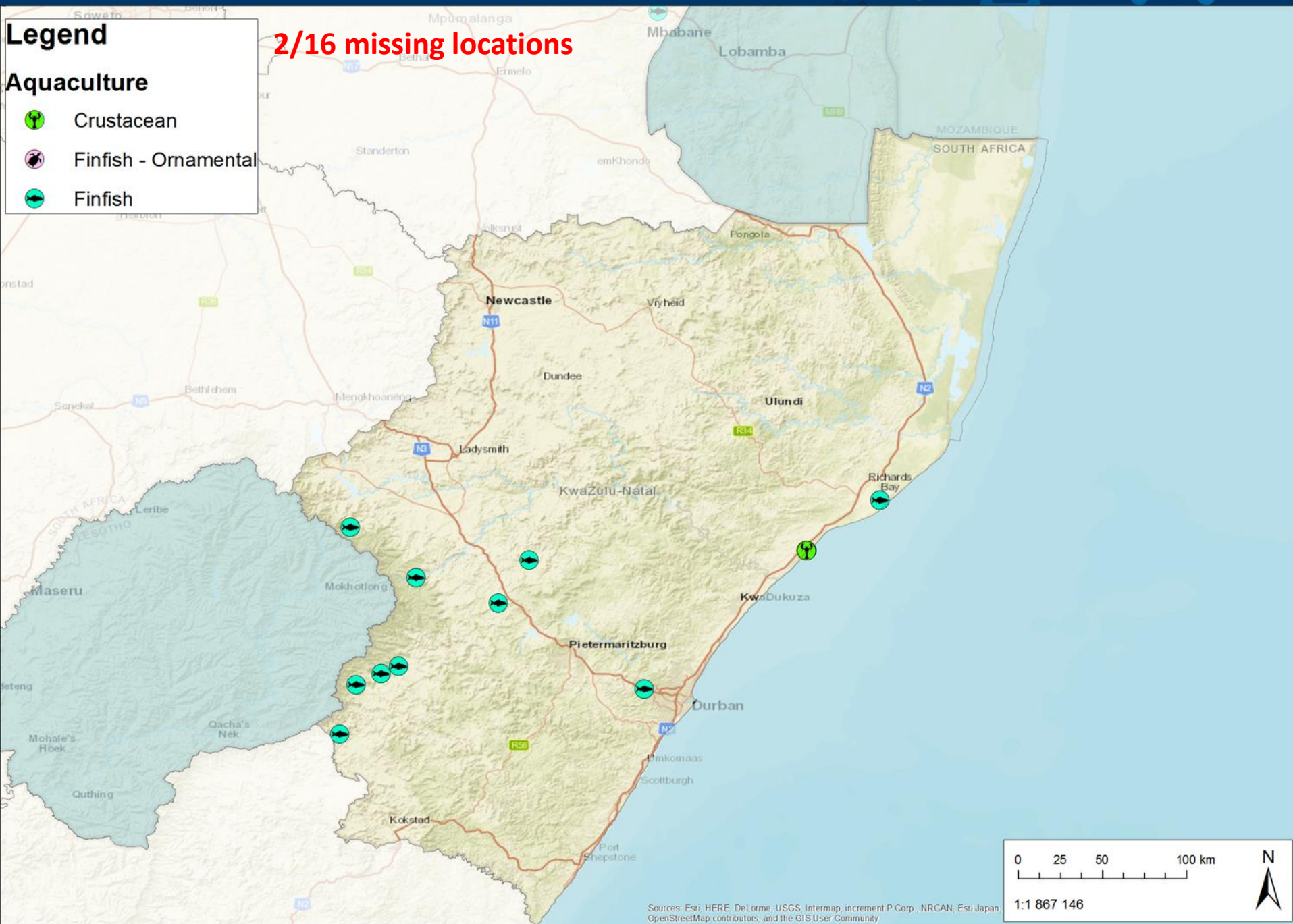


Finfish - Ornamental



Finfish

2/16 missing locations

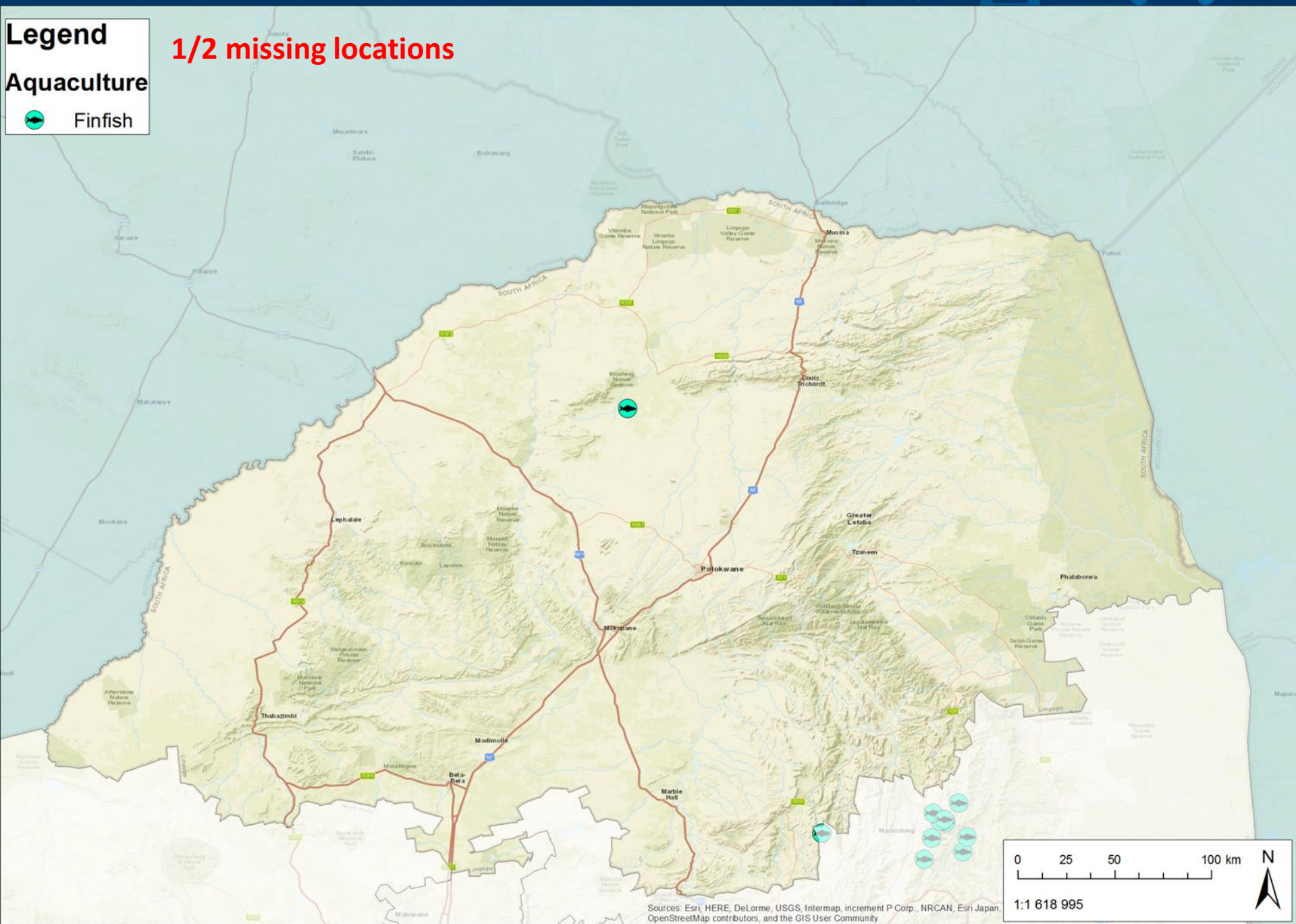


Legend

Aquaculture

 **Finfish**

1/2 missing locations



Legend

Aquaculture

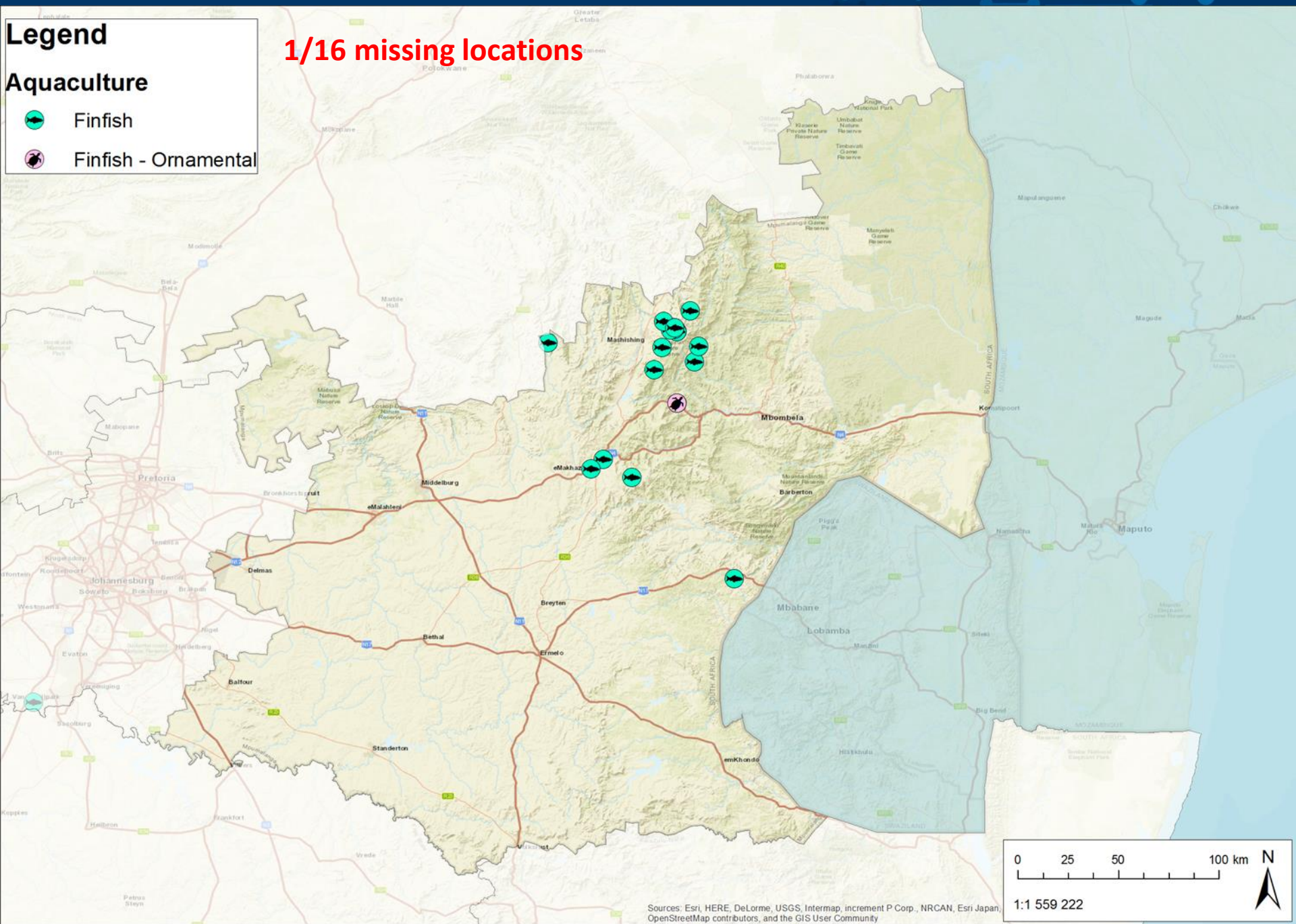


Finfish



Finfish - Ornamental

1/16 missing locations



Identifying optimal aquaculture areas – Proposed method

Collate existing spatial data ★ **We are here**

Classify features as pull and push factors

Weight pull and push factors

Analyse to extract optimal aquaculture areas

Identifying optimal aquaculture areas – Proposed method

1) COLLATE EXISTING SPATIAL DATA

For example:

- **Environmental features** (e.g. rivers, dams, coastline)
- **Conservation planning**
 - Aquatic
 - Terrestrial
- **Land use**
 - Agriculture
 - Spatial development plans
 - Land cover
- **Infrastructure**
 - Roads
 - Towns
 - SKA
 - Renewable energy



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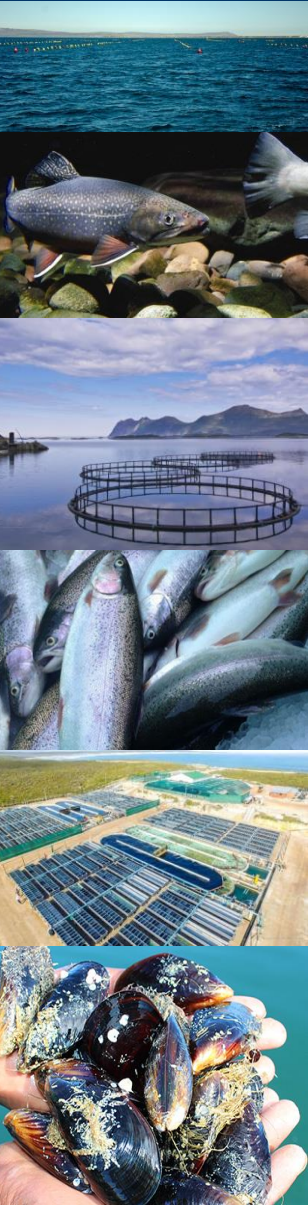


Identifying optimal aquaculture areas – Proposed method

2) CLASSIFY FEATURES AS PULL & PUSH FACTORS

For example:

- Proximity to roads = **PULL**
- Conservation priority areas = **PUSH**



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Identifying optimal aquaculture areas - Marine



Pull factors, for example:

- Wave height $< x$
- Proximity to shore $< x$
- Water temperature $< x$



Push factors, for example:

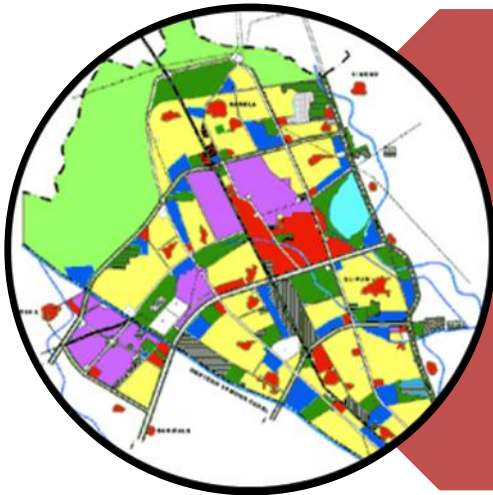
- Wind $> x$
- Harmful algae bloom
- Other sea-space use, e.g. shipping
- Marine Protected Areas

Identifying optimal aquaculture areas - Freshwater



Pull factors, for example:

- Proximity to roads $< x$
- Proximity to agricultural fields $< x$
- Water bodies (not conservation priorities)



Push factors, for example:

- Formal Protected Areas
- Freshwater Priority Areas
- Water scarcity / drought intensity

Identifying optimal aquaculture areas – Proposed method

3) WEIGHT PULL AND PUSH FACTORS

For example:

MARINE	
Factor/Attribute	Weighting/Rank
Wave height $< x$	9
Proximity to shore $< x$	9
Water temperature $< x$	6
Wind $> x$	2
Harmful algae bloom	1
Other sea-space use, e.g. shipping	1
Marine Protected Areas	0



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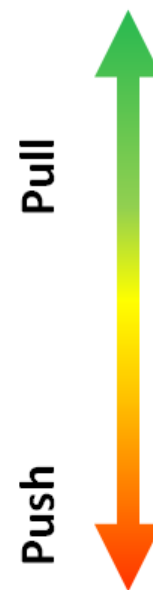


Identifying optimal aquaculture areas – Proposed method

3) WEIGHT PULL AND PUSH FACTORS

For example:

FRESHWATER	
Factor/Attribute	Weighting/Rank
Proximity to water source $< x$	9
Proximity to road network $< x$	8
Proximity to field crops $< x$	7
Water scarcity / drought intensity	2
FEPAs	1
Formal Protected Areas	0



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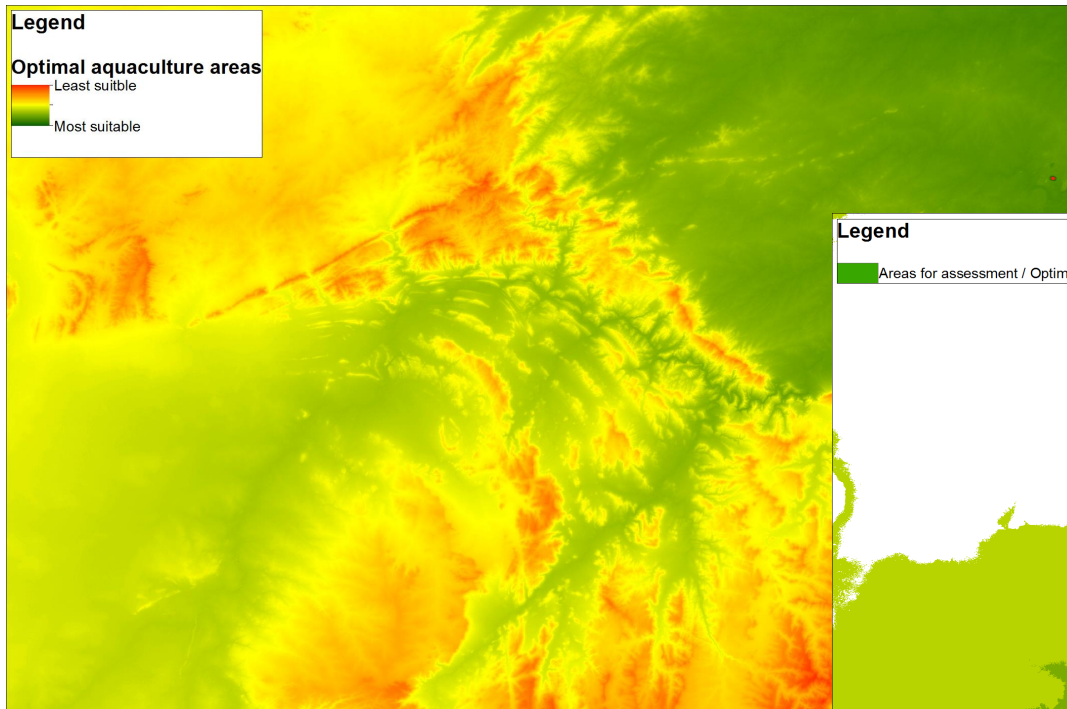
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Identifying optimal aquaculture areas – Proposed method

4) SPATIAL ANALYSIS TO EXTRACT OPTIMAL AQUACULTURE AREAS FOR ASSESSMENT

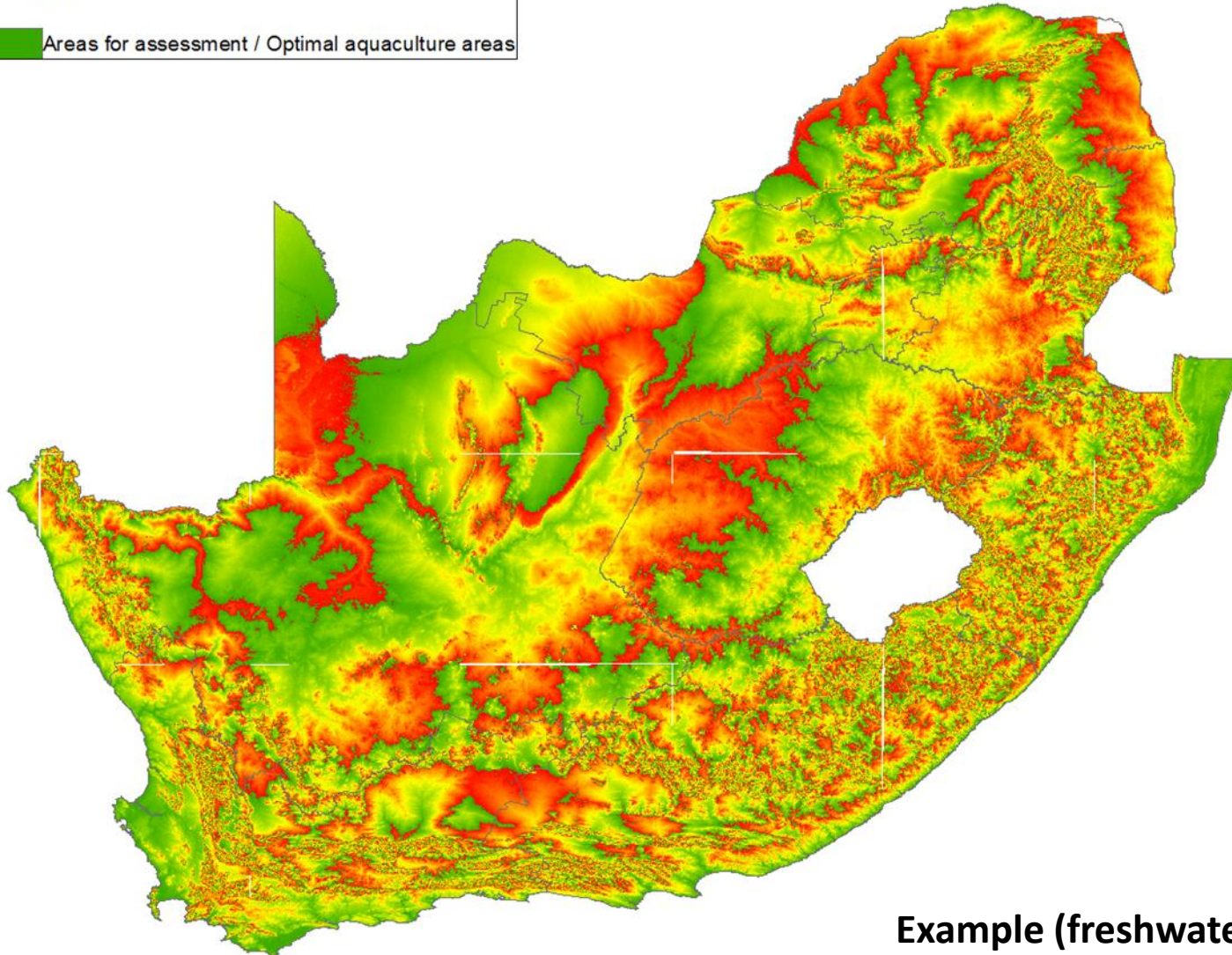
Example (freshwater):



4) SPATIAL ANALYSIS TO EXTRACT OPTIMAL AQUACULTURE AREAS FOR ASSESSMENT

Legend

 Areas for assessment / Optimal aquaculture areas

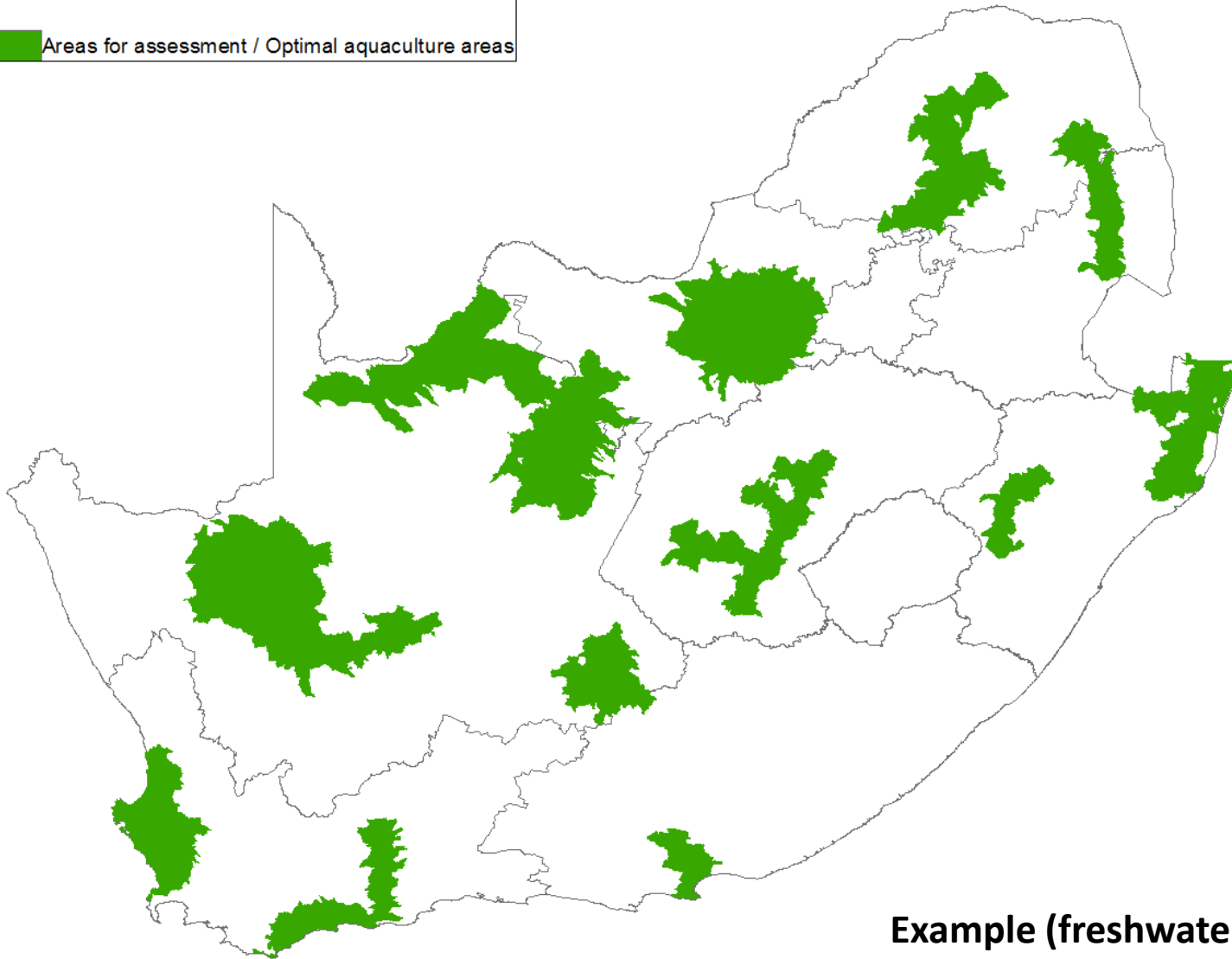


Example (freshwater)

4) SPATIAL ANALYSIS TO EXTRACT OPTIMAL AQUACULTURE AREAS FOR ASSESSMENT

Legend

 Areas for assessment / Optimal aquaculture areas



Example (freshwater)

Approach to remainder of the Screening Phase



Remaining tasks following the national-scale screening:

- Verify and update locality mapping of existing aquaculture farms;
- Classify rivers & water bodies in relation to alien fish invasion, hybridization and endemic sensitivity;
- Review and update biodiversity risk and benefit assessments for selected aquaculture species;
- Perform opportunity ('pull') and constraints ('push') analysis to identify and map the optimal/suitable aquaculture areas in SA for further assessment.



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Website: <http://aquasea.csir.co.za/>

E-mail: aquasea@csir.co.za



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AGENDA

PROJECT STEERING COMMITTEE (PSC) MEETING 22 NOVEMBER 2016

FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

DATE	TIME	VENUE
Tuesday, 22 Nov 2016	08:30 – 12:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
08:30 - 09:00	Registration with tea and coffee	
09:00 - 09:10	Welcome and introductions	DAFF: Asanda Njobeni
09:10 – 09:45	Overview of Aquaculture SEA – approach, impacts, objectives, scope & key outputs	CSIR: Lizande Kellerman
09:45 – 10:50	Feedback on completion of the <u>Inception Phase</u> (stakeholder engagement, focus group meetings roadshow, literature review and baseline information, key impacts identified and review of scope of SEA)	CSIR: Lizande Kellerman
10:50 – 11:50	Feedback on <u>Screening Phase</u> progress (data capture & national-scale mapping of existing aquaculture facilities, environmental attributes, siting criteria & identification of areas most suitable for aquaculture)	CSIR: Luanita Snyman
	Approach to remainder of <u>Screening phase</u>	CSIR: Lizande Kellerman
11:50 – 12:00	Way forward & closure	DEA: Simon Moganetsi
12:00 – 13:00	Lunch	

For any enquiries, please contact: Karabo Mashabela (CSIR), Tel: 021-888-2482, Email: aquasea@csir.co.za



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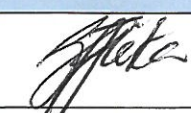


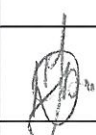

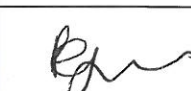


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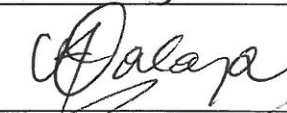
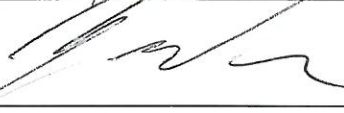
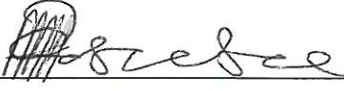
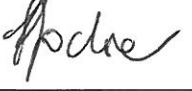

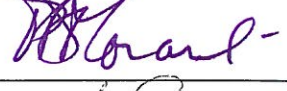


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**National Aquaculture SEA
Project Steering Committee (PSC) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 22 November 2016
Attendance Register**

Please sign in and confirm your details below:

Organisation / Institution		Name & Surname	Email	Branch / Unit	Telephone / Mobile	Signature
Dept of Agriculture, Forestry & Fisheries	DAFF	Zimasa Jika	ZimasaJ@daff.gov.za	Sustainable Aquaculture Management	(021) 402 3356/082 332 7943	
Dept of Agriculture, Forestry & Fisheries	DAFF	Fatima Savel	Fatimas@daff.gov.za	Sustainable Aquaculture Management		
Dept of Agriculture, Forestry & Fisheries	DAFF	Grant Pitcher	GrantP@daff.gov.za	Aquaculture Renewal	021 430 7015	
Dept of Agriculture, Forestry & Fisheries	DAFF	Chris Fouche	ChrisF@daff.gov.za			
Dept of Agriculture, Forestry & Fisheries	DAFF	Michelle Pretorius	MichellePR@daff.gov.za	Sustainable Aquaculture Management	021 430 7034	
Dept of Agriculture, Forestry & Fisheries	DAFF	Brett Macey	BrettM@daff.gov.za			
Dept of Agriculture, Forestry & Fisheries	DAFF	Maxhoba Jezile	MaxhobaAJ@daff.gov.za	Sustainable Aquaculture Management	021 430 7037	
Dept of Agriculture, Forestry & Fisheries	DAFF	Pontsho Sibanda	PontshoS@daff.gov.za			
Dept of Environmental Affairs	DEA	Dee Fischer	DFischer@environment.gov.za	Environmental Advisory Services	012 399 8844	
Dept of Environmental Affairs	DEA	Simon Moganetsi	SMoganetsi@environment.gov.za	Environmental Advisory Services	012 399 9309	
Dept of Environmental Affairs	DEA	Milicent Solomons	MSolomons@environment.gov.za	Integrated Environmental Authorisations	012 399 9382	
Dept of Environmental Affairs	DEA	Ramakulukusha Moses	MRamakulukusra@environment.gov.za	Oceans & Coasts Coastal Conservation Strategies	021 819 2494	 (EAF+ permits)
Dept of Environmental Affairs	DEA	Khathutshelo Nelukalo	KNelukalo@environment.gov.za			
Dept of Environmental Affairs	DEA	Livhuwani Nnzeru	Lnnzeru@environment.gov.za	Environmental Programmes: Biosecurity	021 441 2725 083 204 1926	

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CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 22 November 2016
Attendance Register**

Organisation / Institution		Name & Surname	Email	Branch / Unit	Telephone / Mobile	Signature
Dept of Environmental Affairs	DEA	Mbulelo Dopolo	Mdopolo@environment.gov.za			
Dept of Environmental Affairs	DEA	Nangamso Dyantyi	NDyantyi@environment.gov.za	ENVIRONMENTAL PROGRAMMES (EPIP:CA) DEA PRETORIA	012-399 9649 0760738050	
Dept of Environmental Affairs	DEA	Takalani Nemarude	TNemarude@environment.gov.za			Apology
Dept of Public Works	DPW	John Walaza	John.Walaza@dpw.gov.za	PTME PROFESSIONAL SERVICES	0782637347 0124061868	
Dept of Science and Technology	DST	Eric Watkinson	Eric.Watkinson@dst.gov.za	Sustainable Livelihoods	084 392 5155	
Dept Trade and Industry	DTI	Cliff Rasoesoe	CRasoesoe@thedti.gov.za	Agro-processing	0123941136	
Dept Water and Sanitation	DWS	Lumka Kuse	kusel@dws.gov.za	Instream Water Use		Apology
Council for Scientific and Industrial Research	CSIR	Paul Lochner	PLochner@csir.co.za	Environmental Management Services	021 888 2486	
Council for Scientific and Industrial Research	CSIR	Lizande Kellerman	LKellerman@csir.co.za	Environmental Management Services	021 888 2489 083 799 0949	
Council for Scientific and Industrial Research	CSIR	Pat Morant	pmorant@csir.co.za	Environmental Management Services		
Council for Scientific and Industrial Research	CSIR	Luanita van der Walt	LvdWalt1@csir.co.za	Environmental Management Services	021 888 2490	
Council for Scientific and Industrial Research	CSIR	Karabo Mashabela	KMashabela1@csir.co.za	Environmental Management Services	021 888 2482	
Council for Scientific and Industrial Research	CSIR	Rudolph du Toit	RduToit@csir.co.za	Environmental Management Services		

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Tuesday, 22 November 2016
Attendance Register**

Organisation / Institution		Name & Surname	Email	Branch / Unit	Telephone / Mobile	Signature
KZN Dept of Economic Development, Tourism and Environmental Affairs	KZN EDTEA	Malcolm Moses	Malcolm.Moses@kznedtea.gov.za	Impact Management	0824618303	
Free State Dept of Agriculture and Rural Development	FS DARD	<i>Siegfried van der Merwe</i> Pilot Nchabeleng	<i>sieg@fs.agric.za</i> pilotn@fs.agric.za	Research and Technology Development Services	<i>051-861 8379</i> <i>083 2904484</i>	
KZN Dept of Economic Development, Tourism and Environmental Affairs	KZN EDTEA	Mduduzi Zondo	Mduduzi.zondo@kznedtea.gov.za			
Limpopo Economic Development; Environment and Tourism	LEDET	Keleabetswe Tlouane	TlouaneKC@ledet.gov.za			
Limpopo Economic Development; Environment and Tourism	LEDET	Victor Mongwe	MongweV@ledet.gov.za			
Western Cape Dept of Environmental Affairs & Development Planning	WC DEADP	Mellisa Naiker	Mellisa.Naiker@westerncape.gov.za	<i>Directorate: Biodiversity & Coastal Mng.</i>	021 483 2885	
Northern Cape Dept of Environment and Nature Conservation	NC DENC	Louise Geldenhuys	geldenhuys.louise1@gmail.com	Marine Biology		Apology
Northern Cape Dept of Environment and Nature Conservation	NC DENC	Adeleen Cloete	adeleen.denc@gmail.com			Apology
Gauteng Dept of Agriculture and Rural Development	GDARD	Dr. Dietana Nemudzivhadi	Dietana.Nemudzivhadi@gauteng.gov.za	Veterinary Services & SRM	<i>082 7864 222</i>	
Dept of Environmental Affairs	DEA	Tintswalo Shirindig	TGShirindig@environment.gov.za	Coastal Conservation Strategies (O&C)	021 819 2863	
Dept of Agriculture, Forestry & Fisheries	DAFF	Anatea Bernat zeder	Anatea.B@daff.gov.za	<i>operator phalosa Delany Unit</i>	021 462 3067	
<i>DoA:WC</i>	<i>DoA:WC</i>	<i>F. Endemann</i>	<i>fendlic@elsenburg.co.za</i>	<i>FS</i>	<i>0748700520</i>	
<i>Gauteng Dept of Agric</i>						



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National Strategic Environmental Assessment for Aquaculture Development in South Africa

2nd Expert Reference Group Meeting
22 November 2016

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Agenda



TIME	ACTIVITY/PRESENTATION	PRESENTER
12:30 - 13:00	Registration with lunch	
13:00 - 13:10	Welcome and introductions	DAFF: Zimasa Jika
13:10 - 13:45	Overview of Aquaculture SEA – approach, impacts, objectives, scope & key outputs	CSIR: Lizande Kellerman
13:45 - 14:45	Feedback on completion of the <u>Inception Phase</u> (stakeholder engagement, focus group meetings roadshow, literature review and baseline information, key impacts identified and review of scope of SEA)	CSIR: Lizande Kellerman
14:45 - 15:00	Tea/Coffee break	
15:00 - 15:50	Feedback on <u>Screening Phase</u> progress (data capture & national-scale mapping of existing aquaculture facilities, environmental attributes, siting criteria & identification of areas most suitable for aquaculture) Approach to remainder of <u>Screening phase</u>	CSIR: Luanita Snyman CSIR: Lizande Kellerman
15:50 - 16:00	Way forward & closure	DEA: Simon Moganetsi



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Purpose of the meeting



- Bring new stakeholders up-to-speed on the SEA (this is the second round of PSC and ERG meetings)
- Present outcomes of *Phase 1: Inception*
- Provide feedback from the national roadshow in Sept/Oct 2016
- Present initial progress on *Phase 2: Screening* and confirm way forward for remainder of Phase 2
- Discuss push & pull factors and weighting criteria



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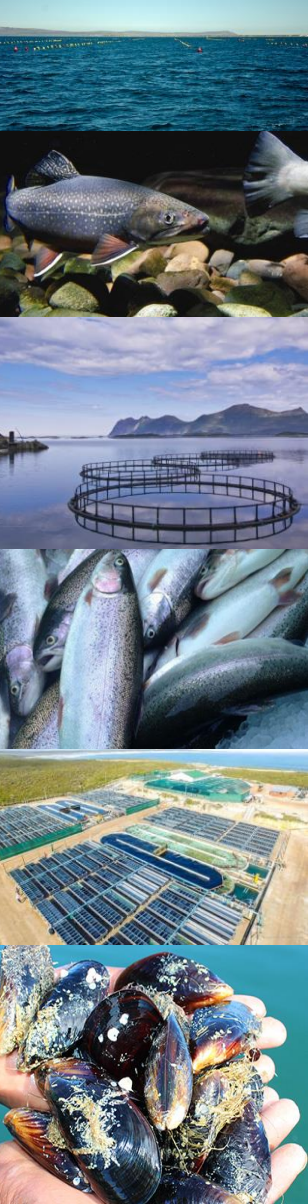


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Overview to the Aquaculture SEA



- Aquaculture includes the breeding, rearing and harvesting of plants and animals in salt or fresh water.
- Aquaculture is the fastest growing food production sector in the world.
- An additional 50 million tonnes of fish is required to feed the world population by 2030 - production will come mainly from aquaculture.
- Operation Phakisa, 2014 – promotion of Oceans Economy
 - ✓ Aquaculture is one of the priority focal areas for implementation
- DEA, in collaboration with DAFF has commissioned the CSIR to conduct a Strategic Environmental Assessment (SEA) for aquaculture development in South Africa.
- The overall purpose of the SEA is to **promote** and **support** the responsible **growth** of the aquaculture industry in South Africa.



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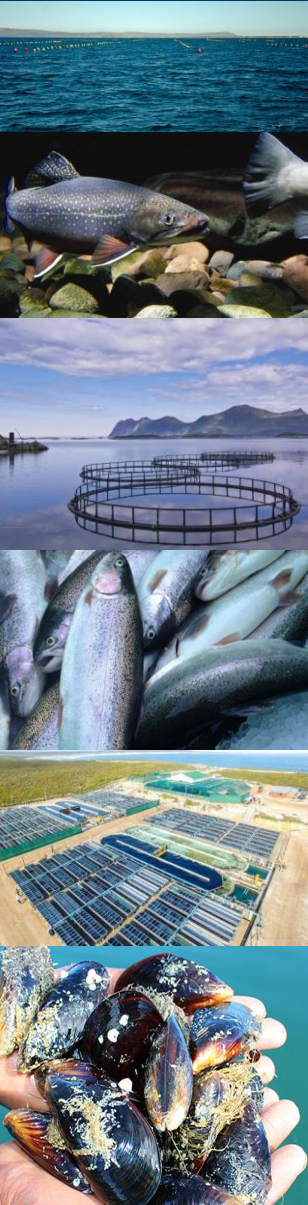


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Key challenges of the aquaculture industry in SA



- Over regulation of the sector;
- Market demand favours high-value species more than food supply;
- Scarcity of adequate freshwater and a harsh marine environment;
- Unpredictability associated with climate change;
- Vast difference between winter and summer temperatures;
- Difficulty in accessing project funding;
- Limited pool of skills and support services;
- Challenges with access to sufficient land and sea space; and
- Perceived competition with the tourism and conservation sectors.



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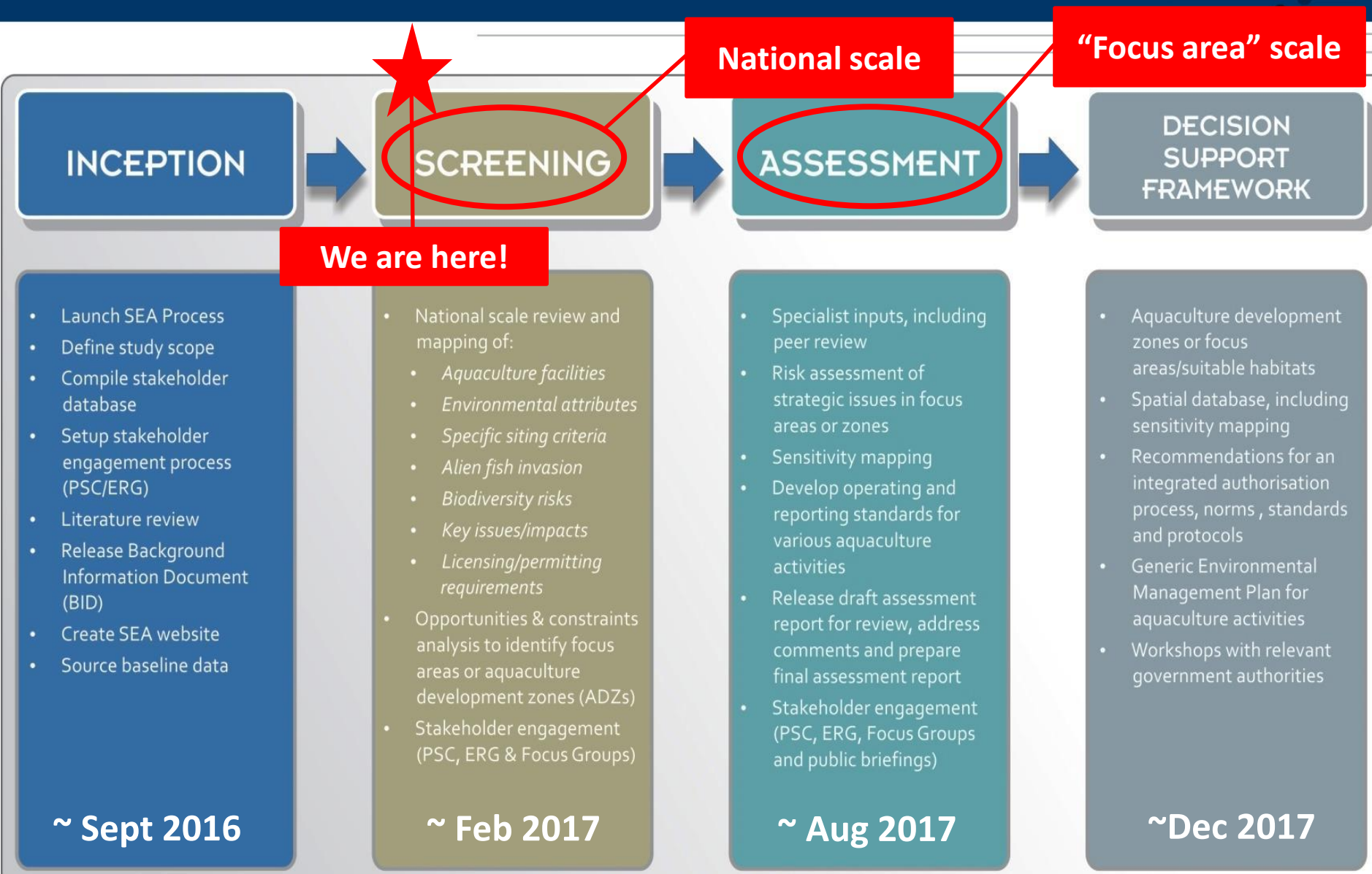


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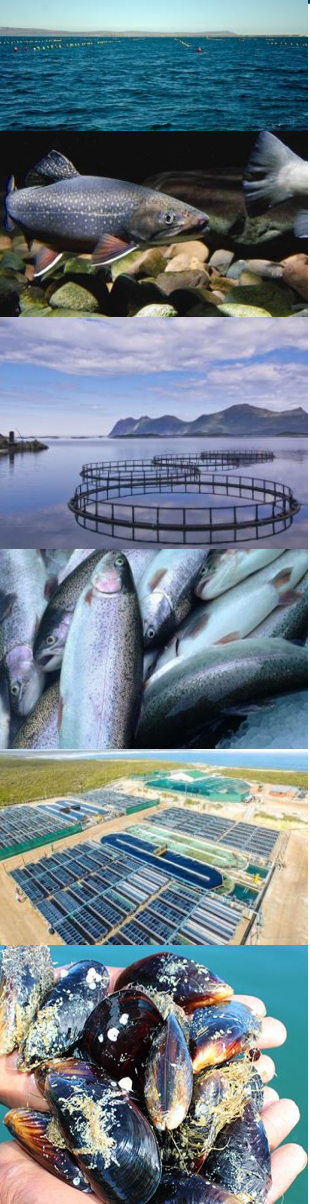
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Approach to the Aquaculture SEA



Key objectives of the Aquaculture SEA



- The SEA aims to achieve its purpose in two ways:
 - Firstly, by identifying **suitable areas** where environmentally sustainable aquaculture development can be prioritised and incentivised; and
 - Secondly, by providing a **streamlined and integrated management and regulatory framework** to reduce compliance complexities and improve decision-making processes.



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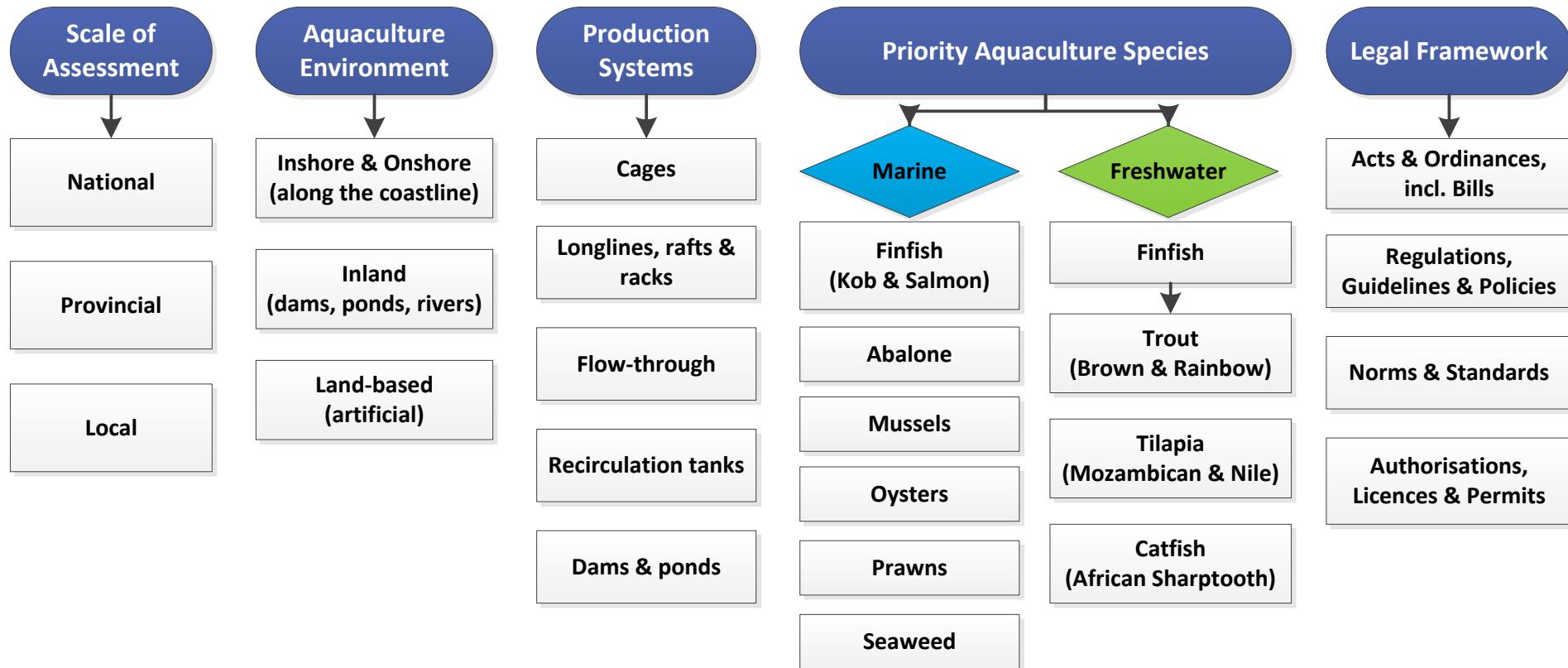


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Scope of the SEA



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Refinement of Scope during Inception phase

Based on the roadshow and Focus Group meetings, literature review, inputs from DAFF and other stakeholders, the following are excluded from the scope of the SEA:

- **Offshore** (open ocean, typically > 3 km offshore) as a suitable aquaculture environment for development

Reason: SA offshore coastline is a high risk for aquaculture development due storm severity, very high capital costs, etc

- **Freshwater crayfish:**

- *Cherax quadricarinatus* (Redclaw)
- *Cherax tenuimanus* (Marron)

Reason: These species are highly invasive (NEMBA Category 1b & 2), compete with indigenous species & are carriers of parasites.



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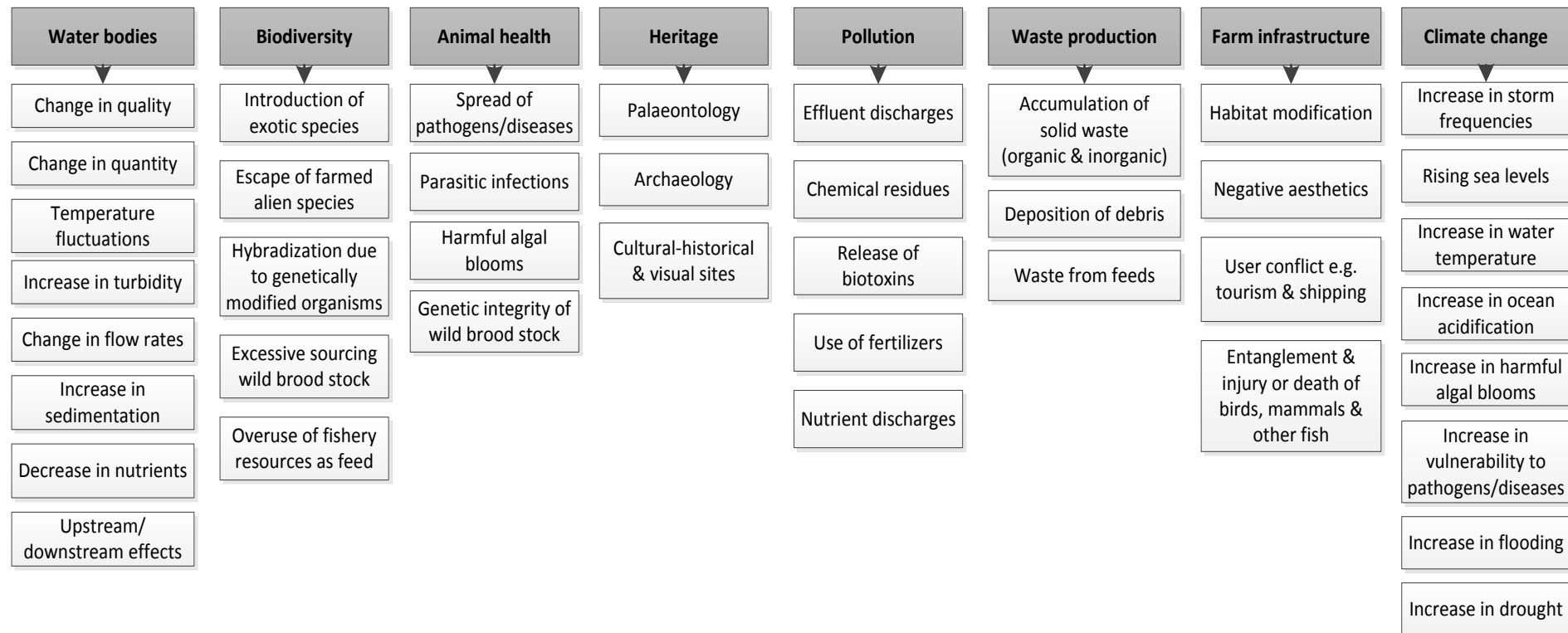
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Key environmental impacts / risks identified

Applicable to marine and/or freshwater aquaculture activities:



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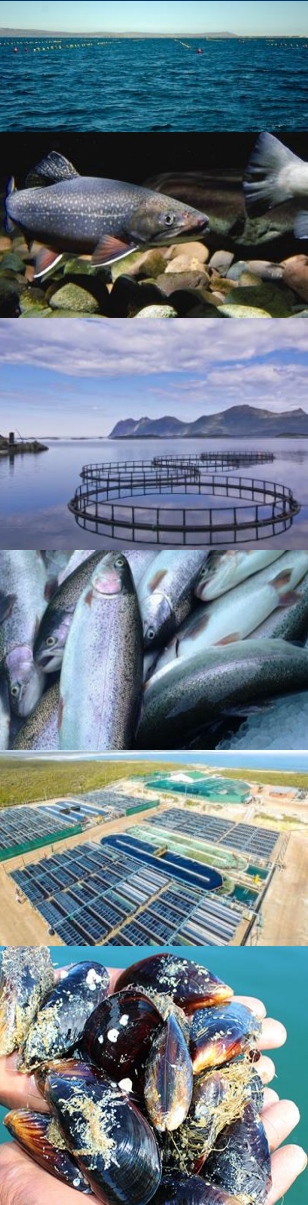


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Key outputs of the SEA



- **Optimal aquaculture areas/habitats** in South Africa.
- **Environmental compliance framework** (standards) for streamlined & integrated decision-making to reduce (or limit) the need for permitting & authorisations.
- **Environmental screening & risk assessment** for aquaculture in SA that can be continuously updated & maintained by DEA & DAFF.
- **Generic Environmental Management Plan (EMP)** for the management of aquaculture activities in South Africa.



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Stakeholder engagement

- Setup **stakeholder engagement process**:
 - Stakeholder database (comprising authorities, NGOs, research & industry);
 - Project Steering Committee (PSC);
 - Expert Reference Group (ERG).
- Launched the **SEA process**:
 - Advert published in 4 national scale newspapers;
 - Advert/article published on CSIR, DEA & DAFF websites;
 - Created **SEA website** (<http://aquasea.csir.co.za/>);
 - Created **SEA e-mail** account (aquasea@csir.co.za);
 - Prepared and released the **Background Information Document (BID)**.



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Project Steering Committee

- The **Project Steering Committee (PSC)** comprises authorities with a legislated decision-making mandate for aquaculture development in SA (incl. DEA, DAFF, DWS, DMR, DPME, DPE, DPW, DST, DTI, DRDLR, TNPA & 9 provinces)
- The purpose of the PSC is:
 - To inform, guide and monitor the implementation of the SEA process;
 - To coordinate the mandates of all organs of state in an integrated manner;
 - To facilitate sustainable development and ensure legal compliance; and
 - To facilitate discussion on the outcomes of the SEA so that they may be adopted and implemented by government.



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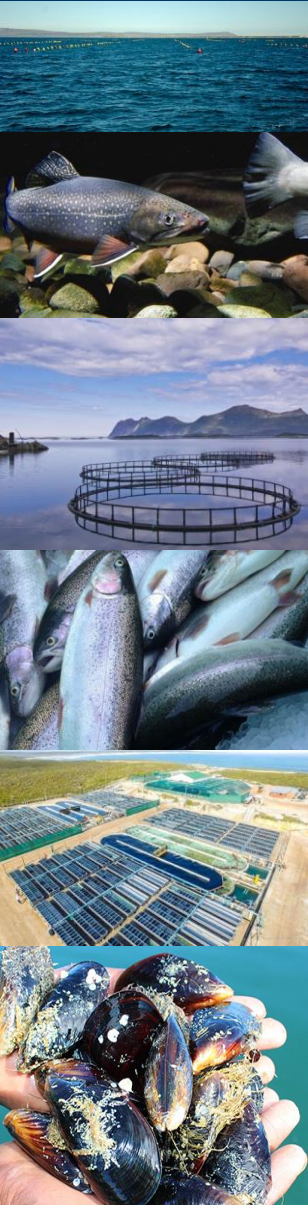
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Expert Reference Group

The ERG comprises representatives of the following:

- South African Aquaculture Industry Associations
- Directorates from DEA Oceans and Coasts, Biodiversity & Conservation, Environmental Programmes & Integrated Environmental Authorisations
- DAFF Fisheries Branch
- Department of Water and Sanitation (DWS)
- South African National Biodiversity Institute (SANBI)
- South African Institute for Aquatic Biodiversity (SAIAB)
- Agricultural Research Council (ARC)
- Provincial representatives (e.g. from nature conservation & planning departments)
- NGOs e.g. WWF South Africa
- Relevant research bodies and academia.



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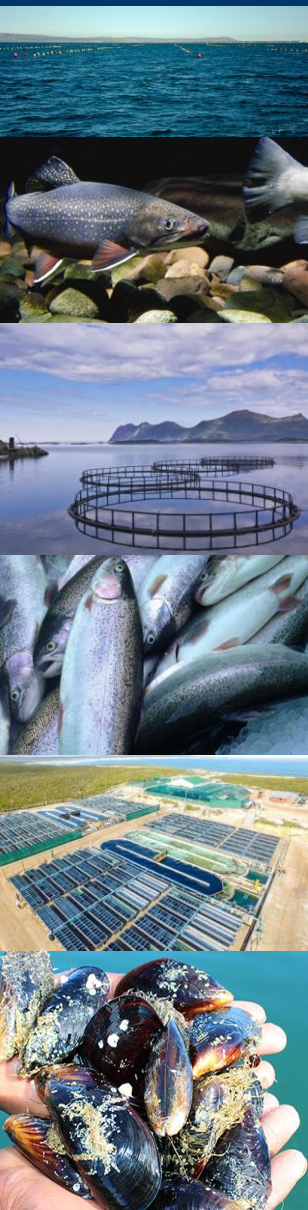
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Expert Reference Group

- The purpose of the ERG is:
 - **verify** that the process proposed at the outset of the SEA has been implemented in a fair and unbiased manner in that suitably experienced experts have been involved in the process;
 - **review** structures have been designed and implemented in a credible manner; and
 - **queries/comments** from the public have been adequately **addressed**.



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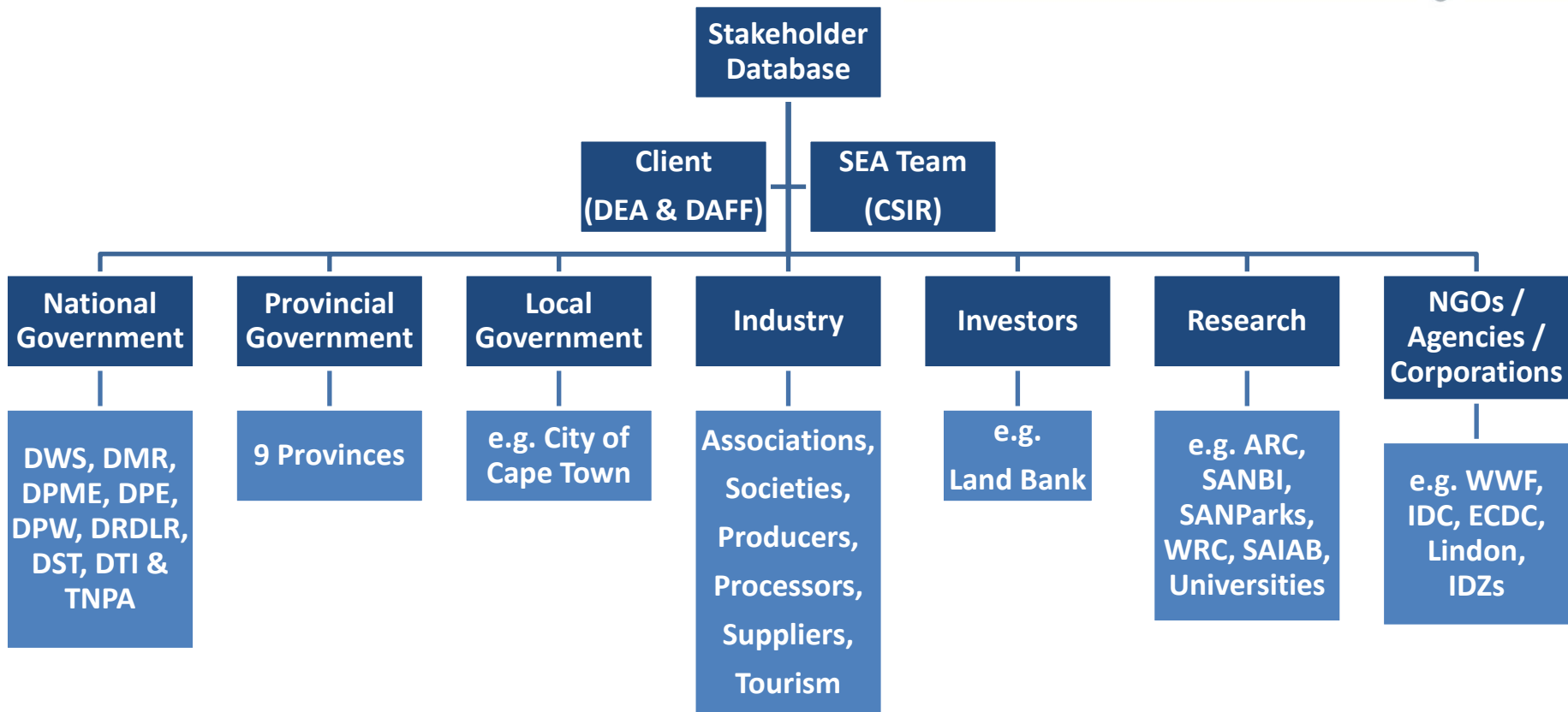


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Stakeholder database



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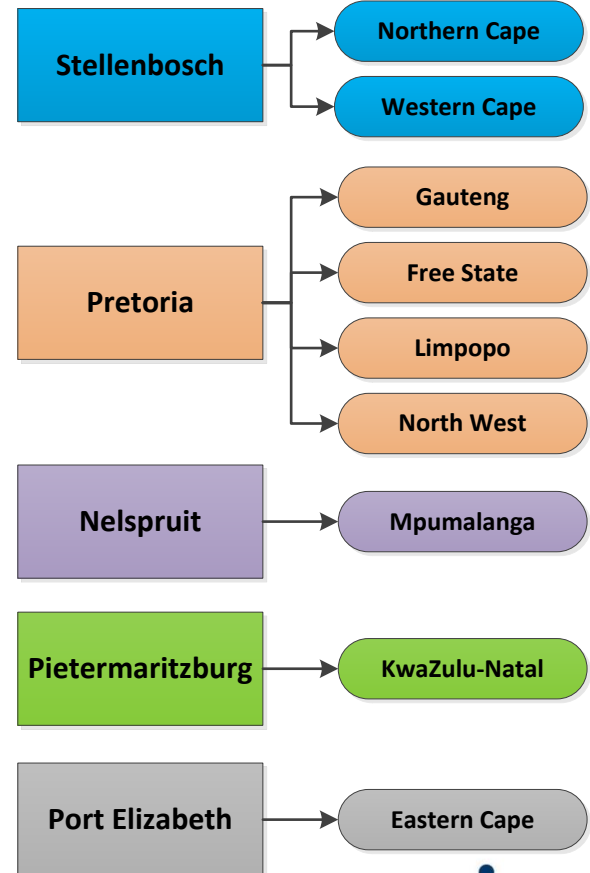
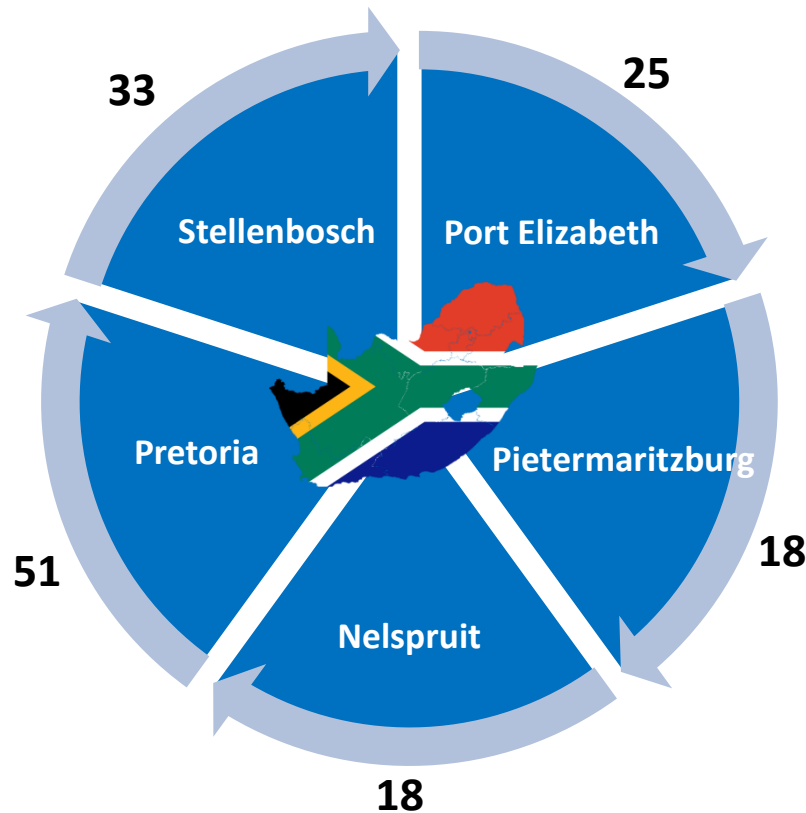
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Focus Group Meeting Roadshow

30 Sep – 7 Oct 2016



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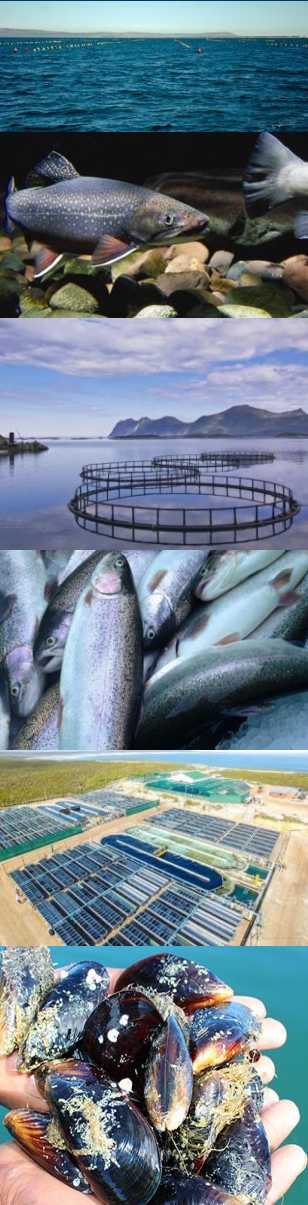
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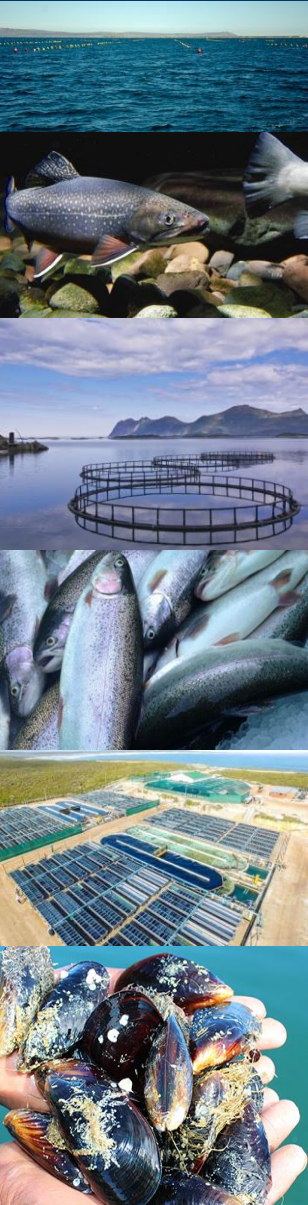
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Key points from Focus Group Meetings



- Ornamental fish species should be included in the scope.
response: capturing in existing facility database, not being included in SEA due to vast diversity of species, different production focus, etc
- Processing and post-processing activities should be included in the scope.
response: downstream processing moves into different domain of legislation for food processing (as for other food industry activities) and outside scope of this SEA
- Freshwater aquaculture is currently being governed through provincial nature conservation legislation and not through national agriculture & fisheries legislation.
- DWS is developing new General Authorisation regulations for aquaculture.
- SEA to consider different economies of scale, i.e. small scale (subsistence & artisanal) versus large scale commercial production.
- Include mapping and review of existing aquaculture facilities should include the decommissioned and failed/closed projects, incl. state-owned hatcheries, as these can provide learning as to why they did not work out.



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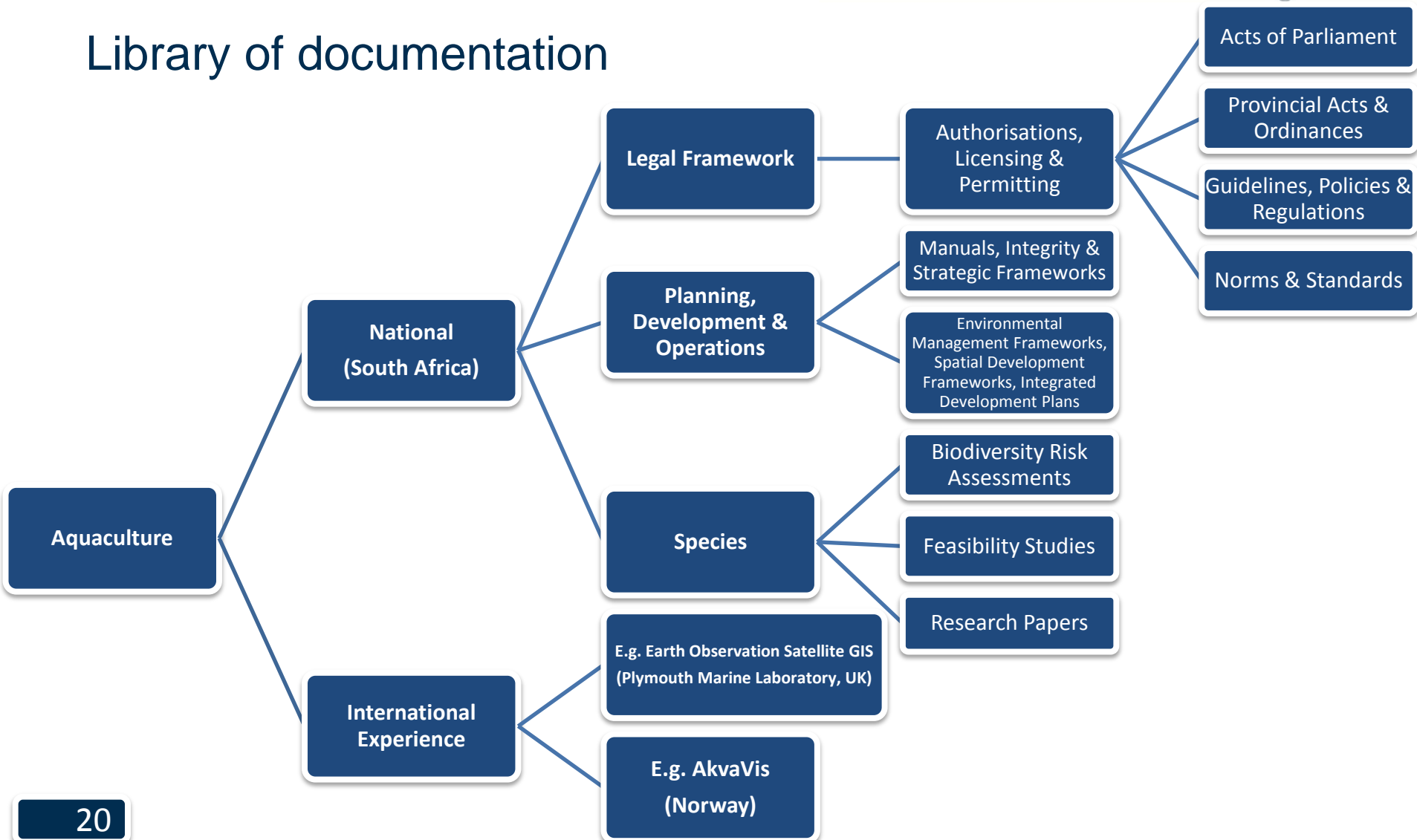
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Overview of literature & regulatory requirements

Library of documentation



Summary of Phase 1 outcomes



Key tasks completed for Phase 1:

- SEA website, Background Information Document, Announcements
- Stakeholder engagement programme and database
- PSC and ERG established (meetings 07 June and 22 Nov 2016)
- Road show and focus group meetings across provinces
- Refinement of scope of SEA
- Literature review and collation of relevant base information

Additional task (conduct during Phase 2: Screening)

- Collate a project description for aquaculture in marine and freshwater environment, in consultation with stakeholders and for review by PSC and ERG → inform the assessment phase



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Phase 2: Screening - Data capture & mapping

FACILITY NAME

LOCATION

(Lat-Long + province +
closest town)

AQUACULTURE TYPE

(e.g. marine, freshwater,
offshore, inshore, inland)

OPERATIONAL SYSTEM

(e.g. flow-through, re-
circulation, ponds, dams,
tanks, cages, long lines,
rafts)

CATEGORY

(e.g. mollusc, finfish,
shellfish, plants, sea
squirts, crustaceans)

SPECIES COMMON NAME

(e.g. Abalone)

SPECIES SCIENTIFIC NAME

(e.g. *Haliotis midae*)

Feed (e.g. commercial
feed, phytoplankton
filterfeeding)

SPECIES STATUS

(e.g. alien / indigenous)

RIVER SYSTEM & CATCHMENT

(primary + quaternary +
subquat)

SCALE

(Small-scale/Artisanal <
20 000 kg/yr;
Commercial/Industrial >
20 000 kg/yr)

NUMBER OF PEOPLE EMPLOYED

INDUSTRY

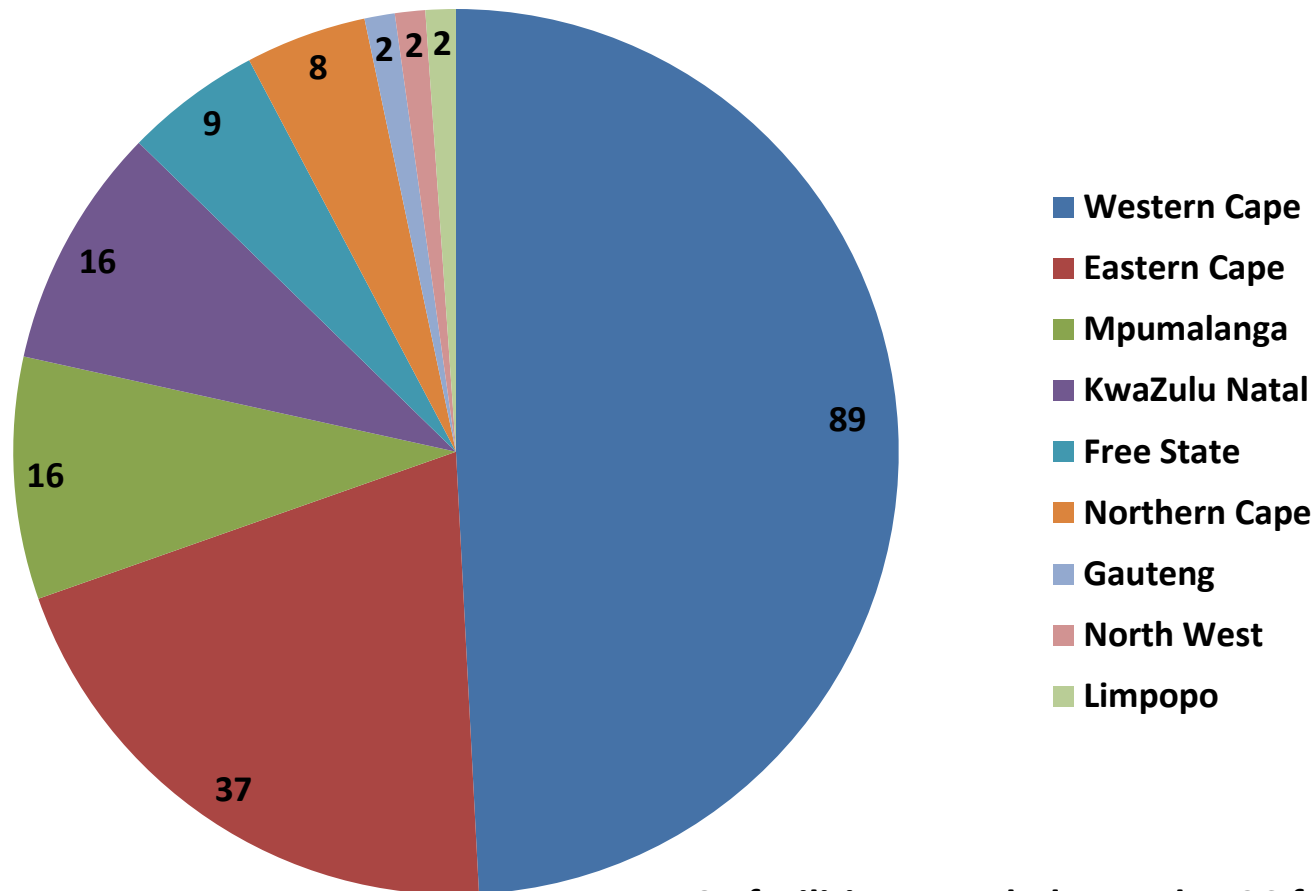
(e.g. food production /
recreation)

FACILITY STATUS

(operational, non-
operational, proposed)

Existing facilities data collected thus far

Number of aquaculture facilities per province (Nov 2016)



181 facilities recorded vs. only 136 facilities in Sept '16
However, data still very porous w.r.t. other data fields

Aquaculture

Aquaculture

Mollusc



Sea squirts



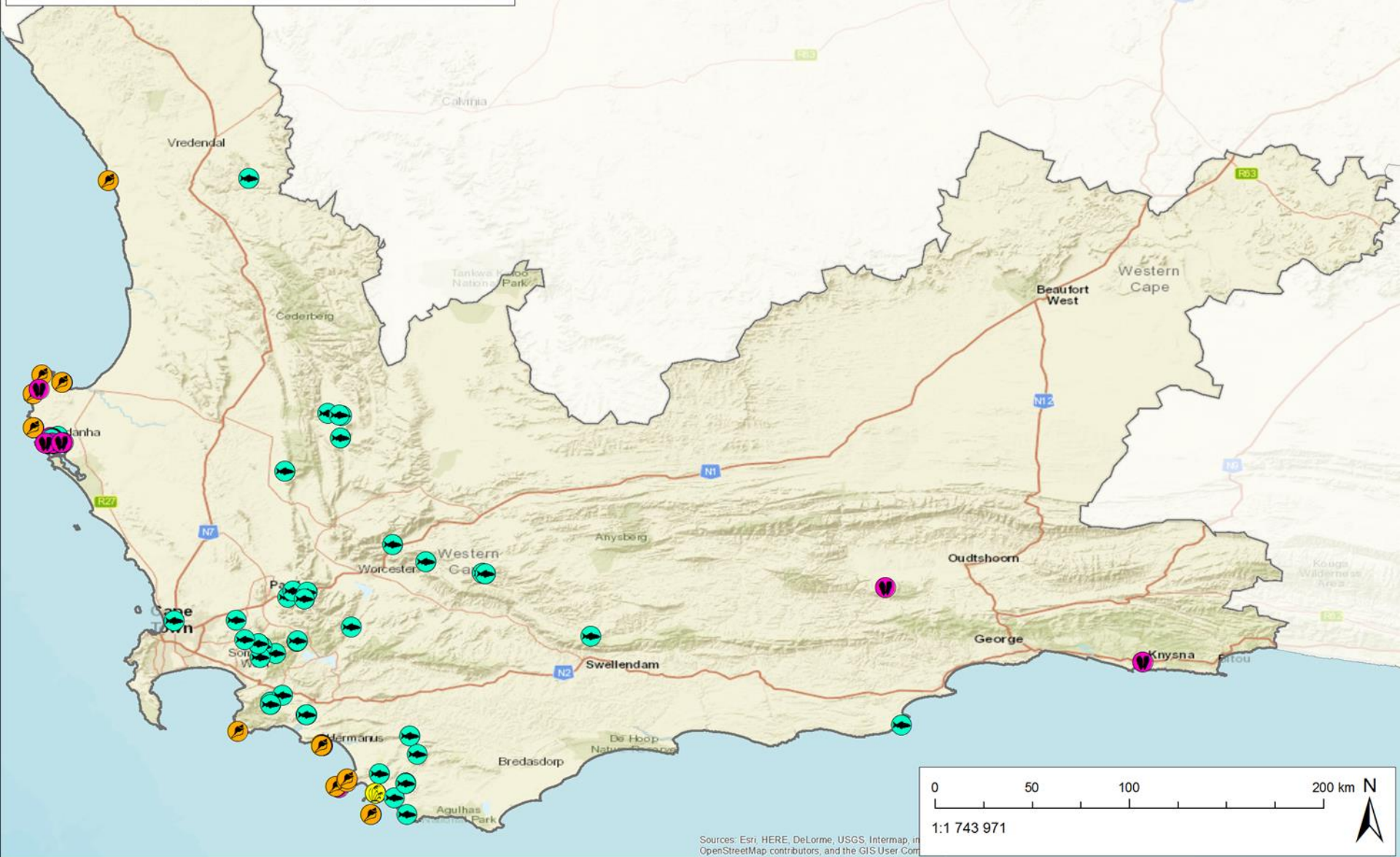
Finfish



Plants

Shellfish

14/89 missing locations



Sources: Esri, HERE, DeLorme, USGS, Intermap, in OpenStreetMap contributors, and the GIS User Community

Legend

Aquaculture



Mollusc



Sea squirts



Finfish

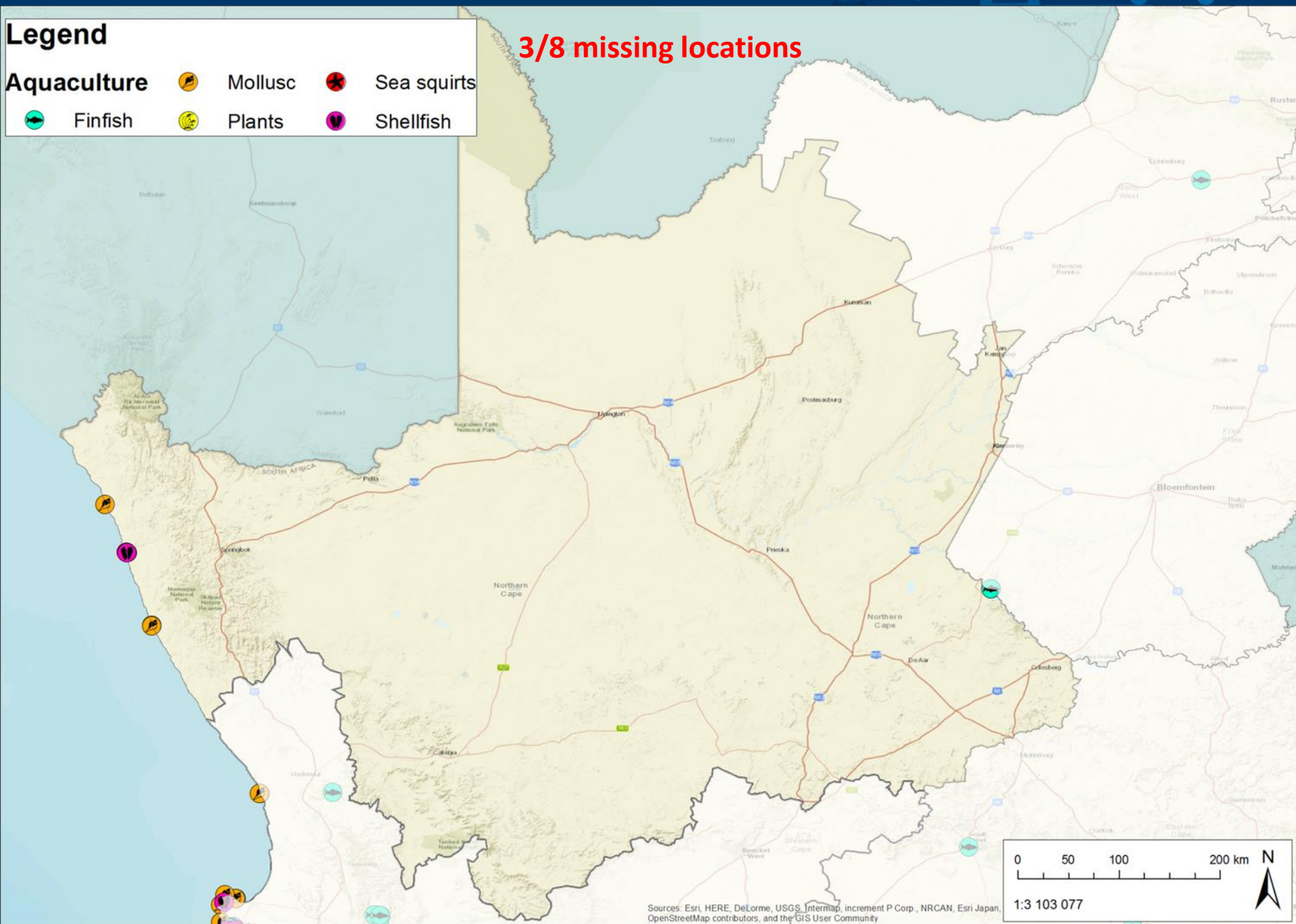


Plants



Shellfish

3/8 missing locations



Legend

Aquaculture



Mollusc



Shellfish

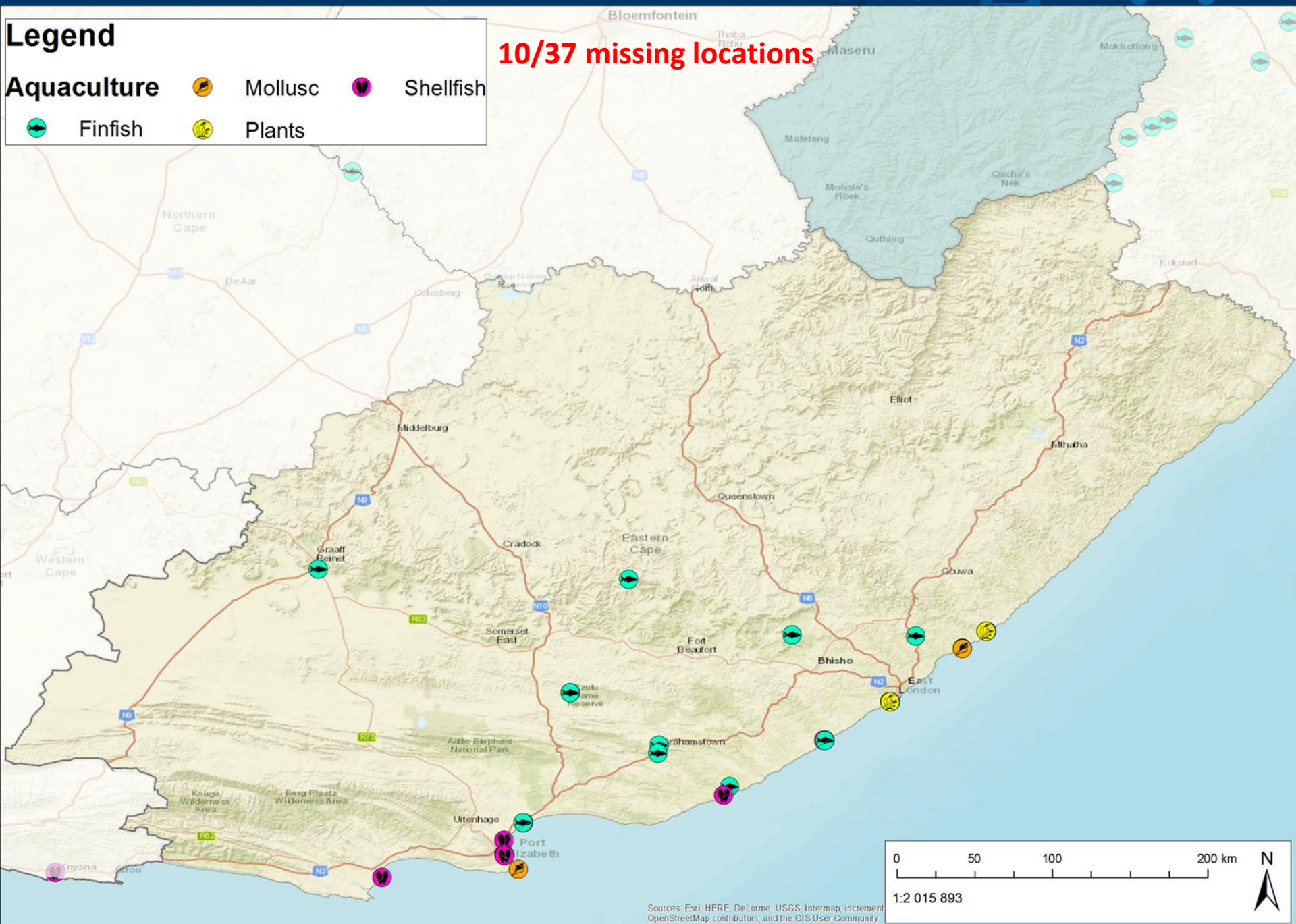


Finfish



Plants

10/37 missing locations

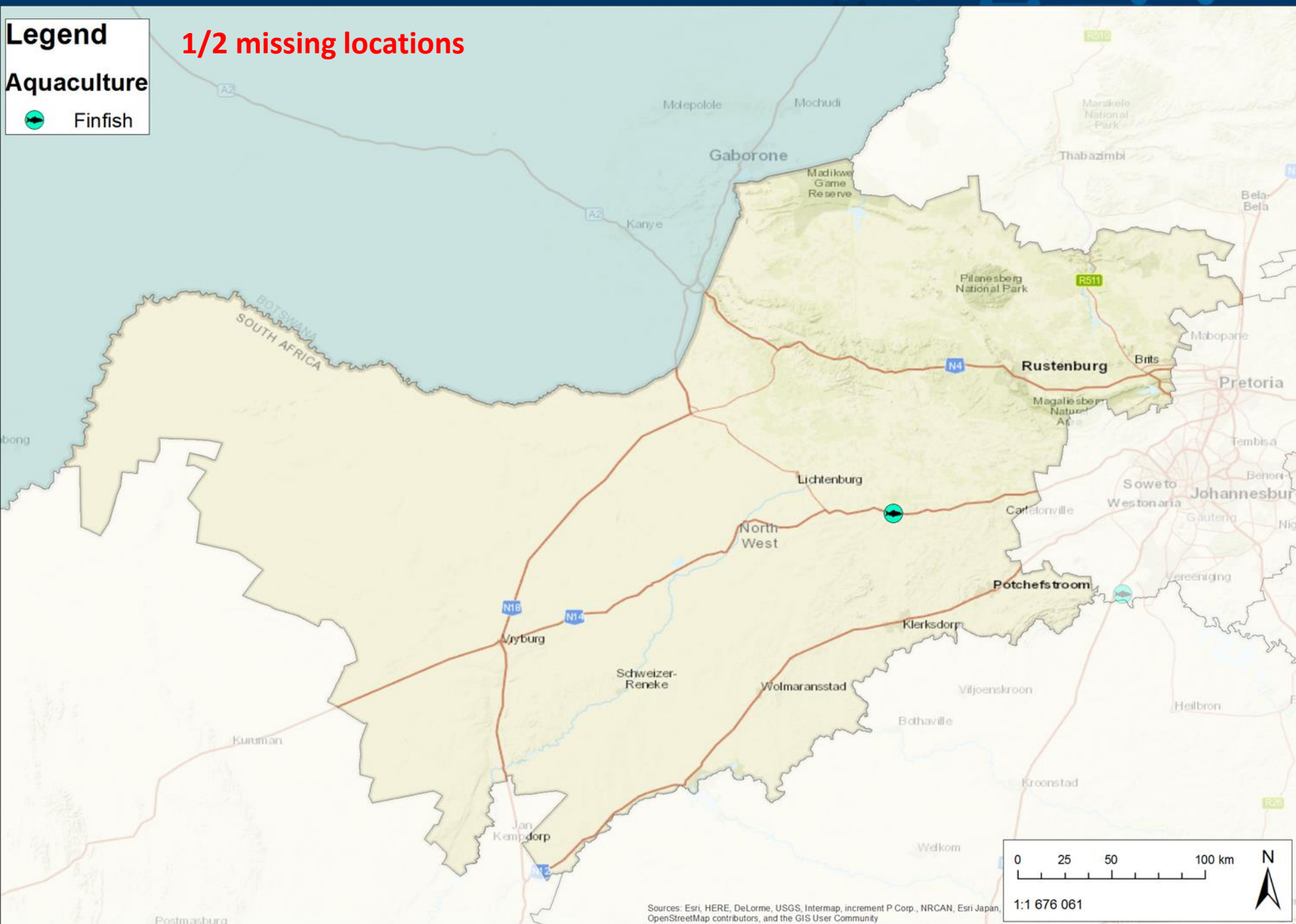


Legend

Aquaculture

 **Finfish**

1/2 missing locations

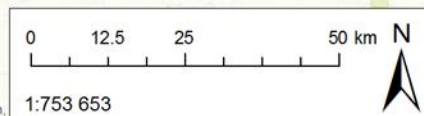
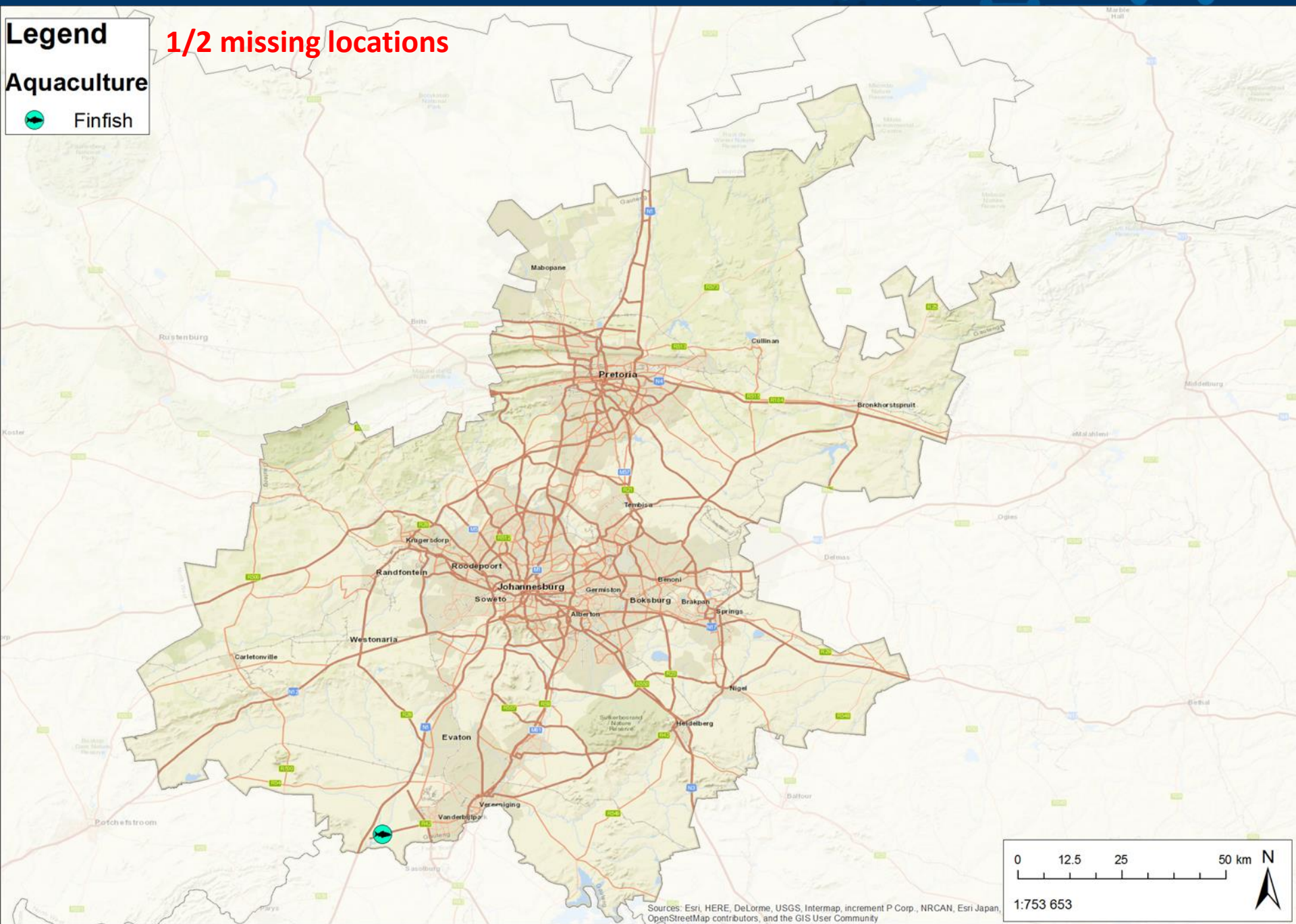


Legend

Aquaculture

- Finfish

1/2 missing locations



Legend

Aquaculture



Crustacean

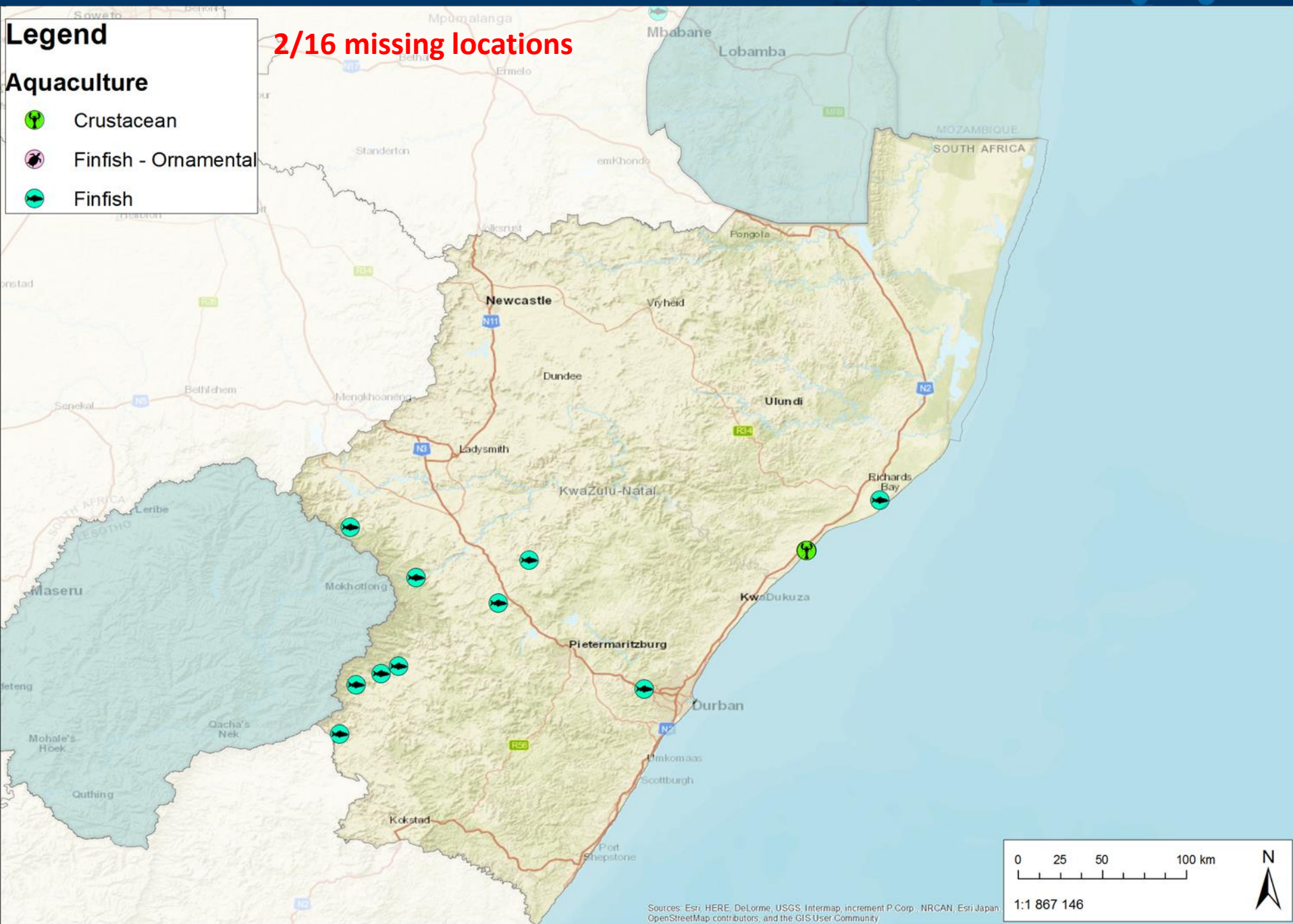


Finfish - Ornamental



Finfish

2/16 missing locations

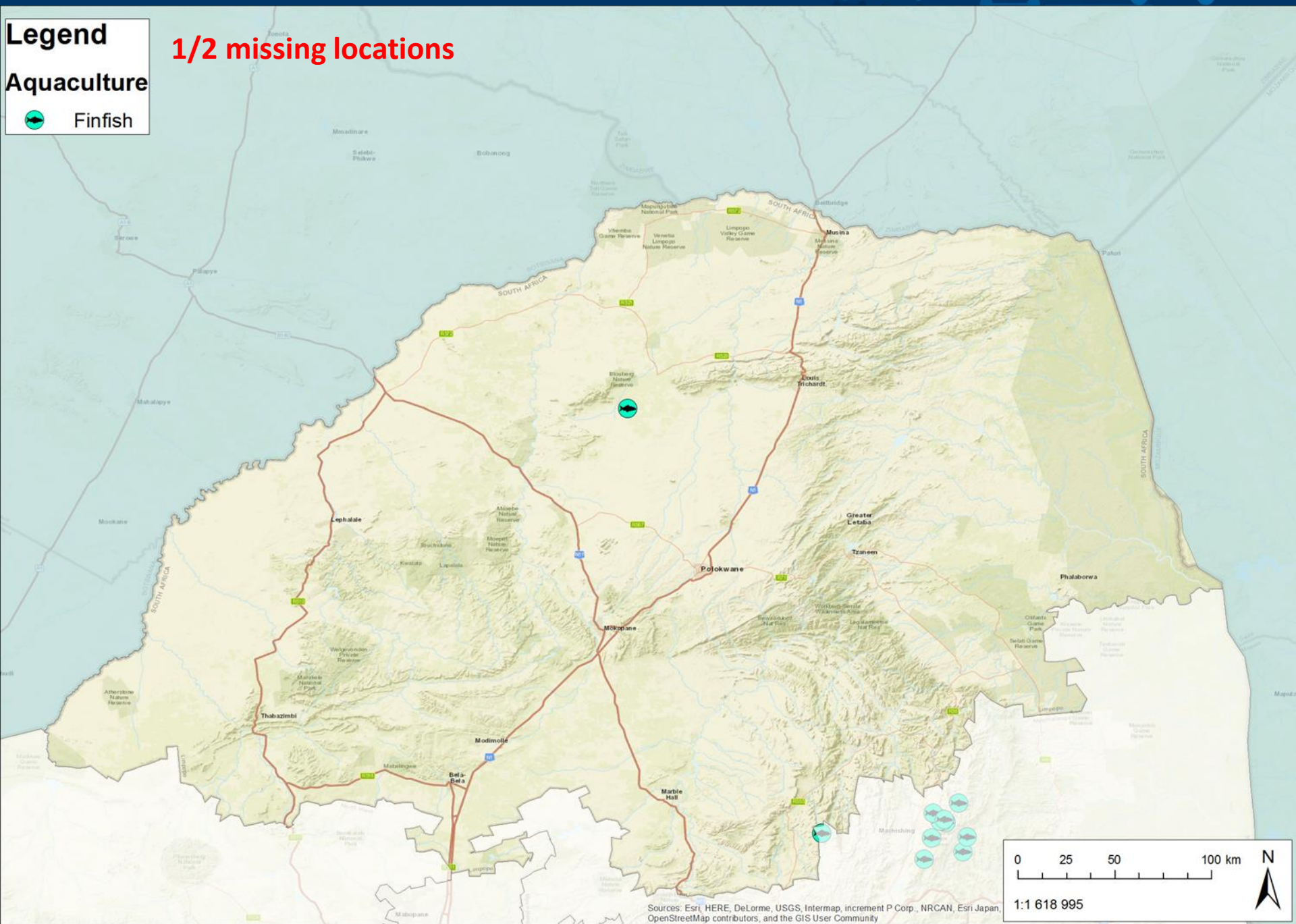


Legend

Aquaculture

 **Finfish**

1/2 missing locations



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, OpenStreetMap contributors, and the GIS User Community

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Legend

Aquaculture

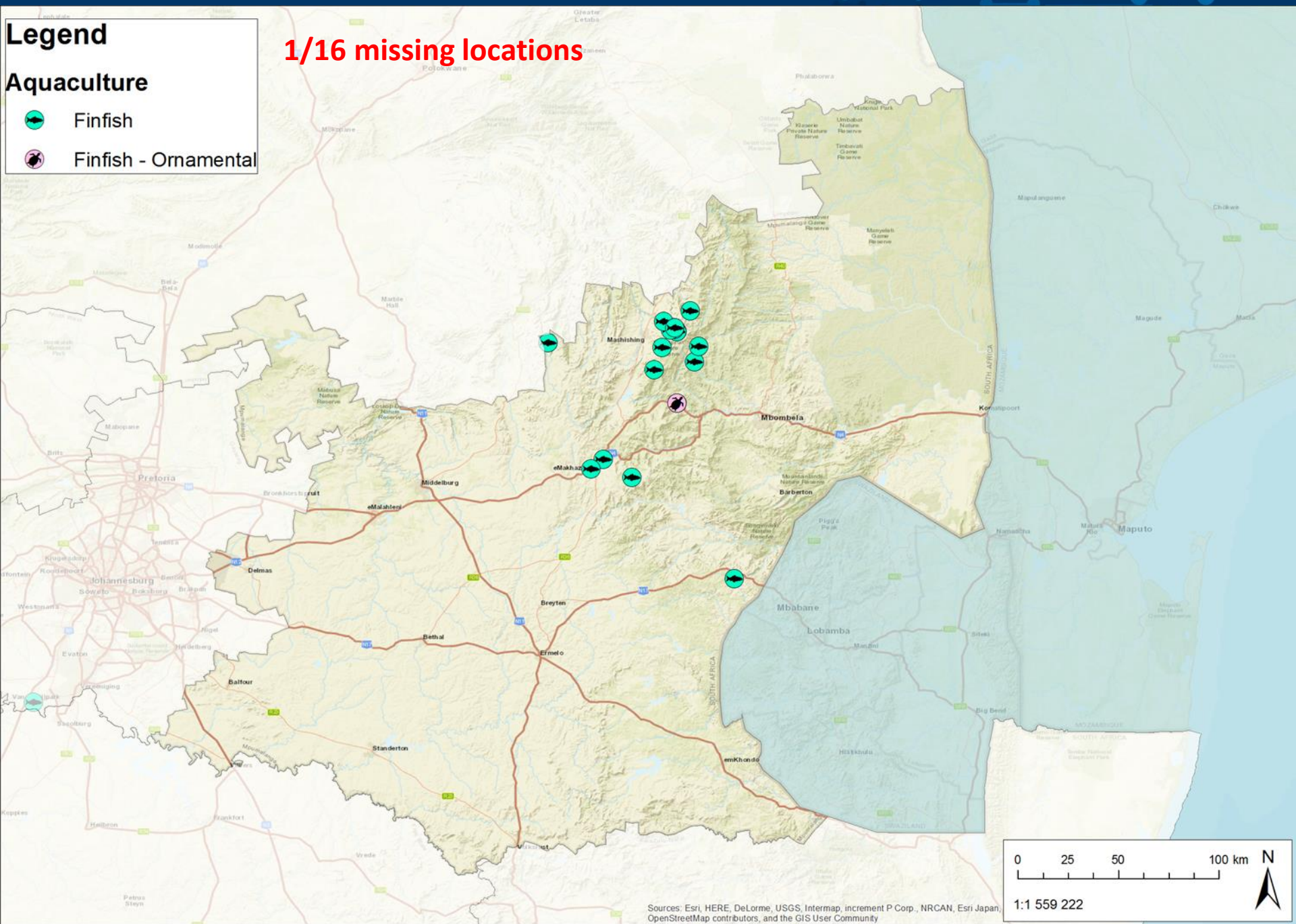


Finfish



Finfish - Ornamental

1/16 missing locations



Identifying optimal aquaculture areas – Proposed method

Collate existing spatial data ★ **We are here**

Classify features as pull and push factors

Weight pull and push factors

Analyse to extract optimal aquaculture areas

Identifying optimal aquaculture areas – Proposed method

1) COLLATE EXISTING SPATIAL DATA

For example:

- **Environmental features** (e.g. rivers, dams, coastline)
- **Conservation planning**
 - Aquatic
 - Terrestrial
- **Land use**
 - Agriculture
 - Spatial development plans
 - Land cover
- **Infrastructure**
 - Roads
 - Towns
 - SKA
 - Renewable energy



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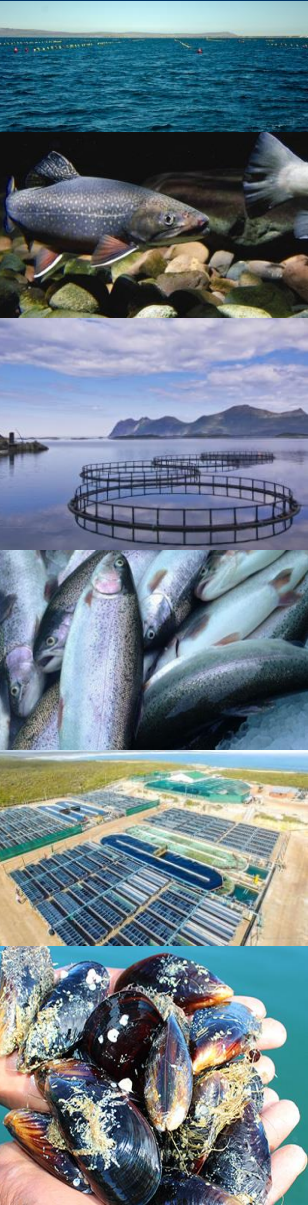


Identifying optimal aquaculture areas – Proposed method

2) CLASSIFY FEATURES AS PULL & PUSH FACTORS

For example:

- Proximity to roads = **PULL**
- Conservation priority areas = **PUSH**



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Marine (offshore): What are the main pull factors?



Pull factors, for example:

- Wave height $< x$
- Proximity to shore $< x$
- Water temperature $< x$

Marine (offshore): What are the main push factors?



Push factors, for example:

- Wind $> x$
- Harmful algae bloom
- Other sea-space use, e.g. shipping
- Marine Protected Areas

Marine (inshore/offshore): What are the main pull factors?



Pull factors, for example:

- Wave height $< x$
- Proximity to shore $< x$
- Water temperature $< x$

Marine (inshore/offshore): What are the main push factors?



Push factors, for example:

- Wind $> x$
- Harmful algae bloom
- Other sea-space use, e.g. shipping
- Marine Protected Areas

Freshwater: What are the main pull factors?



Pull factors, for example:

- Proximity to roads $< x$
- Proximity to agricultural fields $< x$
- Water bodies (not conservation priorities)

Marine (inshore/onshore): What are the main push factors?



Push factors, for example:

- Formal Protected Areas
- Freshwater Priority Areas
- Water scarcity / drought intensity

Marine & Freshwater (land-based/artificial): What are the main pull factors?



Pull factors, for example:

- Proximity to roads $< x$
- Proximity to agricultural fields $< x$
- Water bodies (not conservation priorities)

Marine & Freshwater (land-based/artificial): What are the main push factors?



Push factors, for example:

- Formal Protected Areas
- Freshwater Priority Areas
- Water scarcity / drought intensity

Identifying optimal aquaculture areas – Proposed method

3) WEIGHT PULL AND PUSH FACTORS

For example:

MARINE	
Factor/Attribute	Weighting/Rank
Wave height $< x$	9
Proximity to shore $< x$	9
Water temperature $< x$	6
Wind $> x$	2
Harmful algae bloom	1
Other sea-space use, e.g. shipping	1
Marine Protected Areas	0



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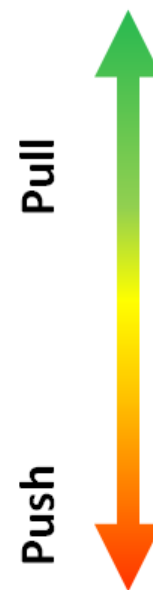


Identifying optimal aquaculture areas – Proposed method

3) WEIGHT PULL AND PUSH FACTORS

For example:

FRESHWATER	
Factor/Attribute	Weighting/Rank
Proximity to water source $< x$	9
Proximity to road network $< x$	8
Proximity to field crops $< x$	7
Water scarcity / drought intensity	2
FEPAs	1
Formal Protected Areas	0



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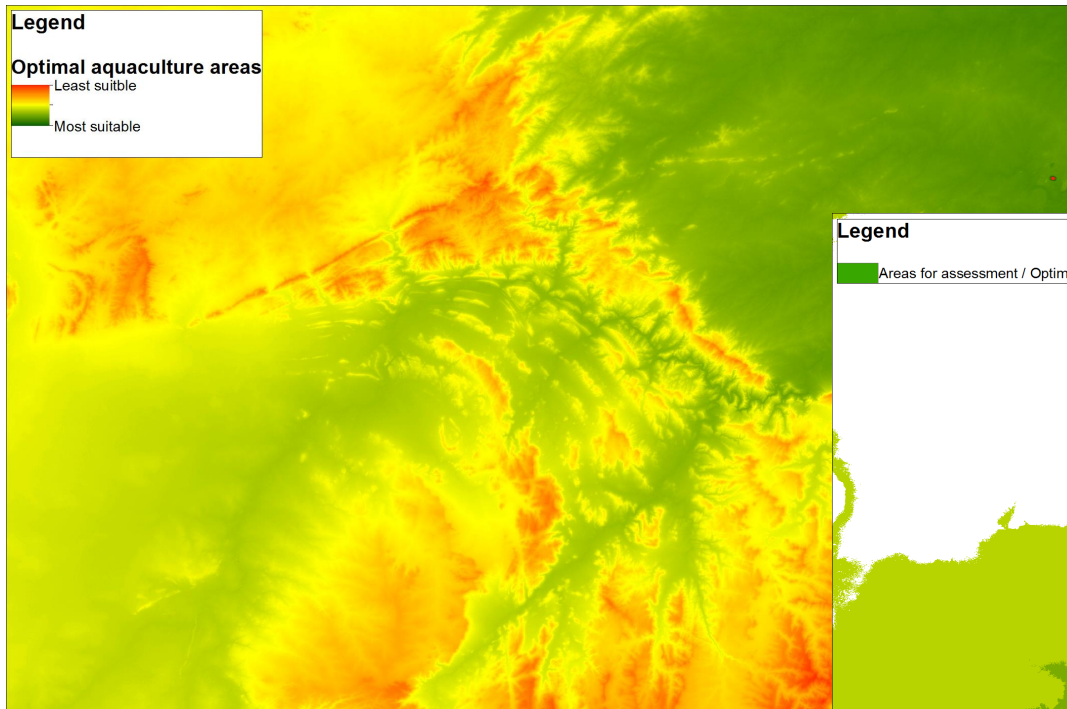
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Identifying optimal aquaculture areas – Proposed method

4) SPATIAL ANALYSIS TO EXTRACT OPTIMAL AQUACULTURE AREAS FOR ASSESSMENT

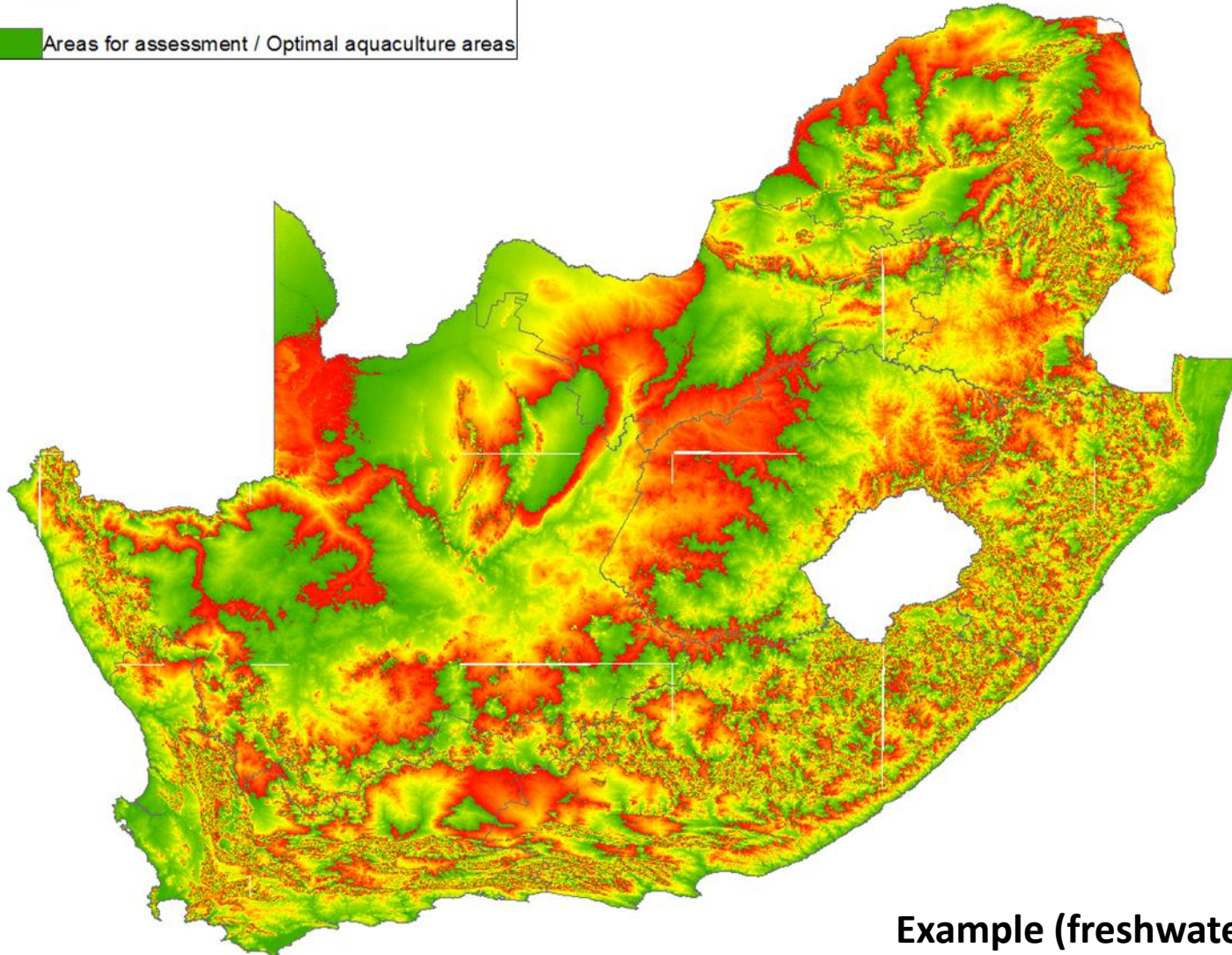
Example (freshwater):



4) SPATIAL ANALYSIS TO EXTRACT OPTIMAL AQUACULTURE AREAS FOR ASSESSMENT

Legend


 Areas for assessment / Optimal aquaculture areas

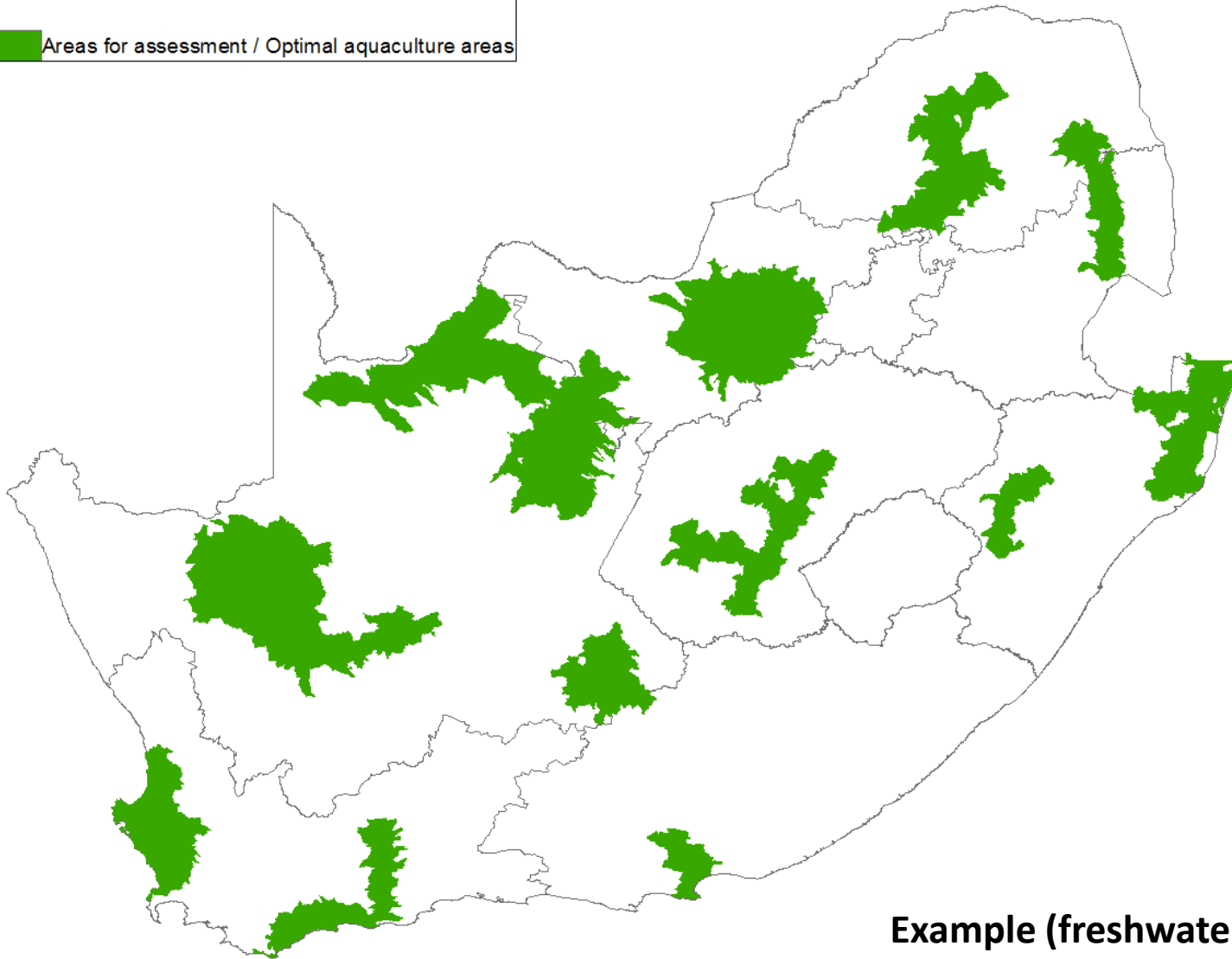


Example (freshwater)

4) SPATIAL ANALYSIS TO EXTRACT OPTIMAL AQUACULTURE AREAS FOR ASSESSMENT

Legend

 Areas for assessment / Optimal aquaculture areas



Example (freshwater)

Approach to remainder of the Screening Phase



Remaining tasks following the national-scale screening:

- Verify and update locality mapping of existing aquaculture farms;
- Classify rivers & water bodies in relation to alien fish invasion, hybridization and endemic sensitivity;
- Review and update biodiversity risk and benefit assessments for selected aquaculture species;
- Perform opportunity ('pull') and constraints ('push') analysis to identify and map the optimal/suitable aquaculture areas in SA for further assessment.



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AGENDA

EXPERT REFERENCE GROUP (ERG) MEETING

22 NOVEMBER 2016

FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

DATE	TIME	VENUE
Tuesday, 22 Nov 2016	12:30 – 16:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

Proceedings will be as follow:

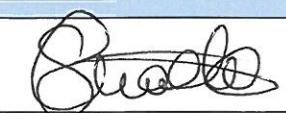





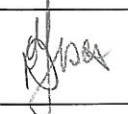

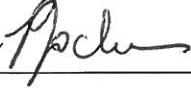

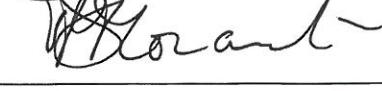
TIME	ACTIVITY/PRESENTATION	PRESENTER
12:30 - 13:00	Registration with lunch	
13:00 - 13:10	Welcome and introductions	DAFF: Zimasa Jika
13:10 – 13:45	Overview of Aquaculture SEA – approach, impacts, objectives, scope & key outputs	CSIR: Lizande Kellerman
13:45 – 14:45	Feedback on completion of the <u>Inception Phase</u> (stakeholder engagement, focus group meetings roadshow, literature review and baseline information, key impacts identified and review of scope of SEA)	CSIR: Lizande Kellerman
14:45 – 15:00	Tea/Coffee break	
15:00 – 15:50	Feedback on <u>Screening Phase</u> progress (data capture & national-scale mapping of existing aquaculture facilities, environmental attributes, siting criteria & identification of areas most suitable for aquaculture)	CSIR: Luanita Snyman
	Approach to remainder of <u>Screening phase</u>	CSIR: Lizande Kellerman
15:50 – 16:00	Way forward & closure	DEA: Simon Moganetsi

For any enquiries, please contact: Karabo Mashabela (CSIR), Tel: 021-888 2482 Email: aquasea@csir.co.za



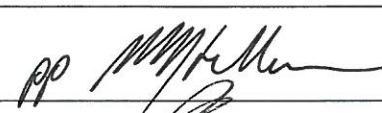

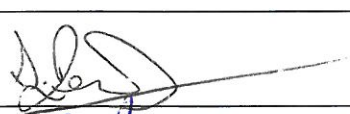
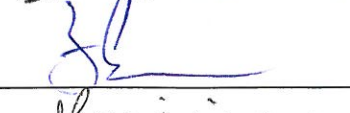


**National Aquaculture SEA
Expert Reference Group (ERG) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 22 November 2016
Attendance Register
13h00 – 16h00**

Please sign in and confirm your details below:

Organisation / Institution		Name & Surname	Email	Branch / Dept / Unit	Telephone / Mobile	Signature
Agricultural Research Council	ARC	Mary-Jane Chimuka	Thaelamj@arc.agric.za	ARC-AP Aquaculture unit	0745291642	
Dept of Agriculture, Forestry & Fisheries	DAFF	Fatima Savel	FatimaS@daff.gov.za			Apology
Dept of Agriculture, Forestry & Fisheries	DAFF	Grant Pitcher	GrantP@daff.gov.za			Apology
Dept of Agriculture, Forestry & Fisheries	DAFF	Zimasa Jika	ZimasaJ@daff.gov.za	DAFF: SAM	(021) 902 3356/ 082 332 7943	
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Dept of Agriculture, Forestry & Fisheries	DAFF	Michelle Pretorius	MichellePR@daff.gov.za	DAFF: SAM	021 430 7034 082 647 723	
Dept of Agriculture, Forestry & Fisheries	DAFF	Brett Macey	BrettM@daff.gov.za	DAFF: ARD	084 414 4525	
Dept of Agriculture, Forestry & Fisheries	DAFF	Maxhoba Jezile	MaxhobaAJ@daff.gov.za	Sustainable Aquaculture Management	021 430 7037	
Dept of Environmental Affairs	DEA	Dee Fischer	DFischer@environment.gov.za	Environmental Advisory Services	012 399 8864	
Dept of Environmental Affairs	DEA	Simon Moganetsi	SMoganetsi@environment.gov.za	Environmental Advisory Services	012 399 9309	
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**National Aquaculture SEA
Expert Reference Group (ERG) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 22 November 2016
Attendance Register
13h00 – 16h00**

Organisation / Institution		Name & Surname	Email	Branch / Dept / Unit	Telephone / Mobile	Signature
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*Page 2 of 4
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**National Aquaculture SEA
Expert Reference Group (ERG) Meeting
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 22 November 2016
Attendance Register
13h00 – 16h00**

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Meeting Notes

Strategic Environmental Assessment (SEA) for Aquaculture Development: DRAFT Notes from Project Steering Committee (PSC) Meeting #2

Date: 22 November 2016

Venue: CSIR Stellenbosch, Mountain View Seminar Room

Attendees:

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Meeting Notes

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- Ashla Gohell (GDARD)
- Dr Daphney Mayindi (DRDLR)
- Dr Leon Barkhuizen (FS DESTEA)
- Lumka Kuse (DWS)
- Mashikoane Mogodi (DPW)
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- Pilot Nchabeleng (FS DARD)
- Sindiswa Dlomo (DEA)
- Takalani Nemarude (DEA)
- Zandile Khoza (DTI)



Meeting Notes

Agenda:

DATE	TIME	VENUE
Tuesday, 22 Nov 2016	08:30 – 12:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

TITLE: Aquaculture SEA (AGENDA)

DATE: 22 November 2016

TIME	ACTIVITY/PRESENTATION	PRESENTER
08:30 - 09:00	Registration with tea and coffee	
09:00 - 09:10	Welcome and introductions	DAFF: Zimasa Jika
09:10 – 09:45	Overview of Aquaculture SEA – approach, impacts, objectives, scope & key outputs	CSIR: Lizande Kellerman
09:45 – 10:50	Feedback on completion of the <u>Inception Phase</u> (stakeholder engagement, focus group meetings roadshow, literature review and baseline information, key impacts identified and review of scope of SEA)	CSIR: Lizande Kellerman
10:50 – 11:50	Feedback on <u>Screening Phase</u> progress (data capture & national-scale mapping of existing aquaculture facilities, environmental attributes, siting criteria & identification of areas most suitable for aquaculture)	CSIR: Luanita Snyman
	Approach to remainder of <u>Screening phase</u>	CSIR: Lizande Kellerman
11:50 – 12:00	Way forward & closure	DEA: Simon Moganetsi
12:00 – 13:00	Lunch	

1. Overview of Aquaculture SEA: overall scope

The overall scope of the SEA was discussed, to ensure that the SEA focuses on the main priorities and that resources are most effectively utilised. The presentation provided is available on the website for the Aquaculture SEA at <https://aquasea.csir.co.za/>. These notes provide the key points of discussion and outcomes from the meeting and are not intended as detailed minutes.

Marine aquaculture includes offshore, inshore and land-based facilities. It was confirmed that the offshore open ocean component (typically defined as being > 3km offshore) is excluded from the scope of the SEA, the key reasons being that the offshore aquaculture and the subsequent South African market is not yet ready for this type of development, given the harsh sea conditions off South Africa's coast and that the necessary technologies needed to implement such a development are too expensive for offshore aquaculture. Andrea Bernatzeder and Ferdie Endemann concurred



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that new cost effective technologies might make this viable in the future, but it is not a current priority or business reality.

Andrea Bernatzeder suggested that the approach used by Anchor in the 2011 Marine Finfish SEA to identify inshore Aquaculture Development Zones (ADZs) be reviewed and verified as part of this SEA. Paul Lochner agreed with this, and added that this approach is also very similar to the approach used by the Plymouth Lab for the recent United Kingdom aquaculture site identification process.

The proposed exclusion of freshwater crayfish (marron and redclaw) from the scope of the SEA was discussed, because they are highly invasive and concerns were raised regarding these species in the Focus Group meetings. Ferdie Endemann explained that there are guidelines from Cape Nature in terms of freshwater crayfish and how to avoid invasion. Paul Lochner added that excluding freshwater crayfish from the SEA does not mean that the projects cannot continue, but that they follow the 'business as usual approach', given the concerns regarding them being highly invasive. Michelle Pretorius added that care should be taken every time a species is added as it complicates the project as risk assessments would need to be undertaken and adds another layer to the project. Since the available timeframe of the SEA is only 18 months these might not be covered in the scope of the SEA. Simon Moganetsi emphasized that the scope of the SEA should be set to enable the SEA process to move forward and finish in the 18 months' time period.

Andrea Bernatzeder agreed that if the study is made bigger challenges of risk assessment per species and species zoning are to be considered. The freshwater crayfish (marron) is complicated, but if there is scope, the study could look at a smaller zone around existing marron facilities in the Eastern Cape area (near Maclean) and look at the permit conditions around those specific areas, i.e. "case study" of how it operates.

Paul Lochner explained that processing is outside of the scope of the SEA, as it involves other legislative processes and departmental mandates. Andrea Bernatzeder mentioned, however, that live packaging on site could be considered (e.g. at an abalone farm).

Under marine priority species included in the scope of the SEA, Eric Watkinson proposed that "seaweed" be replaced with "macro and micro algae". Michelle Pretorius responded that seaweed was included for the purpose of small scale community projects. Eric Watkinson motivated that micro algae is an element of the aquaculture process that determines the success of a facility and that the SEA should consider local vs overseas reference labs strains of algae. Paul Lochner agreed to look at including this change and confirming this with DAFF. However, micro algae for biofuels purposes are outside the scope of this SEA.

2. Scope of the SEA: environmental impacts and risks identified

The slide with key environmental impacts/risks identified from the literature review was discussed.

- Release of biotoxins: Andrea Bernatzeder asked that this be unpacked. Lizande Kellerman explained that this was identified as being an issue linked to use of feedstock and biocides in

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freshwater aquaculture. Ferdie Endemann added that the biotoxins are not being released – they are a result of poor feed management, although this is not a key impact.

- Linking issues to specific species: Andrea Bernatzeder asked that it is indicated when impacts are limited to specific species – e.g. hybridisation is only associated with tilapia (and not trout). This helps to raise awareness and prevent the impact from being exaggerated. Ferdie Endemann added that catfish hybridisation may be an additional issue. Nature conservation is concerned with catfish, in this case African sharptooth, but Dutch strains could hybridise with local catfish. The hybrids could lead to higher production but must then be contained with certain systems.
- Andrea Bernatzeder requested that the “impact of aquaculture on the environment” is separated from the “impact of the environment on aquaculture”.
- Feedstock: Ferdie Endemann raised the issue of overuse of fishery resources as feed. E.g. in Mexico pilchards are fed to the blue fin tuna (a high value product), which disrupts the fish production value chain for the pilchards. This would probably not be an issue in South Africa, as formulated feeds are used. The efficiency of protein use is also an issue.
- Access to the coast: Moses Ramakulukusha raised the issue that aquaculture development must not result in restrictions in access to the coast (e.g. caused by pipelines and pumps).

Farm infrastructure: The issue of entanglement (e.g. in nets) of birds, mammals and other fish was discussed. Dietana Nemudzivhadi asked that the negative aesthetics and entanglement/injury/death of birds, mammals and/or other fish be unpacked. Ferdie Endemann responded that the study done by Nelson Mandela Metropolitan University (NMMU) has found the entanglement by infrastructure to not be a major issue. The most recent literature considering the latest technology must be used. Andrea Bernatzeder added that the NMMU study was a small pilot project and that entanglement is still a risk and must be considered but mitigation measures were available.

- Malcolm Moses: Habitat modification and loss is a reality and that needs to be captured, i.e. the footprint of the facility.
- Marine Protected Areas (MPAs): Milicent Solomons stated that impacts on marine protected areas must be stated. Andrea Bernatzeder responded that this impact would need to be unpacked, in order to understand what aspect of an MPA is being impacted upon by aquaculture. The impacts should also be linked to the purpose of the MPA. Skhumbuzo Khubeka said there are MPAs proposed by Operation Phakisa. Andrea Bernatzeder added that it may be outside of the scope of the SEA as the Operation Phakisa marine spatial planning initiative was looking at planning marine activities.
- Conflicts between aquaculture and other users such as conservation and recreation need to be unpacked.

3. Approach to future PSC & ERG meetings



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Paul Lochner asked whether the Project Steering Committee (PSC) and Expert Reference Group (ERG) meetings could potentially be combined, in order to make most efficient use of participants' time. Andrea Bernatzeder responded that there are situations when the mandated authorities can have a more robust discussion. Eric Watkinson added that the SEA should focus on what is expected from the participants and have a clear workplan. Government must constrain costs, and attending four meetings is expensive. Once the network is formed perhaps there are other ways to get work done. Dee Fischer added that the team is about to move into the next phase of the SEA concerning the more technical work, and then it is valuable to have a combined meeting with industry included.

The outcome from the discussion was the agreement to a best model approach of starting with a PSC meeting (e.g. 1 hour) to enable robust discussion amongst mandated government agencies; and then move into a combined PSC and ERG meeting for discussion on content of the SEA.

4. Key points from the roadshow and five Focus Group Meetings

Lizande Kellerman gave an overview of the key points raised at the 5 Focus Group Meetings. Ferdie Endemann commented on the point of including decommissioned and failed/closed projects e.g. state-owned hatcheries in the existing aquaculture facilities mapping exercise, that many of the state-owned hatcheries did not "fail", but the operational policy changed (e.g. to stop trout hatcheries and stocking of rivers with trout) and therefore the facilities were closed down.

5. Phase 2: Screening, including data capture and mapping

Luanita Snyman presented the approach to the national scale collation of data and screening to identify areas suitable for aquaculture¹.

Mellisa Naiker informed the CSIR team that Western Cape government has a beta version of conservation planning data that is available from Cape Nature. Some local municipalities are currently busy with new updated Spatial Development Frameworks (SDFs). The SEA should include these in the assessment. Department of Water and Sanitation (DWS) are busy with catchment classification that could feed into the freshwater screening study (Barry Clark from Anchor). Other contact person for the water classification project is: Erik van der berg (Erik.derberg@aurecongroup.com).

Grant Pitcher asked where the data is coming from and what efforts are made to collect new data. Luanita Snyman responded that the SEA is based on using existing data available and no new data will be produced or generated.

Dietana Nemudzivhadi commented that Gauteng has data that can be provided to the CSIR team, it also includes information on farms and a latest conservation plan. The latest Environmental Management Framework (EMF) for Gauteng is also available.

¹ At the date of the presentation no explicit location data for aquaculture facilities in the Free State had been sourced.



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Grant Pitcher suggested that an expert system approach may be best, where the SEA is based on the experience of experts who can, for example, identify the optimal areas for aquaculture. Dee Fischer responded that she agrees, but in addition scientific evidence is needed to be used to identify the best areas where aquaculture can be incentivised.

The determination of **criteria for identifying suitable aquaculture areas** was discussed. Andrea Bernatzeder said that when setting up the criteria there is a need to look at the criteria that are applicable to aquaculture access to market. DAFF has started a feasibility study looking at the suitable areas, as part of Operation Phakisa.

Andrea Bernatzeder asked when the screening categories/criteria will be defined. Luanita Snyman responded that the screening phase will run until end March 2017 during which time data criteria will be refined. Paul Lochner added the draft criteria will be available for review by experts from mid-January 2017. The approach to screening for marine aspects is clearer, and there are existing studies, but the approach to freshwater aspects is a big challenge. Dee Fischer added that there are criteria that have been identified in the other SEAs that can inform the CSIR team's methodology.

Andrea Bernatzeder suggested that the criteria will probably need to be split into the broad categories of Marine and Freshwater. Under marine, this might need to be split into land-based and inshore. Under Freshwater, this might need to be split into different species and different production systems.

Andrea Bernatzeder said that DAFF has commissioned various financial feasibility studies for marine finfish (dusky kob & Atlantic salmon), oyster and mussels, that includes identifying suitable areas.

Action: Andrea Bernatzeder to send the results from these feasibility studies to CSIR (Luanita Snyman) to feed into mapping e.g. economies of scale, job numbers, etc.

Malcolm Moses: The criteria and screening should build in a risk variability and/or worst case scenario (e.g. wave height). Luanita Snyman responded that this is a desktop study and only existing data can be used, but it is important to work in a risk-based approach. When ready, the ERG will be asked to review the draft outputs.

Mellisa Naiker: Western Cape has developed coastal management lines for three District Municipalities. **Action:** Mellisa Naiker to provide this data to the CSIR team (Luanita Snyman).

Siegfried van der Merwe: Agree that processing should not be part of the scope of the SEA, but proximity to processing facilities should be a pull factor for aquaculture development. Data of existing aquaculture production and processing facilities from the Free State can be provided. There was an agriculture master plan done in the Free State recently to map certain areas suitable for certain commodities. The process which was followed can be a possible way forward regarding the identification of suitable areas for aquaculture. In the master plan development, criteria were developed for different enterprises which were then plotted geographically against natural resource, climatic and other data. Once that was completed it was presented to different stakeholders where adjustments were made with the inputs from the experts.



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Siegfried van der Merwe: Currently the data does not reflect the purpose of the facilities. Some facilities are for research, training and demonstration purposes and are not production facilities per se. The SEA should map research facilities (e.g. universities) and demonstration/experimental aquaculture facilities as pull factors.

Eric Watkinson stated that there is a need for the SEA to look at the disease risk. Disease risk data is available from the Agricultural Research Council (ARC) and should be included as this makes a big difference to the suitability mapping.

End of Meeting

National SEA for Aquaculture Development in South Africa

Draft Meeting Notes

National Strategic Environmental Assessment for Aquaculture Development in South Africa

Expert Reference Group Meeting #2

Date: 22 November 2016

Venue: Mountain View Seminar Room, CSIR Stellenbosch

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National SEA for Aquaculture Development in South Africa

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National SEA for Aquaculture Development in South Africa

Draft Meeting Notes

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South African National Biodiversity Institute	SANBI	Dr Kerry Sink	k.sink@sanbi.org.za
South African National Biodiversity Institute	SANBI	Dr Philip Ivey	P.Ivey@sanbi.org.za
South African National Parks	SANParks	Carly Cowell	Carly.Cowell@sanparks.org
Stellenbosch University	SUN	Neill Goosen	njgoosen@sun.ac.za
Stellenbosch University	SUN	Khalid Salie	ks1@sun.ac.za
Aquaculture Association of South Africa / Stellenbosch University	SUN / AASA	Henk Stander	hbs@sun.ac.za
Tilapia Aquaculture Association of South Africa	TAASA	Frans Swanepoel	hunt4u@vodamail.co.za
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University of Limpopo	UL	Johan Theron	Johan.Theron@ul.ac.za
University of Limpopo	UL	Dr Joseph Sara	Joseph.Sara@ul.ac.za
West Coast Oyster Growers	WCOG	Nick Loubser	nick@vikingaquaculture.co.za
Western Cape Trout Farmers Association	WCTAA	Paul Luckhof	Paul@threestreams.co.za
University of the Witwatersrand	WITS	Darragh Woodford	darragh.woodford@wits.ac.za

National SEA for Aquaculture Development in South Africa

Draft Meeting Notes

Agenda:

DATE	TIME	VENUE
Tuesday, 22 Nov 2016	12:30 – 16:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
12:30 - 13:00	Registration with lunch	
13:00 - 13:10	Welcome and introductions	DAFF: Zimasa Jika
13:10 – 13:45	Overview of Aquaculture SEA – approach, impacts, objectives, scope & key outputs	CSIR: Lizande Kellerman
13:45 – 14:45	Feedback on completion of the <u>Inception Phase</u> (stakeholder engagement, focus group meetings roadshow, literature review and baseline information, key impacts identified and review of scope of SEA)	CSIR: Lizande Kellerman
14:45 – 15:00	Tea/Coffee break	
15:00 – 15:50	Feedback on <u>Screening Phase</u> progress (data capture & national-scale mapping of existing aquaculture facilities, environmental attributes, siting criteria & identification of areas most suitable for aquaculture) Approach to remainder of <u>Screening phase</u>	CSIR: Luanita Snyman CSIR: Lizande Kellerman
15:50 – 16:00	Way forward & closure	DEA: Simon Moganetsi

The presentation provided is available on the website for the Aquaculture SEA at <https://aquasea.csir.co.za/>. These notes provide the key points of discussion and outcomes from the meeting and are not intended as detailed minutes.

National SEA for Aquaculture Development in South Africa

Draft Meeting Notes

DRAFT MEETING NOTES:

1. Overview of Aquaculture SEA: overall scope

The overall scope of the SEA was discussed, to ensure that the SEA focuses on the main priorities and those resources that are most effectively utilised.

- **Ornamental fish excluded from scope of the SEA:** Dean Impson explained that there are many species of ornamentals that are farmed by hobbyists and sold on the internet. They are sometimes grown in tanks in garages in suburbia and do not trigger the need for an EIA. It was agreed these should be excluded from the SEA. The purpose of the SEA is to create an enabling environment and one must be careful not to make it too complicated. Nonetheless, ornamentals are a risk if dumped into waterbodies and therefore education and awareness is important, but this must be done via a different platform, and not as part of the SEA.
- **Wider access to waterbodies (e.g. dams) and fisheries:** Ben Zaaiman mentioned the conflict between anglers, artisanal fishers and commercial fish cage farming at the Vanderkloof dam. The issue of who has rights to resources and who has access to resources is not being addressed in the SEA. Ferdie Endemann responded that “aquaculture is farming, and fishing is hunting”. DAFF is developing an inland fisheries plan and Vanderkloof is a case study for this. The purpose of the SEA is to assist decision-makers to open up areas for aquaculture in an informed manner. Andrea Bernatzeder added that mapping socio-economic aspects will be important. Economic opportunities for poor communities will form part of the opportunities to be assessed.
- **Level of engagement with communities:** Ben Zaaiman conveyed that a public body of water (e.g. dam) needs a full EIA, including community engagement, and enquired as to what level of community engagement will be achieved in the SEA. Would these artisanal fishers have a voice? Andrea Bernatzeder responded that the SEA is at a national scale, and once the zones have been identified there will be further drilling down into these types of issues. Many dams and other water bodies have resource management plans where these types of stakeholder issues can be considered. Paul Lochner added that the SEA is a high-level assessment to identify areas that are most suitable for aquaculture and least sensitive to negative impacts, but these areas are still subject to ground-truthing and stakeholder and community engagement as part of the project development. There may still be user conflicts on the ground, the SEA would not resolve those, but would assist decision-makers reach informed decisions.
- **Role of the SEA in creating an enabling environment:** Andrea Bernatzeder explained that the purpose of the SEA is to create an enabling environment. Greg Stubbs conveyed that a Norwegian study done in Africa on suitable sites for aquaculture found that the main reason aquaculture failed is because government did not create an enabling environment. He

National SEA for Aquaculture Development in South Africa

Draft Meeting Notes

expressed concern that the Aquaculture Bill is adding more complexity to the development process. Zimasa Jika responded that one of the difficulties that proposed applicants have is that they have many authorisations sitting in different departments. The Aquaculture Bill seeks to coordinate all these different requirements, and create a cohesive body of legislation that covers all aquaculture activities.

- **Overall outcomes and benefits of the SEA:** Sue Reuther asked about the eventual outcomes of the SEA. Simon Moganetsi responded that the SEA is pro-actively identifying and pre-assessing areas where aquaculture can take place in a sustainable manner, instead of the traditional EIA approach which is more reactive. Also the SEA aims to come up with areas where a streamlined environmental authorisation process can be applied. Dee Fischer added that the intention is to replace the EIA process with the use of norms and standards, and to streamline and align the current legislative processes. DWS are developing a General Authorisation for Aquaculture instead of requiring a WULA. She emphasized that the SEA is not the legislation - DEA and DAFF will use the outcomes of the SEA to prepare the norms and standards and these will be gazetted.

Greg Stubbs asked if an outcome of the SEA is to identify ADZs. Andrea Bernatzeder responded that the SEA may propose areas, and DAFF may in the future take an area forward, but that is not the outcome of the SEA.

2. Scope of the SEA: environmental impacts and risks identified

The slide summarising the key environmental impacts/risks identified from the literature review was discussed.

- Thinus Jonker raised that the SEA should also look at the impact of mining rights activities and abalone ranching in the Northern Cape along the west coast, not only for land / ocean access, but also in terms of other potential negative impacts. E.g. whole Northern Cape coast is either mining or conservation areas. Lizande Kellerman responded that the SEA will assess the different land uses.
- Dean Impson: How were the candidate species chosen? E.g. Mozambican tilapia hasn't been a big commercial success, and brown trout mainly for recreation and not food production. He asked if the SEA is considering Atlantic salmon or other new potential species. The SEA must explain why these selected species are of priority importance. Michelle Pretorius responded that African sharp-tooth catfish was added to the SEA scope based on the outcome from the focus group meetings where its addition to the SEA scope was requested. These priority species were selected because the SEA needed a concise list of species of which the impacts are known and that is workable. This does not mean the other species are not viable, but a defined scope of work had to be pinned down.

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3. Phase 2: Screening, including data capture, mapping and initial discussion on push and pull factors

Luanita Snyman presented the approach to the national scale collation of data and screening to identify areas suitable for aquaculture. The ERG plays a crucial role in providing input, comment, advice and guidance on the methodology and criteria for the mapping exercise.

Mary-Jane Chimuka: ARC has done studies in Gauteng for the Gauteng Government to look at the suitable areas for aquaculture. This mapping was done for the entire province using various different attributes. She said there are more than 9 aquaculture projects in Gauteng and this will also update the project locality mapping. **Action:** CSIR (Luanita Snyman) to contact Mary-Jane Chimuka for this Gauteng suitability mapping and project data.

Ané Oosthuizen: The screening must include all freshwater (i.e. NFEPA) and Marine Protected Areas and priority areas data.

Ben Zaaïman: Extensive data on water quality and water temperature in dams is available from DWS. Ferdie Endemann said it is best work through the DWS Coordinating Group to try and source this data. Ben Zaaïman added that developers and consultants often state that they can “create” the right water temperature and water availability, but this costs more money, and it is important to look at the “natural” water availability and suitability as this is a measure of the “natural attractiveness” of an area. **Action:** CSIR (Luanita Snyman) to contact DWS to try to obtain this data.

Sue Reuther: The SEA should investigate land-based/artificial systems. These can be completely engineered and be located anywhere. Gauteng GDARD has data on their provincial projects.

Greg Stubbs asked if GIS can generate oxygen levels and water temperature data, because it is critical to farm specific species under specific conditions. Luanita Snyman responded that GIS has this type of analytical capability, however, for this SEA the CSIR team is only using available desktop data. If projects are planned in a suitable area, then those projects will still need to be ground-truthed as part of the project level planning.

Mary-Jane Chimuka: Data is also available from the South African Weather Bureau. In Gauteng, trout farmers are controlling water temperature to grow trout at specific water temperatures.

Dean Impson: Mapping of existing facilities is crucial especially in terms of the natural occurrence of trout versus where trout is actually farmed. There is a growing interest in growing trout in warehouses in industrial areas and to establish land-based aquaculture facilities, but this is to be considered in future not now in this SEA. Trout mapping has been done by SANBI. Lizande Kellerman confirmed that the CSIR team is aware of this and has liaised with SANBI to obtain this information.

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Greg Stubbs: The Chilean government did rapid development of aquaculture without having proper biosecurity measures in place. This caused serious consequences and the industry almost collapsed.

The Aquaculture Stewardship Council Standards provide a good benchmark for environmental, social and economic requirements. **Action:** CSIR team to check that these standards have been obtained.

A discussion to identify the key **push and pull factors that influence the location of freshwater aquaculture facilities** then followed. The outcomes are summarised below:

Pull factors	Push factors
<ul style="list-style-type: none"> Water temperature (species specific) Water quality (e.g. dissolved oxygen) Sufficient water quantity and availability (species specific) Soil integrity, quality & chemistry (e.g. earth dams & ponds) Water availability from existing agricultural irrigation supply schemes where water can be fed through an aquaculture system before being used in the agricultural scheme Groundwater availability Location of existing aquaculture facilities (can be push or pull factor, e.g. existing cage culture on a dam) Carrying capacities of larger dams in terms of criteria such as phosphorus load, water turnover, water use requirements (agriculture / human). Electricity availability (bulk) Proximity and access to infrastructure such as roads, ports and airports Proximity and access to market availability, noting this is dependent on scale of operations (i.e. larger scale projects can afford to be further from markets) Location near main metros is an advantage as some production systems are highly technical and very fragile, and require 	<ul style="list-style-type: none"> Protected Areas, including downstream areas and upstream areas without natural barriers, that are vulnerable to invasion by alien aquaculture species, as well as cross boundary impacts along river systems Wetlands, ephemeral pans and estuaries Location of existing aquaculture facilities (can be push or pull factor, e.g. existing cage culture on a dam) Conflicts of uses and/or constraints exist due to other established water users and water use rights (e.g. avoid a dam with excellent water quality that is used for urban drinking supply such as the Berg River dam; avoid a dam with existing rights for recreational fishers such as fly fishing at Sterkfontein dam) For dams, when aquaculture is not aligned with approved Resource Management Plans (e.g. regarding introduction of alien species) Constraints on water availability due to environmental flow requirements or lack of remaining allocatable water for consumptive use Incompatibility with DWS risk based for different river systems, such as a DWS Special Standards for rivers which may limit intensity of production (see Aquaculture Stewardship Council Standards) Lack of telecommunications (in remote

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<p>technical support services that are usually available in major metros or areas of high density aquaculture development</p> <ul style="list-style-type: none"> • Local government support • Local economic development priority areas • Proximity and access to research facilities (e.g. aquaculture research units in universities) and veterinary services 	<p>areas)</p> <ul style="list-style-type: none"> • Water quality issues re how many facilities can be accommodated on a specific river in terms of carrying capacity, production volumes of facilities and what impacts it could have on up/downstream activities • Disease vulnerability (species specific) • Safety and security risks for personnel and capital investments • Restricted access due to mining rights or activities
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4. Approach to remainder of screening phase

Dean Impson: With regards to the task to “classify rivers and water bodies with regards to alien fish invasion”, the SAIAB needs to be involved with this. The SEA team should be careful about what this point wants to achieve, because it is a major undertaking that would not fit into the timeframe of the SEA. Andrea Bernatzeder responded that this classification would be nationally or within identified areas.

End of Meeting



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DEPARTMENT OF ENVIRONMENTAL AFFAIRS
STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT
Discussion on selection of siting criteria for mapping-12 December 2016

Attendance Register

Please sign in and confirm your contact details below.

Organisation	Name	Email	Telephone	Signature
Department of Agriculture, Forestry and Fisheries	Michelle Pretorius	MichellePR@daff.gov.za	021 430 7034	Apology
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Department of Agriculture, Forestry and Fisheries	Andrea Bernatzeder	AndreaB@daff.gov.za	021 402 3067	
Department of Environmental Affairs	Dee Fischer	DFischer@environment.gov.za	012 399 8843	
Department of Environmental Affairs	Simon Moganetsi	smoganetsi@environment.gov.za	012 399 9309	
CSIR Environmental Management Services	Pat Morant	pmorant@csir.co.za	021 888 2480	Apology
CSIR Environmental Management Services	Karabo Mashabela	KMashabela1@csir.co.za	021 888 2482	
CSIR Environmental Management Services	Lizande Kellerman	LKellerman@csir.co.za	021 888 2489	
CSIR Environmental Management Services	Luanita van der Walt	LvdWalt1@csir.co.za	021 888 2490	

National SEA for Aquaculture Development in South Africa

Meeting Notes

National Strategic Environmental Assessment for Aquaculture Development in South Africa Discussion on Specialist studies - Approach and TORs

Date: 19 January 2017, from 10:00 to 15:00
Venue: Sea Point Research Aquarium

Attendees

Name	Organisation	Email
Andrea Bernatzeder	DAFF	AndreaB@daff.gov.za
Maxhoba Jezile	DAFF	MaxhobaAJ@daff.gov.za
Michelle Pretorius	DAFF	MichellePR@daff.gov.za
Paul Lochner	CSIR	PLochner@csir.co.za
Lizande Kellerman	CSIR	LKellerman@csir.co.za
Pat Morant	CSIR	pmorant@csir.co.za
Karabo Mashabela	CSIR	KMashabela1@csir.co.za

Apologies / Invited but did not attend

Name	Organisation	Email
Fatima Savel	DAFF	Fatimas@daff.gov.za

Note: In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion that influence the approach to the SEA and not as detailed minutes of the entire meeting.

1. Project description

- Presentation by Lizande Kellerman
- Michelle Pretorius added that the draft Project Description document can be updated referencing relevant information contained in the DAFF's Aquaculture Year Book of 2014/2015, as well as the DAFF Environmental Integrity Framework for Marine Aquaculture dated 2012.

Action: Michelle to send Lizande an electronic copy of the latest year book.

Action: CSIR to search for WAAS 2017 article authored by Peter Britz.

Action: Andrea Bernatzeder to provide the latest aquaculture facilities information.

2. Environmental legal framework

Lizande Kellerman: CSIR is currently collating an overview of national and provincial environmental legislation associated with authorisations, licenses and permits, including other approvals for aquaculture developments [focus is on legislation mandated by commissioning authorities i.e. DEA,

National SEA for Aquaculture Development in South Africa Meeting Notes

DAFF and DWS]. Paul Lochner added that this summary will help to understand how the SEA can assist in making recommendations for a potential integrated authorisational process for aquaculture going forward.

Michelle Pretorius suggested that CSIR look at work done to date by the Inter-Governmental Authorisations Committee as they are currently mapping the legal authorisation process required for marine rights applications. DAFF has also consulted GTAC to re-engineer and map the business processes currently associated with an aquaculture facility.

Action: CSIR to contact Nitasha Baijnath-Pillay at DEA: Oceans and Coast whom is responsible for managing progress of this project and request a copy of the latest report.

Andrea Bernatzeder alerted to the fact that this study only consider relevant national legislation and that provincial legislation is not investigated per se. Andrea suggested CSIR look at the Van Der Kloof Dam trout project where DAFF is involved with the application for a wide range of permits, that can be used as a case study.

3. Scope of specialist studies

Andrea Bernatzeder suggested that the existing Marron farm near East London in the Eastern can be used as a case study in the SEA for a specialist assessment in a localized area in preparation for possible norms and standards. Michelle Pretorius added that this farm, its activities and associated sites be included as a pilot study farm in the Biodiversity Risk and Benefit Assessment for Marron.

Andrea further mentioned that there will be Terms of Reference issued to specialist consultants during 2017 for additional feasibility studies for other aquaculture species.

Michelle suggested that the SEA clearly states the rationale why aquaculture species such as seaweed, marron and white-leg shrimp are only assessed during the screening phase of the SEA, but will not be taken further into detailed specialist assessment for the development of possible norms and standards. Reasons justifying this action include (i) low action of actual facilities in South Africa (e.g. <5% out of 150+); (ii) biodiversity risk is high and the existing Biodiversity Risk and Benefit Assessment applies; and (iii) there is very limited suitable areas available for marron farming. The CSIR is to document this reasoning in the screening report for species not receiving detailed assessment in phase 3 of the SEA as they can proceed under existing BA/legal processes.

4. Biodiversity Risk and Benefit Assessments (BRBAs)

- The existing Biodiversity Risk and Benefit Assessments are species specific but not area specific.
- Only the Biodiversity Risk and Benefit Assessment for Nile Tilapia has been reviewed by DEA and updated by DAFF.
- Biodiversity Risk Assessment on mussels is not that essential since mussels are not wide spread.

National SEA for Aquaculture Development in South Africa

Meeting Notes

- The purpose of the Biodiversity Risk and Benefit Assessments is done on alien species only to inform the necessary applicable biodiversity regulation.
- Outcome: To have two or three experts review the existing Biodiversity Risk and Benefit Assessments and apply it in the respective study areas to confirm its need for improvement.

5. Potential experts to provide an author or reviewer role in the SEA


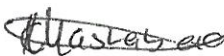





A tabled summary of potential specialists to serve as either integrated author and/or reviewer is attached to these notes.

Action: The team to review the updated summary and provide further inputs/comments.

End of Meeting

National Aquaculture SEA
Discussion on Specialist studies - Approach and TORs
Sea Point Research Aquarium
Thursday, 19th January 2017
Attendance Register

Please sign in and confirm your details below:

Organisation / Institution	Name & Surname	Email	Telephone	Mobile	Signature
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AGENDA

STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

EXPERT REFERENCE GROUP (ERG) WORKSHOP: KEY SITING CRITERIA AND SPECIES SPECIFIC THRESHOLDS

24 JANUARY 2017

DATE	TIME	VENUE
Tuesday, 24 Jan 2017	09:30 – 15:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:30 - 10:00	Registration with tea/coffee	
10:00 - 10:10	Welcome, introductions and purpose of workshop	CSIR / DAFF
10:10 – 12:30	Discussion: Key siting criteria (variables) and species specific thresholds for Level 1 – national scale screening	CSIR: Lizande Kellerman & Luanita Snyman-vd Walt
12:30 – 13:00	Lunch	
13:00 – 14:45	Discussion: Key siting criteria (variables) and species specific thresholds required for Level 2 – finer scale screening (only in suitable areas identified through Level 1 screening)	CSIR: Lizande Kellerman & Luanita Snyman-vd Walt
14:45 – 14:55	Next steps: Consolidated project description and Terms of Reference for specialist inputs	CSIR: Lizande Kellerman
14:55 – 15:00	Closure	DEA / DAFF

For any enquiries, please contact: Karabo Mashabela (CSIR), Tel: 021-888 2482 Email: aquasea@csir.co.za



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National Strategic Environmental Assessment for Aquaculture Development in South Africa

Key siting criteria and species thresholds

Expert Reference Group Workshop

Tuesday, 24 January 2017

Stellenbosch

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Agenda



TIME	ACTIVITY/PRESENTATION	PRESENTER
09:30 - 10:00	Registration with tea/coffee	
10:00 - 10:10	Welcome, introductions and purpose of workshop	CSIR / DAFF
10:10 – 12:30	Discussion: Key siting criteria (variables) and species specific thresholds for Level 1 – national scale screening	CSIR: Lizande Kellerman & Luanita Snyman-vd Walt
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Note

- *This presentation was populated during the workshop and updated based on inputs from the attendees.*



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Purpose of the meeting



- Determine thresholds of key siting criteria for identifying suitable aquaculture areas, per species.
- Provide brief overview of project description and Terms of Reference for specialist inputs.



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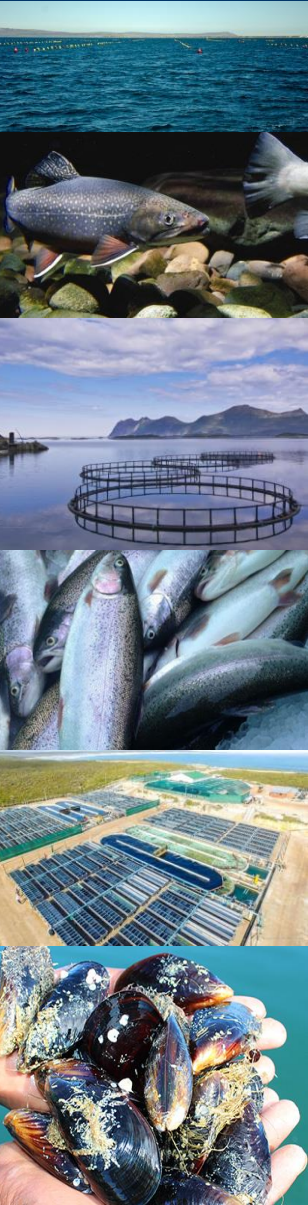


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Overview to identifying suitable aquaculture areas



- Key siting variables and species-specific thresholds are used to identify suitable marine- and freshwater aquaculture areas.
- Two levels of national-scale screening:
 - LEVEL 1:
 - Screen out unsuitable areas and identify suitable areas at a coarser level.
 - LEVEL 2:
 - Refine areas identified through Level 1 by considering finer scale data.



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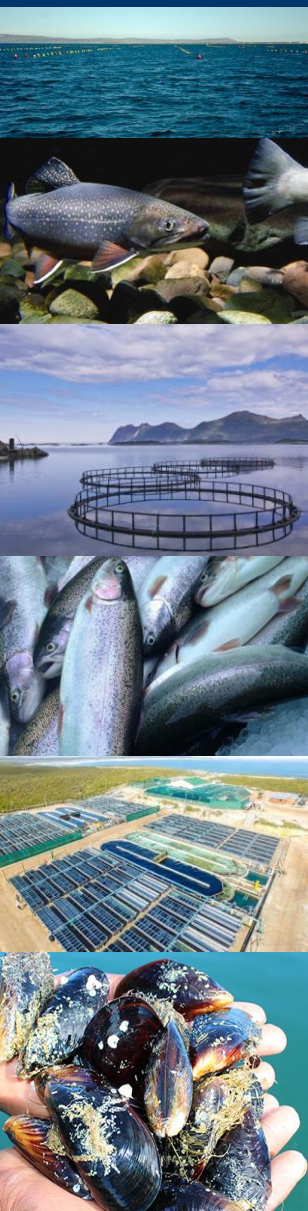
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LEVEL 1 SCREENING

*Screen out unsuitable areas and identify
suitable areas at a coarser level*



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MARINE WATER DEPTH

- What are the optimal marine water depth ranges for these species?

MARINE WATER DEPTH (m)			Optimal	Tolerance
MARINE	OFFSHORE	• Dusky kob	40	25 – 100
		• Atlantic salmon	40	25 – 100
	INSHORE	• Dusky kob	35	25 – 70
		• Atlantic salmon	35	25 – 70
		• Pacific oyster	10 - 20	< 20
		• Mediterranean mussel	10 (raft) 15 – 20 (longlines)	< 10
		• Seaweed	5 – 15	< 20
		• Abalone	1 – 50	1 – 50

DAM DEPTH

- What is the optimal dam depth for freshwater cage-culture aquaculture?

DAM DEPTH (m)		Optimal	Tolerance
FRESHWATER	• Brown trout	10	> 7
	• Rainbow trout	10	> 7
	• Mozambique tilapia	10	> 5
	• Nile tilapia	10	> 5
	• African sharptooth catfish	5	> 1

WATER TEMPERATURE

- What are the optimal water temperature and tolerance ranges for these species?

WATER TEMPERATURE (°C)			Optimal	Tolerance
MARINE	OFFSHORE	• Dusky kob	22 – 25	12 – 30
		• Atlantic salmon	12 – 16	6 – 20
	INSHORE	• Dusky kob	22 – 25	12 – 30
		• Atlantic salmon	12 – 16	6 – 20
		• Pacific oyster	11 – 28	5 – 35
		• Mediterranean mussel	10 – 20	7 – 30
		• Seaweed	15 – 25	< 30
		• Abalone	14 - 18	< 30
	ONSHORE	• Abalone	14 - 18	< 25
	FRESHWATER	• Marron	24	8 – 30
• Brown trout		< 15	< 20	
• Rainbow trout		9 – 16	5 – 22	
• Mozambique tilapia		20 – 30	12 – 36	
• Nile tilapia		28 – 30	22 – 36	
• African sharptooth catfish		30	12 – 35	

WATER SALINITY

- What are the optimal and tolerance salinity ranges for these species?

SALINITY (‰)			Optimal	Tolerance
MARINE	OFFSHORE	• Dusky kob	33 – 35	10 - 40
		• Atlantic salmon	33 – 35	< 35
	INSHORE	• Dusky kob	15 – 35	10 - 40
		• Atlantic salmon	33 – 35	35
		• Pacific oyster	30 – 35	10 – 40
		• Mediterranean mussel	30 – 35	< 35
		• Seaweed	33 – 35	9 – 45
		• Abalone	33 - 35	30 - 35
	ONSHORE	• Abalone	33 - 35	30 - 35
FRESHWATER		• Marron	?	< 18
		• Brown trout	0 – 35	0 – 35
		• Rainbow trout	0 – 35	0 – 35
		• Mozambique tilapia	10 – 12	0 – 35
		• Nile tilapia	0 – 10	0 – 10
		• African sharptooth catfish	< 3	0 – 10

WAVE HEIGHT

- What is the optimal wave height ranges for these species?

WAVE HEIGHT (m)			Optimal	Tolerance
MARINE	OFFSHORE	• Dusky kob	< 1	< 3
		• Atlantic salmon	< 1	< 3
	INSHORE	• Dusky kob	< 1	< 3
		• Atlantic salmon	< 1	< 3
		• Pacific oyster	< 1	< 3
		• Mediterranean mussel	< 1	< 3
		• Seaweed	< 1	< 3
	ONSHORE	• Abalone	< 1	< 3
	FRESHWATER		• Brown trout	< 0.5
• Rainbow trout			< 0.5	< 1
• Mozambique tilapia			< 0.5	< 1
• Nile tilapia			< 0.5	< 1
• African sharptooth catfish			< 0.5	< 1

CHLOROPHYLL CONCENTRATION & HARMFUL ALGAL BLOOMS

LEVEL 1

- What concentrations of algae / chlorophyll is unacceptable for aquaculture? Or rather which areas along coast and in dams are high risk?

CHLOROPHYLL CONC (cells/ml or mg/m ³)		Optimal
MARINE	OFFSHORE	• Dusky kob
		• Atlantic salmon
	INSHORE	• Dusky kob
		• Atlantic salmon
		• Pacific oyster
		• Mediterranean mussel
		• Abalone
	ONSHORE	• Abalone
FRESHWATER		• Marron
		• Brown trout
		• Rainbow trout
		• Mozambique tilapia
		• Nile tilapia
		• African sharptooth catfish

- This is an extremely complex variable. It depends on the cyanobacteria spp. (toxicity) and the sensitivity of aquaculture spp. at various life-stages. It is recommended that areas where devastating HABs have occurred in the last 10 years be identified and used as a push factor.
- Large dams have a lower risk of being affected by harmful concentrations of cyanobacteria.

DISTANCE FROM SHORELINE

- What is the optimal economic distance from shoreline for marine aquaculture?

DISTANCE FROM SHORE (km)			Optimal
MARINE	OFFSHORE	• Dusky kob	5
		• Atlantic salmon	5
	INSHORE	• Dusky kob	5
		• Atlantic salmon	5
		• Pacific oyster	4
		• Mediterranean mussel	4
		• Seaweed	4
		• Abalone	6

SLOPE

- What is the maximum allowable slope for onshore marine (pump head) or land-based freshwater aquaculture facilities and associated infrastructure?

_____ **10%** _____

WATER REQUIREMENTS

- What volume of water is required for freshwater aquaculture?
- *Note: Information on calculating water consumption (m^3/kg) at varying degrees of recirculation at different farming system intensities i.e. flow-through and RAS for different freshwater fish species will be referenced from a FAO guideline dated 2015 on recirculation aquaculture.*

MEAN ANNUAL RUNOFF

- What volume of water recharge is required to sustain freshwater aquaculture? _____? **mm per annum**_____

WATER USERS

- Which dams should be excluded?
 - Domestic use?
- Which dams provide an opportunity?
 - Irrigation?
- Current data includes the following users:

Biological Control	Flood Control	Municipal
Divert Water	Flow Measurement	Recreation
Domestic	Industrial	River Diversion
Electricity	Irrigation	Stock Watering
Erosion Control	Limited Agricultural Use	Storage
Fish Barrier	Mining	

PORTS AND HARBOURS

- Which ports and harbours should be considered?

Coega (export)	Mossel Bay
Durban (export)	Port Elizabeth (export)
East London (future export)	Port Nolloth
Gansbaai	Richards Bay
Hermanus	Saldanha Bay (future export)
Hout Bay	Simonstown
Kalk Bay	St Francis
Lamberts Bay	Table Bay (export)
Doring Bay	St Helena Bay
Laaiplek	Gordon's Bay
Arniston	Struisbaai
Stilbaai	

- What is the optimal distance to export ports and harbours for access to markets? 100 km
- Ability to service facility from launch point in port/harbour and access to infrastructure 10 km

MAJOR AIRPORTS

- Which airports should be considered?

OR Tambo	Lanseria
Cape Town	Nelspruit
Durban	East London
Port Elizabeth	Richards Bay
Upington	Polokwane
Bloemfontein	
Kimberley	
Pietermaritzburg	
George	

What is the optimal distance to major airports for access to market? _____ **100 km** _____

MAJOR ROADS

- What is the optimal distance to major roads (e.g. National Routes; Regional Routes; Main Roads) for access to market? _____ **10 km** _____

• This is a site-specific variable, recommended for Level 2 Screening

RESEARCH / SUPPORT SERVICES (UNIVERSITIES)

LEVEL 1

- Which universities should be considered?

Nelson Mandela Metropolitan Univ	Univ of KwaZulu-Natal - Durban
North-West Univ - Potchefstroom	Univ of Limpopo
Rhodes Univ	Univ of Pretoria - Onderstepoort
Stellenbosch Univ	Univ of the Free State
Univ of Cape Town	Agricultural Research Council

- What is the optimal distance to universities for access to support services? **_100 km_**

CITIES AND MAJOR TOWNS

- Which cities and major towns should be considered?

EC	East London (coastal)	GP	Johannesburg	NW	Klerksdorp	WC	Cape Town (coastal)
	Graaff Reinet		Pretoria		Rustenburg		Vredendal
	Port Elizabeth (coastal)	KZN	Durban (coastal)		Vryburg		Mossel Bay (coastal)
	Queenstown		Ladysmith	LP	Polokwane		Saldanha (coastal)
	Mthatha		Pietermaritzburg		Louis Trichardt		Hermanus (coastal)
FS	Bethlehem		Richards Bay (coastal)		Tzaneen		Worcester
	Bloemfontein	MP		NC			
	Kroonstad		Nelspruit		Kimberley		
	Welkom		Bethal		Upington		
			Emalahleni		Springbok		
					Port Nolloth		

- What is the optimal distance to cities and major towns for access to market and support services? 100 km

AQUACULTURE FEED SUPPLIERS

- Where are aquaculture feed suppliers located that should be considered?
- Are these already included in the major towns and cities & other infrastructure / services variables?

Hermanus (Marifeed – abalone & fish; Specialised Aquatic Feeds – abalone & fish)

Graaff-Reinette (Montego Pet Nutrition)

Pietermaritzburg (Aviplus - Aqua+)

Johannesburg (AFGRI Limited)

Pretoria (Epol)

Gariep dam

Machadodorp (?)

Cape Town (AVI Products)

Durban (AVI Products)

- What is the optimal distance to aquaculture feed suppliers for access to support services? _____ **100 km** _____

IRRIGATED LAND

- Which large irrigation schemes should be considered?

Pongola floodplain
Vaalharts

- Opportunity for intermediate water use, before irrigation.

- Large irrigation schemes will be captured in coverage of irrigated land (Land Cover 2014)

MILITARY AND MINING

- Military
 - Exclusion of military / Department of Defence land / areas (e.g. military and air force bases, training areas)
- Mining
 - Mining may be an opportunity or constraint.
 - Which types of mining could be an opportunity?
 - Onshore diamond mining areas?
- National Key Points
 - E.g. exclusion of Koeberg power station

PROTECTED AREAS & CONSERVATION

- Which protected areas should be excluded?
 - Formal National Parks
 - Formal Marine Protected Areas
- How important push / pull factors are other types of protected areas?

Biosphere Reserves	National Protected Areas Expansion Areas
Botanical Gardens	Nature Reserves
Forest Nature Reserves	Protected Environments
Forest Wilderness Areas	Ramsar Sites
Marine Protected Areas	Special Nature Reserves
Mountain Catchment Areas	World Heritage Sites
National Parks	

NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREAS (NFEPAs)

LEVEL 1

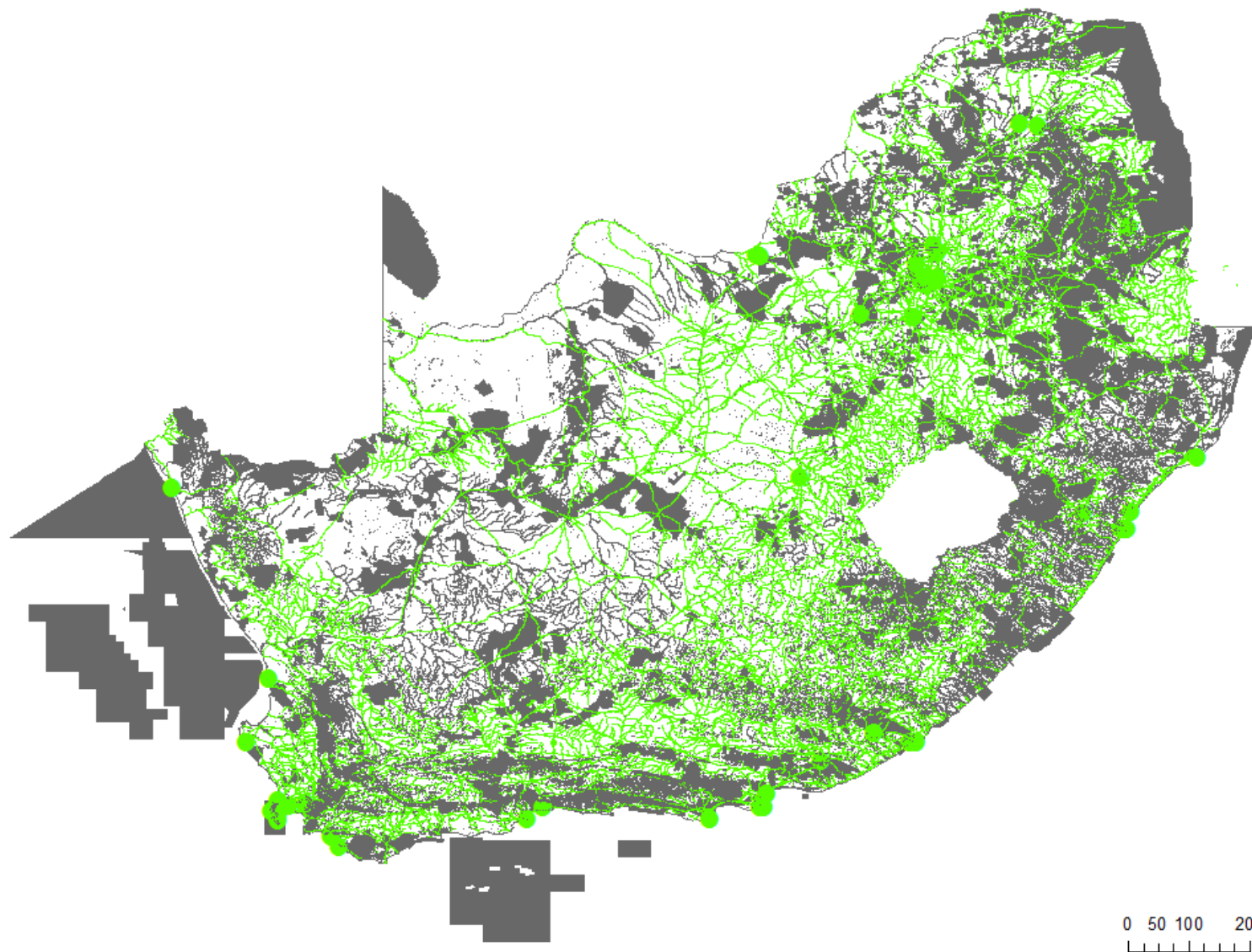
- Which NFEPAs should be excluded?
 - Rivers Ecological State A (unmodified / natural) and B (largely unmodified)
 - Flagship free-flowing rivers
 - Fish sanctuaries (essential for protecting threatened and near-threatened freshwater indigenous fish)
 - Natural wetlands

Preliminary opportunities & constraints mapping

LEVEL 1

- **Preliminary** opportunity and constraints mapping, only taking into account:

• Slope > 10%	• Universities
• Mining	• Major roads
• Military	• Major airports
• National Parks	• Ports and harbours
• Marine Protected Areas	
• Fish Sanctuaries	
• Natural wetlands	
• Cat A & B, and flagship free-flowing rivers	



Legend

Preliminary constraints and opportunities mapping



Constraints



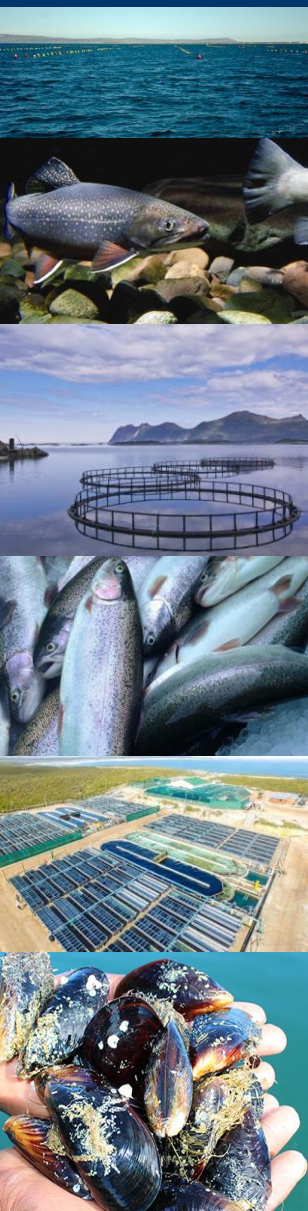
Opportunities

Constraints

- Slope > 10%
- Mining
- Military
- National Parks
- Marine Protected Areas
- Fish Sanctuaries
- Natural wetlands
- Cat A & B, and flagship free-flowing rivers

Opportunities

- Universities
- Major roads
- Major airports
- Ports and harbours



LEVEL 2 SCREENING

*Refine areas identified through Level 1 by
considering finer scale data.*



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FRESHWATER QUALITY

- What is the optimal water quality (Total Dissolved Solids (TDS)) for freshwater aquaculture?
 - Which species are most vulnerable / sensitive to water pollution?

FRESHWATER QUALITY (TDS – mg/ℓ)		Optimal	Tolerance
FRESHWATER	• Marron	867	126 – 2 389
	• Brown trout	18 – 35 000	0 – 40 000
	• Rainbow trout	18 – 35 000	0 – 40 000
	• Mozambique tilapia	0 – 10 000	0 – 55 000
	• Nile tilapia	0 – 10 000	0 – 25 000
	• African sharptooth catfish	50 - 250	0 – 3 500

MARINE WATER QUALITY

- Proximity to marine waste outfalls as proxy for marine water quality.
 - Which species are most vulnerable / sensitive to water pollution?
 - What is the optimal distance from waste outfalls for marine aquaculture? __3 km__

FRESHWATER SEDIMENTS AND TURBIDITY

- Soil erodibility index as proxy for freshwater sediments and turbidity.
 - Which species are more sensitive to sediments and turbidity?
- **Visual feeders (e.g. trout) are most sensitive to sediments and turbidity**

FRESHWATER SEDIMENTS & TURBIDITY		
FRESHWATER	• Marron	
	• Brown trout	High sensitivity
	• Rainbow trout	High sensitivity
	• Mozambican tilapia	Medium sensitivity
	• Nile tilapia	Medium sensitivity
	• African sharptooth catfish	Least sensitive

MARINE SEDIMENTS AND TURBIDITY

- River plume as proxy for marine sediments and turbidity.
 - What is the optimal distance from river mouths / river plumes for marine aquaculture? **___500 m___**
- This will also depend on the magnitude of runoff associated with specific rivers.

ACCESS TO ELECTRICITY

- Required for establishing and operating an aquaculture facility.
 - What is the optimal distance to electricity distribution network? _____ **5 km** _____
- **The capacity of actual available electricity is also important. Therefore, Eskom supply expansion plans should also be considered.**

OTHER LEVEL 2 ASPECTS

- Infrastructure Development Plans
- Spatial Development Frameworks
- Special Economic Zones
- Conservation Plans
- Dam Resource Management Plans
- Port plans

Final thoughts: key siting variables and species thresholds

- Any key additions that should be considered / included?
 - *Phakisa projects (data available) and other established facilities*
 - *Social need / rural community development*
- Any unnecessary inclusions currently?
- Ranking of variables - which are the most important / non-negotiable?

[1 = most important / non-negotiable → 5 = least important]

Next steps: (1) Project Description

1. Overview of Aquaculture (globally & SA)
2. Aquaculture environments
 - Marine (offshore/inshore/land-based)
 - Freshwater (dam cage culture/land-based)
3. Production systems used in SA aquaculture
4. Selection of priority aquaculture species
5. Key environmental, social & economic impacts of SA aquaculture
6. Aquaculture value chain
7. Environmental legal framework for SA aquaculture



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Next steps: (2) Terms of Reference for Specialists input

TORs for specialist assessment per priority species:

1. Executive summary
2. Introduction and scope of work
3. Project activities and key environmental impacts
4. Sensitivity mapping
5. Mitigation measures, management actions, technologies, standards and compliance
6. Assessment of risks & opportunities (likelihood x consequence)
7. Assumptions and limitations



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Thank you

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National SEA for Aquaculture in South Africa Workshop Notes

EXPERT REFERENCE GROUP (ERG) WORKSHOP: Key Siting Criteria And Species Specific Thresholds - Level 1 and 2 Screening/Mapping

Date and Time:

24 January 2017 from 10h00-15h00

Location:

CSIR Stellenbosch, Mountain View Seminar Room

Attendees

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National SEA for Aquaculture in South Africa Workshop Notes

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Note: *In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion that influence the approach to the SEA and not as detailed minutes of the entire workshop as some aspects/issues are captured in the siting criteria matrix.*

Notes

- Presentation by Lizande Kellerman, CSIR
- Comments and inputs from attending participants on each of the key variables discussed were electronically captured by CSIR on the PowerPoint presentation during the workshop. The updated PowerPoint presentation is attached to these notes.

The notes below supplement the information in the presentation:

Level 1 National-scale screening

Ferdie Endemann: The production system using racks for oysters in estuaries is being phased out; however there is one small project in Hamburg, Eastern Cape that still use racks.

Roger Krohn: The production of prawns e.g. white-leg shrimp is not a viable species in natural inshore environments off the South African coast. And prawn producers are often outcompeted by imported product available at half the price of local production. Chris Fouché and others agreed that prawns should not be included as a priority species in the SEA.

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Workshop Notes

Ferdie Endemann: Seaweed can be grown using longlines like oysters. He recommended that the SEA also look at the Operation Phakisa project in Saldanha Bay where seaweed (*Gracilaria* sp.) is grown on longlines along with abalone.

Stewart Bernard: In terms of Harmful Algal Blooms (HABs) and extreme conditions (wave dynamics) it would be useful to consider the frequency and persistence of these undesirable events, as well as the location of occurrence, but given limited available time and budget this might not be feasible. He also added that for algae/cyanobacteria it is important to know whether a particular species is toxic, since different fin- and shellfish species at different stages of their life cycles have different sensitivities to HABs.

Mary-Jane Thaela-Chimuka: A possible workaround the complexity of the HAB variables is to perhaps consider where devastating HABs have occurred in the past 10 years and regard those as potential exclusion or 'push' areas. Ferdie Endemann supported Mary-Jane's comment adding that inshore abalone farms should ideally be located away from potential freshwater influences.

Brett Macey: Harmful cyanobacteria concentrations will probably not be an issue in big dams.

Ferdie Endemann: The definition of "offshore" could be redefined to "all areas outside of sheltered bays". Mary-Jane Thaela-Chimuka added that steep slope is a constraint for development in terms of facility construction costs onshore; however, the functioning of land-based flow-through systems is assisted by slight slope.

Dee Fischer: In other SEAs such as the Wind and Solar SEA, "no-go" areas (where development is restricted in terms of environmental legislation) were masked. This could assist in the mapping exercise to identify those areas where aquaculture development is not recommended due to unsuitability of the receiving terrain. With regards to exclusion of such areas, national parks, Marine Protected Areas (MPAs) and National Key Points e.g. coastal power stations such as Koeberg should be considered "no-go" areas.

Mary-Jane Thaela-Chimuka: There are about 117 irrigation schemes in Limpopo where the Limpopo Department of Agriculture and Rural Development (LDARD) has initiated the integrated farming of freshwater aquaculture species using irrigation water as intermediate water source. The CSIR is to contact Mr Khoza at the LDARD for more information.

Ferdie Endemann: Excluding dams currently used for domestic water use may exclude rural communities that could potentially benefit from the transformation that aquaculture may bring in that area. He further commented that data on ammonia concentrations would be the most useful indicator of freshwater quality. Pat Morant added that ammonia is very volatile and

National SEA for Aquaculture in South Africa Workshop Notes

would not form dangerous concentrations in open waters e.g. dams; however, it could be a problem in tank-based systems. Stewart Bernard commented that the SEA will have to apply sensitivity mapping for each of the identified suitable dams.

Mary-Jane Thaela-Chimuka: There is a need to also look at former protected areas as some now fall under the custodianship of provincial agriculture departments. Mellisa Naiker added that there are also some forested areas in the Western Cape that have been awarded to agricultural departments.

Level 2 National-scale screening

Roger Krohn: Waste outfalls may provide an indication of marine water quality; however, discharges from storm water outfalls have a greater influence over water quality (e.g. in Saldanha Bay). He further added that access to electricity is an important factor for establishing an aquaculture facility, and that an aquaculture facility generally uses approximately 2 MW of electricity per day. Effectively it is not the proximity to electricity infrastructure that is important, but rather where there is capacity for sufficient electricity supply. Luanita Snyman-van der Walt commented that current spatial data used for the purposes of the SEA include physical areas where electricity infrastructure is present; future expansion plans may be considered, where applicable, to account for potential capacity. Ferdie Endemann, Roger Krohn and Mary-Jane Thaela-Chimuka suggested that proximity to electricity could be a Level 1 screening variable.

Roger Krohn: The SEA should also consider mines that have spare electricity capacity and may also be a potential water source.

Actions:

- 1) CSIR to source FAO data available on ammonia standards for aquaculture.
- 2) Ferdie Endemann to provide CSIR with a copy of the draft Western Cape aquaculture market analysis and development programme/strategy dated 2012.
- 3) Ferdie Endemann to provide CSIR with extra data, including a spreadsheet model to assist in determining water needs per ton of fish production.
- 4) CSIR to contact Prof John Bolton and Dr Anderson at University of Cape Town (UCT) with regards to seaweed culture.
- 5) CSIR to contact Catherine Greengrass about marron culture, as well as to obtain a copy of the ARC's PhD study done on marron from Mary-Jane Thaela-Chimuka.
- 6) CSIR to contact Dr Gerhard Backeberg at the Water Research Commission (WRC), and Dr Khalid Salie at the Stellenbosch University about information on studies done regarding wave height on dams.
- 7) Other variables to consider: existing Operation Phakisa projects as well as existing aquaculture projects can be added by CSIR as pull factors.

National SEA for Aquaculture in South Africa

Workshop Notes

Presentation on consolidated project description and approach to specialist inputs

Lizande Kellerman gave an overview of the consolidated project description and Terms of Reference for the specialist inputs.

Actions:

- 1) CSIR to obtain study from Ferdi Endemann on aquaculture value chains, including diagrams, to include in Project Description.
-

National Aquaculture SEA
Workshop on Key Variables & Species Thresholds for Level 1 & 2 Screening/Mapping
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 24 January 2017
Attendance Register

Please sign in and confirm your details below:

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World Wildlife Fund for Nature	WWF	Rainier Stephanie	srainier@wwf.org.za	021 657 6642 0833171	083371318	

National SEA for Aquaculture in South Africa
Workshop Notes

INTERNAL WORKSHOP:
**Refinement of draft suitable freshwater aquaculture identified
through national-scale GIS screening**

Date and Time:

28 February 2017 from 9h00-16h00

Location:

CSIR Stellenbosch, Mountain View Seminar Room

Attendees

<u>Name</u>	<u>Organisation</u>	<u>Email</u>
Paul Lochner (PL)	CSIR	PLochner@csir.co.za
Pat Morant (PM)	CSIR	pmorant@csir.co.za
Lizande Kellerman (LK)	CSIR	LKellerman@csir.co.za
Luanita Snyman-van der Walt (LSvdW)	CSIR	LvdWalt1@csir.co.za
Karabo Mashabela (KM)	CSIR	KMashabela1@csir.co.za
Ferdie Endemann (FE)	WC DoA	ferdiee@elsenburg.com
Thabo Sefike (TS)	WC DoA	thabos@elsenburg.com
Dean Impson (DI)	WC CapeNature	dimpson@capenature.co.za
Henk Stander (HS)	University of Stellenbosch	hbs@sun.ac.za

Note: In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion that influence the approach to the SEA and the actions to be taken forth and not as detailed minutes of the entire workshop as some are captured in the GIS format. Points of discussion where captured as annotations in the mapping during the workshop.

Purpose of this meeting was to discuss and refine the draft suitable freshwater aquaculture areas, identified through GIS analysis at a national-scale (Level 1 screening), per province.

Key actions from the workshop:

1. LSvdW to overlay latest map from DEA on where trout occur onto our green areas (proposed trout areas), to check for consistency. LSvdW to check with DEA/DAFF that we have the latest available version of the trout mapping by DEA as at 28/02/2017 (confirm by 07 March).
2. LK to contact Gerrie van der Merwe (aka "oom Gerrie") to find out more about the Mpumalanga seven suitable dams (input needed by 07 March).

National SEA for Aquaculture in South Africa

Workshop Notes

3. LSvdW to overlay Nile Tilapia distribution, if available. LK to send the latest maps to Stanley Rogers at Limpopo DEDET to check (by 07 March), and possibly also Ben van der Waals and Nick James, for their comment.
4. LSvdW to split the suitability maps into cold water species (i.e. trout) and warm water species (i.e. tilapia). And also indicate which of these areas are also suitable for catfish and marron.
5. Look for clusters of suitable dams and add suitable dam info, using inputs from (2) and “top dams for aquaculture” listed below.
6. LK to send revised mapping and green areas to key government experts in the provinces (first) and then to leading fish farm developers, for comment.
7. LK to check that we have identified the top dams for aquaculture in SA, and then source more details on these dams from DWS (e.g. phosphorus levels, volume and turnover of water).

As a high-level check, we identified the following as the top dams for cage culture or for use of water below the exit in raceway:

1. Nandoni Dam in Venda, Limpopo (part of Luvuvhu River, formerly known as Mutoti dam).
2. Sterkfontein Dam near Harrismith, Free State (part of Tugela-Vaal water project).
3. Roodeplaat Dam near Pretoria, Gauteng
4. Hartbeestpoort Dam near Brits, North West
5. Vanderkloof Dam near Petrusville, Northern Cape
6. Seven to nine dams in Mpumalanga (LK to obtain details from Gerrie Van der Merwe)
7. Bergriver Dam near Franschoek, Western Cape
8. Kloof Dam near Clarens, Free State (downstream of Mohale dam)
9. Midmar Dam near Howick, KwaZulu Natal
10. Vaal Dam (may not be suitable as this the major water supply for Gauteng Province)
11. Grootdraai Dam near Standerton, Mpumalanga.

Experts that need to be contacted:

1. Frans Swanepoel: Tilapia Aquaculture Association of South Africa
2. Len Coetzer: Mpumalanga DARDLEA
3. Patricia Ledwaba: Mpumalanga DARDLEA
4. Mary Jane Thaela-Chimuka: Agricultural Research Council

National SEA for Aquaculture in South Africa
Workshop Notes

5. Johan Kooij: Catfish Supreme
 6. Nick James: Tilapia Growers Association
 7. Stanley Rogers: Limpopo DEDET
 8. Gerrie Van der Merwe: Mpumalanga Trout Forum / Trout South Africa
 9. Ian Rushworth: Ezemvelo KZN Wildlife
 10. Catherine Greengrass: ARC (she is working with Mary-Jane)
 11. Roger Krohn: Aquaculture Association of South Africa
 12. Gerhard Backeberg: Water Research Commission
 13. Khalid Salie: Stellenbosch University
-

National Aquaculture SEA
Internal workshop to discuss draft suitable Freshwater aquaculture areas
CSIR Stellenbosch, Mountain View Seminar Room
Tuesday, 28 February 2017
Attendance Register

Please sign in and confirm your details below:

<u>Organisation/Institution</u>		<u>Name & Surname</u>	<u>Email</u>	<u>Telephone</u>	<u>Mobile</u>	<u>Signature</u>
Council for Scientific and Industrial Research	CSIR	Paul Lochner	PLochner@csir.co.za	(021) 888 2486	084 442 3646	<i>P Lochner</i>
Council for Scientific and Industrial Research	CSIR	Pat Morant	pmorant@csir.co.za	(021) 88 2480	076 266 0332	<i>Pat Morant</i>
Council for Scientific and Industrial Research	CSIR	Lizande Kellerman	LKellerman@csir.co.za	(021) 888 2489	083 799 0949	<i>L Kellerman</i>
Council for Scientific and Industrial Research	CSIR	Luanita van der Walt	LvdWalt1@csir.co.za	021 888 2490	072 192 9718	<i>Luanita van der Walt</i>
Council for Scientific and Industrial Research	CSIR	Karabo Mashabela	KMashabela1@csir.co.za	(021) 888 2408/2482	076 011 7841	<i>K Mashabela</i>
Western Cape Dept of Environmental Affairs & Development Planning	WC DEADP	Ferdie Endemann	ferdiee@elsenburg.com		071 840 0522 082 321 1431	<i>Ferdie Endemann</i>
University of Stellenbosch/Aquaponics Association of SA	SUN/AASA /WC TFA/ATA	Henk Stander	hbs@sun.ac.za	(021)-808-2544	082 331 8761	<i>H Stander</i>
Western Cape CapeNature	WC CN	Dean Impson	dimpson@capenature.co.za	(021) 883 2561	082 414 0020	<i>D Impson</i>
WESTERN CAPE DEPARTMENT AGRICULTURE	WC DoA	THABO SEFIKE	thabos@elsenburg.com	021 808 5102	071 680 0516	<i>Thabo Sefike</i>
University of Stellenbosch						

National SEA for Aquaculture in South Africa
Workshop Notes

INTERNAL WORKSHOP:
**Refinement of draft suitable marine aquaculture identified through
national-scale GIS screening**

Date and Time:

02 March 2017 from 09:00-16:00

Location:

CSIR Stellenbosch, Mountain View Seminar Room

Attendees

<u>Name</u>	<u>Organisation</u>	<u>Email</u>
Andrea Bernatzeder (AB)	DAFF	AndreaB@daff.gov.za
Paul Lochner (PL)	CSIR	PLochner@csir.co.za
Pat Morant (PM)	CSIR	pmorant@csir.co.za
Lizande Kellerman (LK)	CSIR	LKellerman@csir.co.za
Luanita Snyman-van der Walt (LSvdW)	CSIR	LvdWalt1@csir.co.za
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Henk Stander (HS)	University of Stellenbosch	hbs@sun.ac.za

Apologies:

<u>Name</u>	<u>Organisation</u>	<u>Email</u>
Lara Van Niekerk	CSIR	LvNieker@csir.co.za
Stephen Lamberth	DAFF	StephenL@daff.gov.za

Note: In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion that influence the approach to the SEA and the actions to be taken forth and not as detailed minutes of the entire workshop as some are captured in the GIS format. Points of discussion where captured as annotations in the mapping during the workshop.

Purpose of this meeting was to discuss and refine the draft suitable Marine aquaculture areas, identified through national-scale Level 1 screening per province.

National SEA for Aquaculture in South Africa Workshop Notes

Key actions from the workshop:

1. LSvdW to adapt the water temperature profile for Dusky kob to between 20°C and 30°C.
2. LSvdW to adapt the weighting of the water temperature and water depth variables so that water temperature has higher weighting (e.g. 35%) than water depth (e.g. 15%).
3. LSvdW to adapt the optimal water temperature profile for Abalone to between 14°C and 18°C, with the “tolerable” upper limit reduced from 25°C to 22°C.
4. LK to source Saldanha ADZ EIA as a valuable input for finer scale mapping and specialist investigations, especially re planned exclusion zones. Saldanha has been identified through Level 1 screening as a potential study area for the SEA going forward.
5. LSvdW to consider the usefulness of overlaying the natural distribution range of indigenous brown seaweeds (kelp) such as *Ecklonia maxima* and *Laminaria pallida* with suitable sites for abalone farming as kelp is a natural food source for abalone.
6. Abalone suitable areas: The Silverstroom coast (west coast, north of Cape Town) was identified as technically suitable for abalone. However, conservation planning and thus constrained available land could rule out the area. LSvdW to check terrestrial biodiversity constraints and conservation planning to confirm.
7. LSvdW to capture points raised in the workshop as annotations to the mapping exercise.

Additional information to consider:

1. LSvdW to consider previous studies e.g. Shiran, 2003; Anchor, 2011; and Advance Africa, 2016 and cross-check recommended suitable aquaculture areas for candidate species from those studies with our current mapping. LK has sourced copies of all aforementioned studies and spatial data from Shiran, 2003 study was obtained from FE.
2. LSvdW to consider usefulness of overlaying the location of Blue Flag Beaches, which relates to visual impacts, water quality and recreational beach use, with identified suitable marine areas to further refine the areas for assessment.
3. LK to check the EIAs done for Mossel Bay and Port Elizabeth for potential marine finfish cage culture (by Jeremy Blood, CCA Environmental) – which species were considered for open water cage culture (e.g. Silver kob and Yellowtail?).
4. LK to cross-check ADZs planned by DAFF i.e. Saldanha, Algoa, Coega, Qoloka and East London from information provided by AB.

National Aquaculture SEA
Internal workshop to discuss draft suitable Marine aquaculture areas
CSIR Stellenbosch, Video Conference Room
Wednesday 02 March 2017
Attendance Register

Please sign in and confirm your details below:

<u>Organisation/Institution</u>		<u>Name & Surname</u>	<u>Email</u>	<u>Telephone</u>	<u>Mobile</u>	<u>Signature</u>
Council for Scientific and Industrial Research	CSIR	Paul Lochner	PLochner@csir.co.za	(021) 888 2486	084 442 3646	
Council for Scientific and Industrial Research	CSIR	Pat Morant	pmorant@csir.co.za	(021) 88 2480	076 266 0332	
Council for Scientific and Industrial Research	CSIR	Lizande Kellerman	LKellerman@csir.co.za	(021) 888 2489	083 799 0949	
Council for Scientific and Industrial Research	CSIR	Luanita van der Walt	LvdWalt1@csir.co.za	021 888 2490	072 182 9718	
Council for Scientific and Industrial Research	CSIR	Karabo Mashabela	KMashabela1@csir.co.za	(021) 888 2408/2482	076 011 7841	
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Western Cape Dept of Environmental Affairs & Development Planning	WC DEADP	Thabo Sefike	thabos@elsenburg.com	0218085102	/	
University of Stellenbosch/Aquaponics Association of SA	SUN/AASA /WC TFA/ATA	Henk Stander	hbs@sun.ac.za	(021)-808-2544	0823318761	
Department of Agriculture, Forestry & Fisheries	DAFF	Andrea Bernabucci	AndreaB@daff.gov.za		082 687 5333	

AGENDA

WORKSHOP TO REFINE DRAFT SUITABLE FRESHWATER AND MARINE AQUACULTURE AREAS

08 MARCH 2017

**FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR
AQUACULTURE DEVELOPMENT IN SOUTH AFRICA**

DATE	TIME	VENUE
Wednesday, 08 March 2017	09:00 – 16:00	Marine Research Aquarium in Sea Point DAFF, Cape town

Proceedings will be as follow:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:00 - 09:10	Welcome, introductions and purpose of workshop	CSIR / DAFF
09:10 – 12:30	Discussion: Refinement of draft suitable marine aquaculture areas identified through national scale screening	CSIR: Lizande Kellerman & Luanita Snyman-vd Walt
12:30 – 13:00	Lunch	
13:00 – 15:50	Discussion: Refinement of draft suitable freshwater aquaculture areas identified through national scale screening	CSIR: Lizande Kellerman & Luanita Snyman-vd Walt
15:50 – 16:00	Way forward & closure	CSIR: Lizande Kellerman

For any enquiries, please contact: Karabo Mashabela (CSIR), Tel: 021-888-2482, Email: aquasea@csir.co.za



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



**agriculture,
forestry & fisheries**

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

National SEA for Aquaculture in South Africa

Workshop Notes

DAFF WORKSHOP: Refinement of draft suitable marine and freshwater aquaculture areas identified through national-scale GIS screening

Date and Time:

08 March 2017 from 09:30-14:00

Location:

DAFF Marine Research Aquarium, Sea Point

Attendees

<u>Name</u>	<u>Organisation</u>	<u>Email</u>
Michelle Pretorius (MP)	DAFF	MichellePR@daff.gov.za
Kishan Sankar (KS)	DAFF	KishanS@daff.gov.za
Maxhoba Jezile (MJ)	DAFF	MaxhobaAJ@daff.gov.za
Thapelo Senyolo (TS)	DAFF	Senyolot@daff.gov.za
Grant Pitcher (GP)	DAFF	Grantp@daff.gov.za
Trevor Probyn (TP)	DAFF	TrevorP@daff.gov.za
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Chris Fouche	DAFF	ChrisF@daff.gov.za
Stephen Lamberth	DAFF	StephenL@daff.gov.za
Keagan Halley	DAFF	KeaganH@Ddaff.gov.za
Paul Lochner	CSIR	PLochner@csir.co.za

Note: In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion that influence the approach to the SEA and the actions to be taken forth and not as detailed minutes of the entire workshop as some are captured in the GIS format. Points of discussion where captured as annotations in the mapping and tabled notes during the workshop.

Purpose of this workshop:

To discuss and refine the draft suitable Marine and Freshwater aquaculture areas, identified through national-scale Level 1 screening per province.

National SEA for Aquaculture in South Africa

Workshop Notes

1. LEVEL 1 SCREENING: FRESHWATER

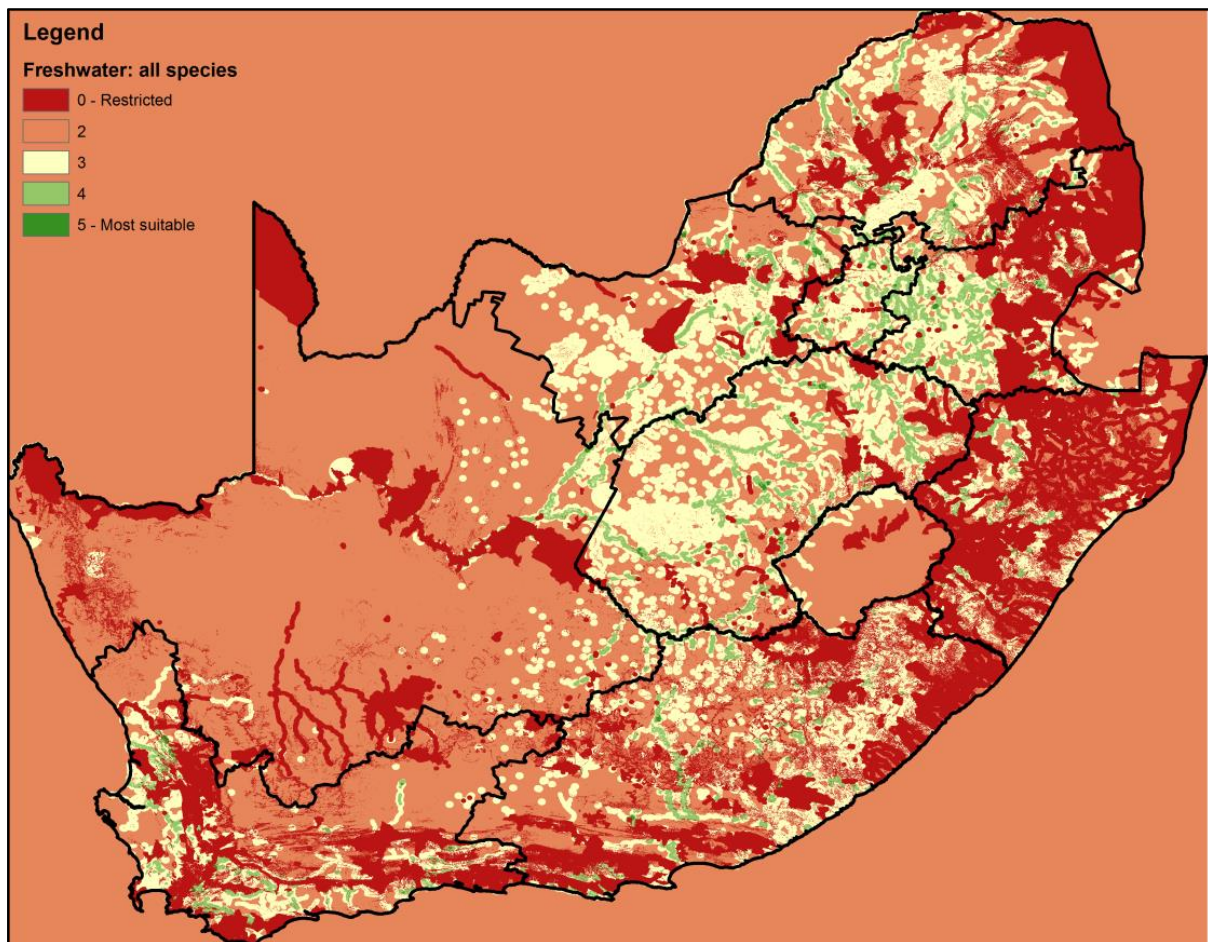
1.1 Key variables used for weighted overlay GIS analysis

Feature		Rank	Weighting
Major Centres	20 km	4	5%
	No data	1	
Protected Areas	Botanical Garden/Mountain Catchment Area/Marine Protected Area/Protected Environment/Special Nature Reserve/Ramsar /National Park	Restricted	15%
	Biosphere Reserve	3	
	NPAES/Nature Reserve/Forest Nature Reserve/Forest Wilderness Area	4	
	No data	5	
Slope	> 10%	Restricted	10%
	No data	5	
Dams and dam users (3 km buffer around dams for purpose of analysis)	Biological Control	2	25%
	Divert Water	3	
	Domestic	Restricted	
	Electricity	5	
	Erosion Control	2	
	Fish Barrier	Restricted	
	Flood Control	2	
	Flow Measurement	3	
	Industrial	4	
	Irrigation	5	
	Limited Agricultural Use	5	
	Mining	2	
	Municipal	Restricted	
	Recreation	3	
	River Diversion	3	
	Stock Watering	2	
	Storage	2	
	No data	1	
Fish Sanctuaries	Fish sanctuaries	Restricted	2%
	No data	5	
Irrigated crops	Optimal	5	20%
	Tolerable	4	
	No data	2	
Stressed catchments	Over-exploited / stressed catchments	1	3%
	No data	5	
Perennial rivers (3 km buffer around rivers for purpose of analysis)	PES A / PES B / Flagship free-flowing	Restricted	20%
	PES C / PES D	5	
	PES > E	3	
	No data	1	

National SEA for Aquaculture in South Africa

Workshop Notes

1.2 Weighted overlay results

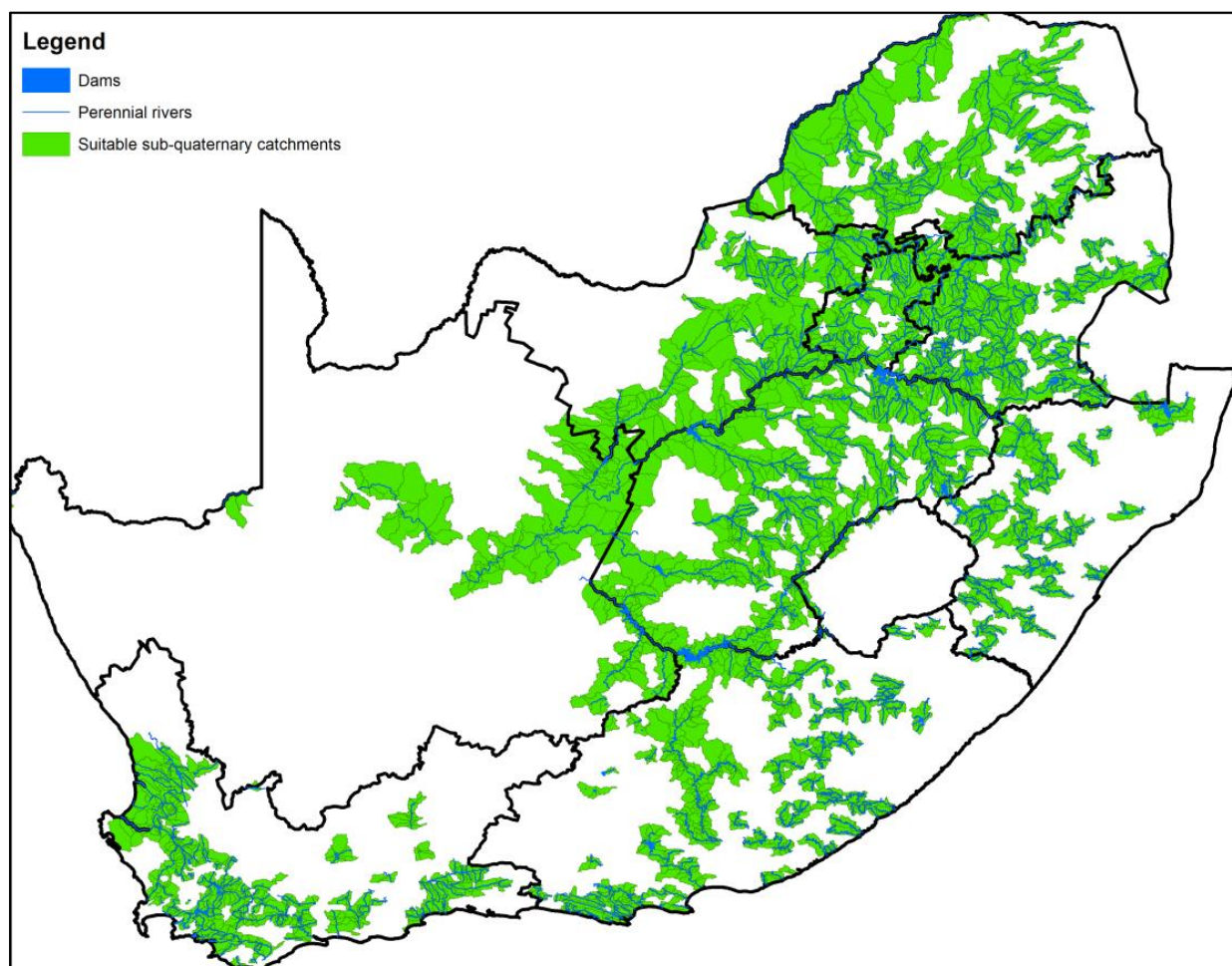


Map 1: Weighted overlay GIS analysis results for freshwater.

National SEA for Aquaculture in South Africa

Workshop Notes

Sub-quaternary catchments that contained features with a suitability score ≥ 4 were extracted:

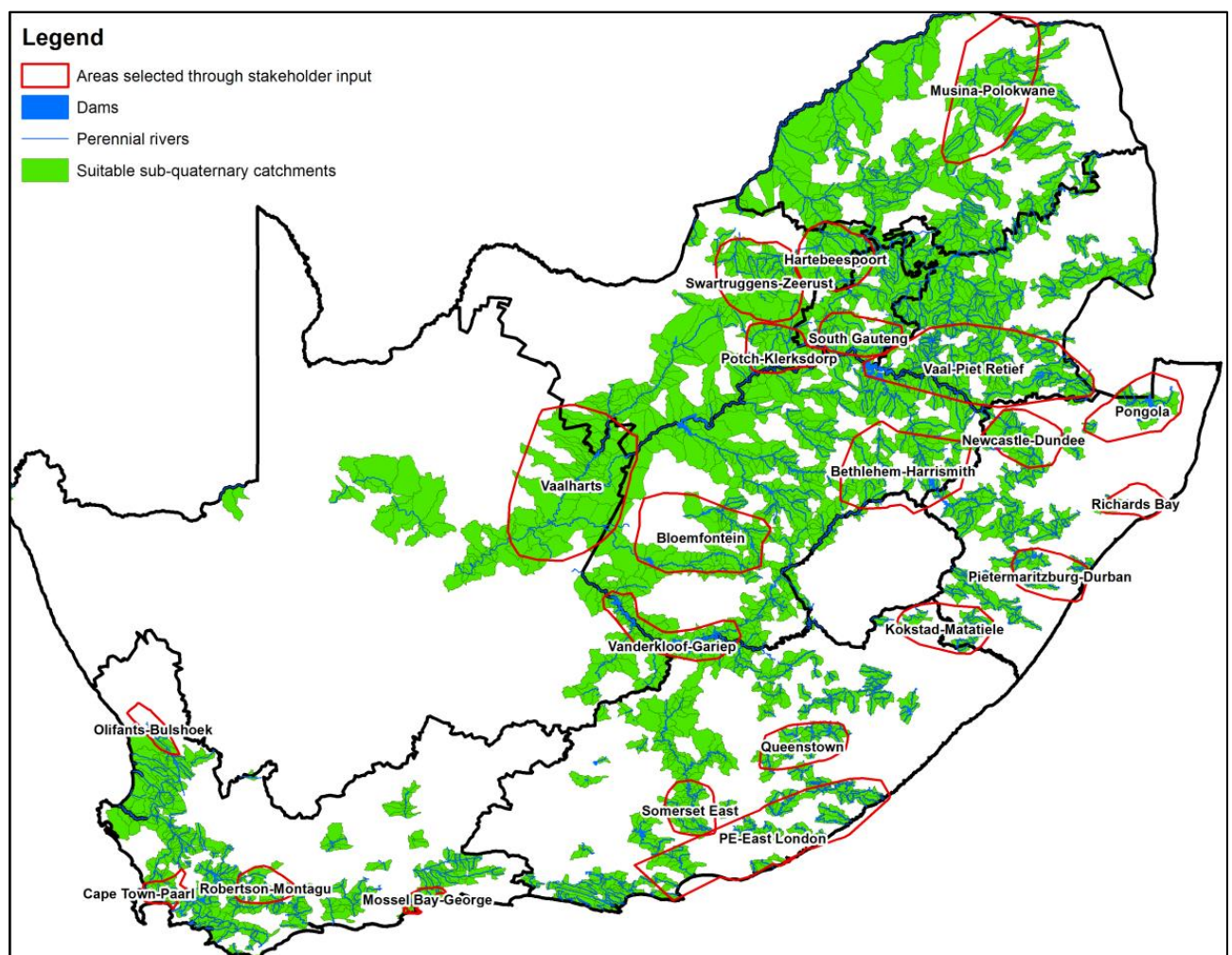


Map 2: Sub-quaternary catchments containing suitable areas for freshwater aquaculture.

National SEA for Aquaculture in South Africa Workshop Notes

1.3 Draft areas identified with stakeholder input

Areas that were shown to be suitable based on the desktop GIS analysis were workshopped with experts to identify areas to take forward in the SEA as study areas.



Map 3: Draft freshwater areas identified with stakeholder input (28 February, 2017).

National SEA for Aquaculture in South Africa

Workshop Notes

1.4 Summary of draft freshwater study areas, rationales and inputs from screening workshops

	AREA	SPECIES	PROVINCE	WATERCOURSE	RATIONALE AND COMMENTS (INPUT FROM 28 FEBRUARY WORKSHOP)	RATIONALE AND COMMENTS (INPUT FROM 08 MARCH WORKSHOP)
1	Musina-Polokwane	Catfish; Tilapia	Limpopo	Rivers flowing to and from the Limpopo River; Nandoni dam	<ul style="list-style-type: none"> - Rivers flowing from/to Limpopo River. Expert input indicated that Nile tilapia may already be present in these watercourses. - Still to determine - for tilapia, would ponds and dam cage-culture be acceptable? 	<ul style="list-style-type: none"> - Nandoni dam water temperature might be too cold for tilapia - This area must be confirmed with Limpopo authorities
2	Vaal-Piet Retief	Trout	Mpumalanga	Various rivers; Vaaldam; Grootdraai dam	<ul style="list-style-type: none"> - WRC inland fisheries study also considers Heyshope and Grootdraai for inland fisheries; therefore could also be suitable for dam cage culture and/or water source for off-stream. - SANBI trout mapping (Dec, 2016) shows trout is not currently extensively present in this area. - May be expected that DWS will have an issue with Vaaldam as it is a key drinking water dam. Cages not feasible as dam levels variable - e.g. recent drought and floods, but potential as water source for off-stream. - The variability of climate of the Highveld (extreme min & max temperatures) may pose a risk. 	<ul style="list-style-type: none"> - This area must be cross-checked with suitable dams provided by Trout South Africa.
3	South Gauteng	Trout	Gauteng	Various rivers	<ul style="list-style-type: none"> - Potential for off-stream aquaculture with various rivers as water sources. 	<ul style="list-style-type: none"> - The cluster of areas identified around the Gauteng and North

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	SPECIES	PROVINCE	WATERCOURSE	RATIONALE AND COMMENTS (INPUT FROM 28 FEBRUARY WORKSHOP)	RATIONALE AND COMMENTS (INPUT FROM 08 MARCH WORKSHOP)
					<ul style="list-style-type: none"> - SANBI trout mapping (Dec, 2016) shows trout is not currently extensively present in this area. - The variability of climate of the Highveld (extreme min & max temperatures) may pose a risk. 	West provinces could be merged into a single study area.
4	Hartebeestpoort	Catfish; Tilapia; Trout	North West; Gauteng	Various rivers; Hartebeestpoort dam; Roodeplaat dam	<ul style="list-style-type: none"> - SANBI trout mapping (Dec, 2016) shows trout is not currently extensively present in this area. - The variability of climate of the Highveld (extreme min & max temperatures) may pose a risk. 	<ul style="list-style-type: none"> - The cluster of areas identified around the Gauteng and North West provinces could be merged into a single study area. - Hartebeestpoort dam has a serious water quality issue, and is probably too hot for trout. - Roodeplaat dam may have a zoning issue, and conflict with recreational users.
5	Potch-Klerksdorp	Catfish; Trout	North West	Various rivers; Boskop dam; Potchefstroom dam; Modder dam; Rietspruit dam; Klipdrift dam	<ul style="list-style-type: none"> - SANBI trout mapping (Dec, 2016) shows trout is currently present in some sub-quaternary catchments in this area (around Potchefstroom). - The variability of climate of the Highveld (extreme min & max temperatures) may pose a risk. 	<ul style="list-style-type: none"> - The cluster of areas identified around the Gauteng and North West provinces could be merged into a single study area. - Too warm for trout. Growth would be marginal here.

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	SPECIES	PROVINCE	WATERCOURSE	RATIONALE AND COMMENTS (INPUT FROM 28 FEBRUARY WORKSHOP)	RATIONALE AND COMMENTS (INPUT FROM 08 MARCH WORKSHOP)
6	Swartruggens-Zeerust	Catfish; Tilapia; Trout	North West	Various rivers	<ul style="list-style-type: none"> - SANBI trout mapping (Dec, 2016) shows trout is currently present in some sub-quaternary catchments in this area. - The variability of climate of the Highveld (extreme min & max temperatures) may pose a risk. 	<ul style="list-style-type: none"> - The cluster of areas identified around the Gauteng and North West provinces could be merged into a single study area.
7	Bethlehem-Harrismith	Trout	Free State	Various rivers; Sterkfontein dam;	<ul style="list-style-type: none"> - Highlands area with cooler climate which is good for trout. - SANBI trout mapping (Sept, 2016) shows trout is currently present in some sub-quaternary catchments in this area. 	<ul style="list-style-type: none"> - Opportunity to employ raceways at the tunnel coming into South Africa from the Katse dam. - Sterkfontein has been earmarked for trout (along with Vanderkloof) as an Operation Phakisa initiative.
8	Bloemfontein	Trout	Free State	Krugersdrift dam; Rustfontein dam; Kalkfontein dam; Masels poort;	<ul style="list-style-type: none"> - SANBI trout mapping (Sept, 2016) shows trout is not currently extensively present in this area. - Prox. to Bloemfontein & access to markets. 	<ul style="list-style-type: none"> - This area is not as optimal as the Bethlehem-Harrismith area. Therefore exclude this area, as Bethlehem-Harrismith sufficiently represents the Free State province.
9	Vanderkloof-Gariep	Trout; Catfish	Free State; Northern Cape; Eastern Cape	Vanderkloof dam; Gariep dam	<ul style="list-style-type: none"> - Operation Phakisa initiatives in Vanderkloof dam. SANBI trout mapping (Dec, 2016) shows trout is not currently extensively present in this area. - Government hatchery (trout, tilapia & catfish) at Gariep dam. - SANBI trout mapping (Dec, 2016) shows trout is currently present in sub-quaternary 	<ul style="list-style-type: none"> - Vanderkloof Dam is an Operation Phakisa initiative for trout cage culture. - It must still be determined whether trout can survive the warm summer months. - The Gariep dam is very turbid – Vanderkloof not as turbid.

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	SPECIES	PROVINCE	WATERCOURSE	RATIONALE AND COMMENTS (INPUT FROM 28 FEBRUARY WORKSHOP)	RATIONALE AND COMMENTS (INPUT FROM 08 MARCH WORKSHOP)
					catchments in associated with Gariep dam. - Gariep dam water quality not great – very turbid, sediment trap.	- Also investigate the Gariep dam for Catfish and Tilapia.
10	Vaalharts	Catfish	Northern Cape	Spitskop dam; Vaalharts dam	- Vaalharts irrigation scheme. - Water management will be crucial here due to the method of irrigation; dams get drained on a daily basis. Water sustainability issues.	- Extend this area slightly to include the Bloemhof dam (potential for cage-culture). - Risks: pesticides and herbicides in water from agricultural activities.
11	Newcastle-Dundee	Trout	KwaZulu Natal	Various rivers; Ntshingwayo (Chelmsford) dam	- SANBI trout mapping (Dec, 2016) shows trout is currently present in some sub-quaternary catchments in this area	- No comments
12	Pongola	Catfish; Tilapia	KwaZulu Natal	Various rivers; Pongolaspoort dam	- Good area for subsistence aquaculture of tilapia and catfish.	- Pongolaspoort dam could have potential for cage-culture - Rhodes project at Pongolaspoort (?) - The climatic variability (extreme min & max temperatures) may pose a risk.
13	Richards Bay	Catfish; Tilapia	KwaZulu Natal	Mhlathuze river; Goedertrou dam	- Good for Tilapia and catfish (pond culture – Mozambique tilapia & catfish)	- Confirmed better temperature profile for warm water species
14	Pietermaritzburg-Durban	Catfish; Tilapia; Trout	KwaZulu Natal	Various rivers; Midmar dam	- Close to Durban markets.	- This area may be too cold for Tilapia, rather also consider Trout here.
15	Kokstad-	Trout	KwaZulu	Various rivers	- SANBI trout mapping (Dec, 2016) shows	- No comments

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	SPECIES	PROVINCE	WATERCOURSE	RATIONALE AND COMMENTS (INPUT FROM 28 FEBRUARY WORKSHOP)	RATIONALE AND COMMENTS (INPUT FROM 08 MARCH WORKSHOP)
	Matatiele		Natal; Eastern Cape		trout is currently extensively present in this area. - Close to Durban markets. - No large dam infrastructure, therefore no opportunity for cage-culture.	
16	PE-East London	Tilapia; Marron	Eastern Cape	Various rivers	- Close to markets. - Perhaps too cold for Tilapia in ponds, but opportunity for RAS. - Potential for marron in colder areas around Stutterheim.	- The cluster of areas identified in the Eastern Cape province could be merged into one or two study areas: 1) from Somerset East down to PE; and 2) From Queenstown down to East London.
17	Somerset East	Trout	Eastern Cape	Groot-vis river; Elandsdrift dam	- Climatic variability. - Perhaps potential for seasonal trout aquaculture. - SANBI trout mapping (Dec, 2016) shows trout is currently present in some sub-quaternary catchments in this area.	- The cluster of areas identified in the Eastern Cape province could be merged into one or two study areas: 1) from Somerset East down to PE; and 2) From Queenstown down to East London.
18	Queenstown	Trout; Marron	Eastern Cape	Various rivers; Xonxa dam; Lubisi dam	- SANBI trout mapping (Dec, 2016) shows trout is currently extensively present in this area. - Marron in escape-proof RAS; no flow-through ponds.	- The cluster of areas identified in the Eastern Cape province could be merged into one or two study areas: 1) from Somerset East down to PE; and 2) From Queenstown down to East London.
19	Mossel Bay-George	Catfish; Trout	Western Cape	Various rivers; Klipheiwé dam;	- Seasonal using RAS only. - CapeNature has serious reservations about	- It is proposed that this area be excluded - considering the

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	SPECIES	PROVINCE	WATERCOURSE	RATIONALE AND COMMENTS (INPUT FROM 28 FEBRUARY WORKSHOP)	RATIONALE AND COMMENTS (INPUT FROM 08 MARCH WORKSHOP)
				Hartebeeskuil dam	<p>this area.</p> <ul style="list-style-type: none"> - SANBI trout mapping (Dec, 2016) shows trout is currently present in some sub-quaternary catchments in this area around George. - CapeNature is sensitive about African sharptooth catfish. Invasive, and stocked illegally. Only RAS in areas where it was legally established (Cape Flats & Eerste River basin). - Will allow RAS of Nile tilapia where there is Mozambique tilapia. Tilapia only where legally established already. 	<p>environmental concerns around this area (raised by CapeNature), it would be irresponsible to allow relaxed legislation for aquaculture here. Rather look to less sensitive areas in the Western Cape.</p>
20	Robertson-Montagu	Trout	Western Cape	Various rivers	<ul style="list-style-type: none"> - SANBI trout mapping (Dec, 2016) shows trout is currently present in some sub-quaternary catchments in this area. 	<ul style="list-style-type: none"> - No comments
21	Cape Town-Paarl	Tilapia (Urban Aquaculture); Marron (Urban Aquaculture) Trout	Western Cape	Urban aquaculture; Bergriver dam	<ul style="list-style-type: none"> - Good area to promote aquaculture in urban areas and industrial zones using RAS systems. - Bergriver dam - race-way below the dam based on intake position. SANBI trout mapping (Dec, 2016) shows trout is currently extensively present in this area. - CapeNature is sensitive about African 	<ul style="list-style-type: none"> - The Western Cape is too cold for tilapia. - Rather only promote Trout in this area. - Production out of City of Cape Town wouldn't be expected to be high and the economic viability of freshwater / inland aquaculture

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	SPECIES	PROVINCE	WATERCOURSE	RATIONALE AND COMMENTS (INPUT FROM 28 FEBRUARY WORKSHOP)	RATIONALE AND COMMENTS (INPUT FROM 08 MARCH WORKSHOP)
					<p>sharptooth catfish. Invasive, and stocked illegally. Only RAS in areas where it was legally established (Cape Flats & Eerste River basin).</p> <ul style="list-style-type: none"> - Will allow RAS for Nile tilapia where there is Mozambique tilapia. Tilapia only where legally established already. 	may not be great here.
22	Olifants-Bulshoek	Catfish; Tilapia	Western Cape	Olifants river, upstream of Bulshoek dam	<ul style="list-style-type: none"> - Seasonal, climatic variability. - Potential to utilise canals as raceways. - CapeNature are sensitive about African sharptooth catfish. Invasive, and stocked illegally. Only RAS in areas where it was legally established (Cape Flats & Eerste River basin). - Will allow RAS for Nile tilapia where there is Mozambique tilapia. Tilapia only where legally established already. 	<ul style="list-style-type: none"> - It is proposed that this area be excluded as there is currently no trout present and the area is too cold for catfish and tilapia.

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Workshop Notes

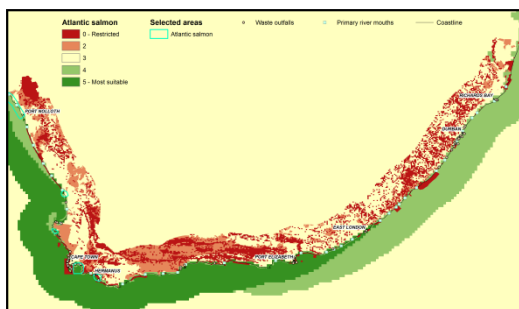
2. LEVEL 1 SCREENING: MARINE

2.1 Key variables used for weighted overlay GIS analysis

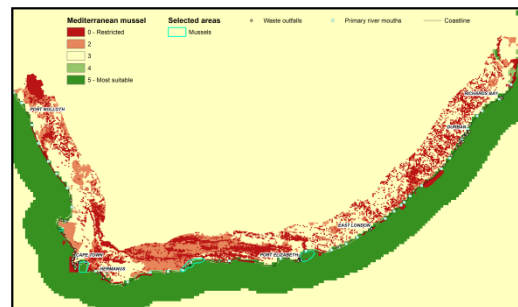
Feature		Rank
Temperature	Optimal	5
	Tolerance	4
	No data	1
Launch Harbours	10 km	5
	No data	2
Major Centres	20 km	4
	No data	1
Protected Areas	Botanical Garden/Mountain Catchment Area/Marine Protected Area/Protected Environment/Special Nature Reserve/Ramsar /National Park	Restricted
	Biosphere Reserve	3
	NPAES/Nature Reserve/Forest Nature Reserve/Forest Wilderness Area	4
	No data	5
Slope	> 10%	Restricted
	No data	5
Extreme wave height (1:1yr at 15 m depth)	Extreme waves < 3.5 - 3.65	5
	Extreme waves < 3.65 - 4.05	4
	Extreme waves < 4.05 - 4.35	3
	Extreme waves < 4.35 - 4.65	2
	Extreme waves < 4.65 - 5.75	Restricted
	No data	4

National SEA for Aquaculture in South Africa Workshop Notes

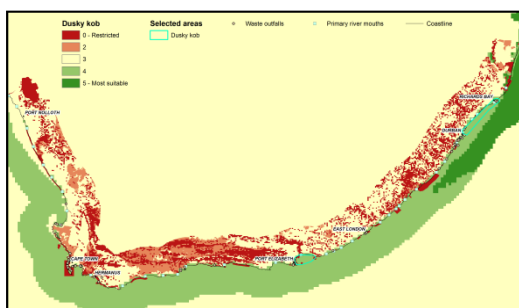
2.2 Weighted overlay results



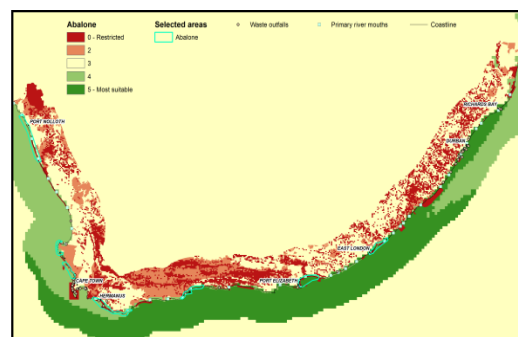
Map 4: Weighted overlay GIS analysis results for Atlantic salmon



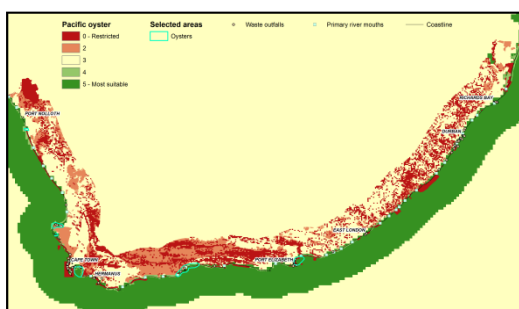
Map 7: Weighted overlay GIS analysis results for Mediterranean mussel



Map 5: Weighted overlay GIS analysis results for Dusky kob



Map 8: Weighted overlay GIS analysis results for Abalone

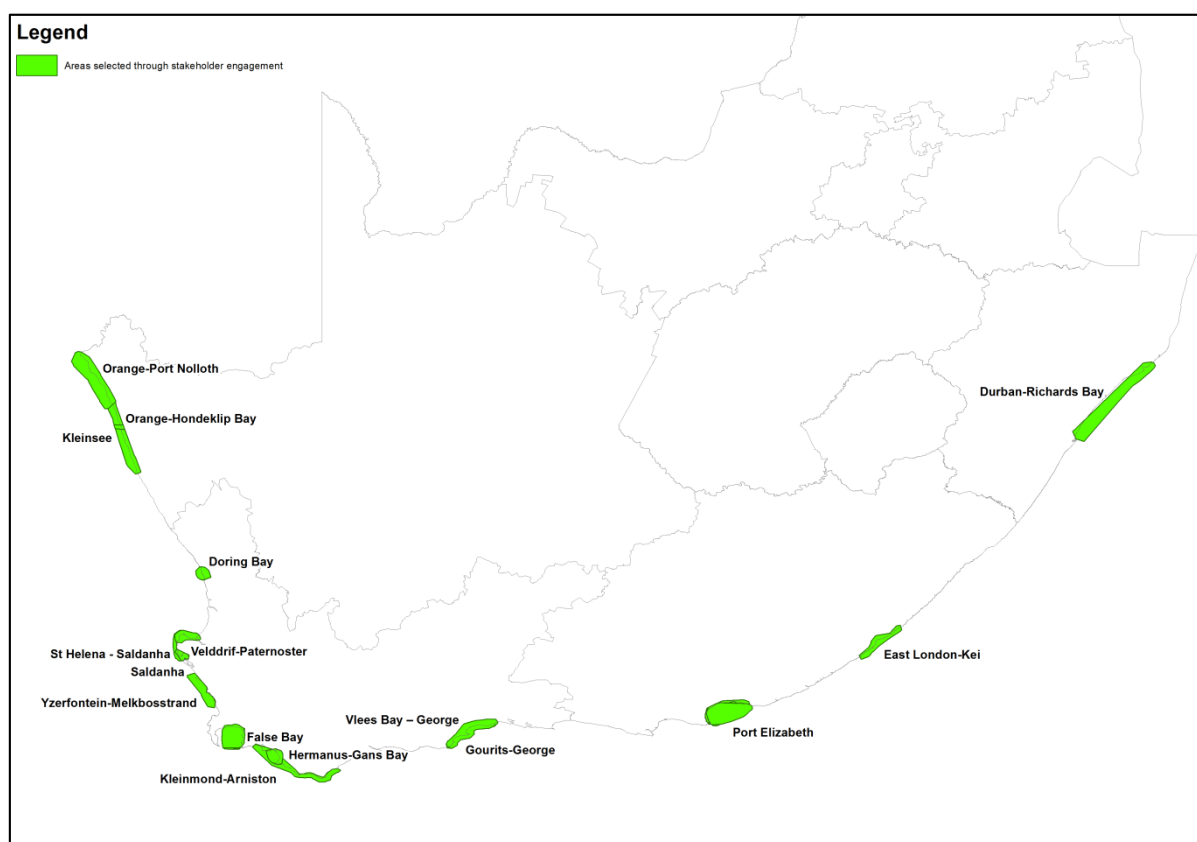


Map 6: Weighted overlay GIS analysis results for Pacific oyster

National SEA for Aquaculture in South Africa Workshop Notes

2.3 Draft areas identified with stakeholder input

Areas that were shown to be suitable based on the desktop GIS analysis were workshopped with experts to identify areas to take forward in the SEA as study areas.



Map 9: Draft marine areas identified with stakeholder input (02 March, 2017).

National SEA for Aquaculture in South Africa

Workshop Notes

2.4 Summary of draft marine study areas, rationales and inputs from screening workshops

	AREA	PROVINCE	SPECIES	RATIONALE AND COMMENTS	INPUT (08 March 2017)
1	Orange-Port Nolloth	Western Cape	Atlantic salmon (land-based)	<ul style="list-style-type: none"> - Potential for land-based Atlantic salmon - Risks: plume from Orange River (increased sediments and turbidity / low salinity), potential conflicts with mining applications and activities; harmful algal blooms (HABs). 	<ul style="list-style-type: none"> - Merge Orange-Port Nolloth, Orange-Hondeklip Bay and Kleinsee into a single larger study area for land-based Atlantic salmon, Oyster nurseries (to feed into Saldanha for finishing), and land-based abalone.
2	Orange-Hondeklip Bay	Western Cape	Abalone (land-based)	<ul style="list-style-type: none"> - Clear of 50 km Orange River mouth plume buffer to minimise freshwater influences - Potential for land-based and ranching - Risks: Orange River plume, mining applications and activities - Degraded mining land for rehabilitation may provide an opportunity 	<ul style="list-style-type: none"> - Merge Orange-Port Nolloth, Orange-Hondeklip Bay and Kleinsee into a single larger study area for land-based Atlantic salmon, Oyster nurseries (to feed into Saldanha for finishing), and land-based abalone. - Currently no mari-culture at Hondeklip Bay due to conflict with mining in terms of water access and security.
3	Kleinsee	Western Cape	Oysters (land-based)	<ul style="list-style-type: none"> - Potential area for oyster nursery and hatchery - not for grow-out - Cheaper pump technology would make it even more feasible - Also identified in the Advance Africa 2017 study - Risks: HABs 	<ul style="list-style-type: none"> - Merge Orange-Port Nolloth, Orange-Hondeklip Bay and Kleinsee into a single larger study area for land-based Atlantic salmon, Oyster nurseries (to feed into Saldanha for finishing), and land-based abalone. - Nursery areas will be strategically important for expansion of the area.
4	Doring Bay	Western Cape	Atlantic salmon (land-based)	<ul style="list-style-type: none"> - Potential for land-based Atlantic salmon and abalone in conjunction 	<ul style="list-style-type: none"> - Extend Doring Bay study area from Strandfontein to Lamberts Bay. - Info to consider: Doringbaai Abalone EIA done by SRK. - Mining activities north of Strandfontein may become an issue – limited land space availability.
			Abalone (land-based)	<ul style="list-style-type: none"> - Potential for land-based Atlantic salmon and abalone in conjunction (value-add) 	<ul style="list-style-type: none"> - Extend Doring Bay study area from Strandfontein to Lamberts Bay.

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	AREA	PROVINCE	SPECIES	RATIONALE AND COMMENTS	INPUT (08 March 2017)
				<ul style="list-style-type: none"> - Potential for Abalone ranching - Risks: freshwater influence from Olifants River, HABs - Electricity may be a limiting factor currently - 900 tpa current carrying capacity, (electricity available for pumping currently limits this to 600 tpa). 	<ul style="list-style-type: none"> - Info to consider: Doringbaai Abalone EIA done by SRK. - Mining activities north of Strandfontein may become an issue – limited land space availability.
5	Velddrif-Paternoster	Western Cape	Oysters (land-based)	<ul style="list-style-type: none"> - Potential for nurseries and hatcheries (and even grow-out) which feed into Saldanha for finishing - Use of salt pans at Paternoster and Velddrif. - New bivalve processing facility proposed – Velddrif - Oyster growth proven to be the best on the West Coast. - Also identified in the Advance Africa 2017 study 	<ul style="list-style-type: none"> - This area also has potential for land-based Atlantic salmon.
6	Saldanha Bay	Western Cape	Atlantic salmon (cage-culture)	<ul style="list-style-type: none"> - Lower HAB risk (though still at risk) - Stripping out nutrients from the shellfish - multifunctional, synergistic. - Risks: Oxygen levels in summer may be low; Land availability restricts land-based Atlantic salmon - nurseries and hatcheries not as feasible in Saldanha, only for grow-out - Potential for land-based Atlantic salmon and abalone in conjunction (value-add) - Also identified in Anchor 2011 and Advance Africa 2016 studies. 	<ul style="list-style-type: none"> - This area also has potential for sea-run trout. - Check the following EIA studies for info: (i) DAFF Saldanha ADZ, (ii) Molapong Aquaculture, and (iii) Southern Cross Salmon Farming Pty Ltd. - Risk: Low oxygen events may occur close to Noordbaai. - It was confirmed during the workshop that it is not necessary to conduct specialist assessments for the Saldanha study area as there is a lot of information available (including a bay-wide EIA). Include Saldanha as a study area in the SEA, but focus on the available information.
			Mussels (rafts & longlines)	<ul style="list-style-type: none"> - Established successful facilities here. - Carrying capacity ~48 000 tpa for shellfish (oysters & mussels) (current estimates) 	<ul style="list-style-type: none"> - It was confirmed during the workshop that it is not necessary to conduct specialist assessments for the Saldanha study area as there is a lot of information

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	PROVINCE	SPECIES	RATIONALE AND COMMENTS	INPUT (08 March 2017)
				<ul style="list-style-type: none"> - Also identified in the Advance Africa 2017 study. Potential decreases to north and south of Saldanha. 	<ul style="list-style-type: none"> - available (including a bay-wide EIA). Include Saldanha as a study area in the SEA, but focus on the available information. - Check the following EIA studies for info: (i) DAFF Saldanha ADZ, (ii) Molapong Aquaculture, and (iii) Southern Cross Salmon Farming Pty Ltd.
			Oysters (rafts & longlines)	<ul style="list-style-type: none"> - Established successful facilities here. - Carrying capacity ~48 000 tpa for shellfish (oysters & mussels) (current estimates) 	<ul style="list-style-type: none"> - It was confirmed during the workshop that it is not necessary to conduct specialist assessments for the Saldanha study area as there is a lot of information available (including a bay-wide EIA). Include Saldanha as a study area in the SEA, but focus on the available information. - Check the following EIA studies for info: (i) DAFF Saldanha ADZ, (ii) Molapong Aquaculture, and (iii) Southern Cross Salmon Farming Pty Ltd.
7	St Helena - Saldanha	Western Cape	Abalone (land-based)	<ul style="list-style-type: none"> - Potential area for abalone - Risks: HABs - Opportunities: Fish processing plant's outfall in St Helena Bay - Better potential (less limiting factors) towards Saldanha Bay 	<ul style="list-style-type: none"> - No comments
8	Yzerfontein-Melkbosstrand	Western Cape	Abalone (ranching(?))	<ul style="list-style-type: none"> - Potential for abalone ranching. - Risks: Major issues from land-based perspectives in terms of terrestrial conservation (CoCT BioNet and Saldanha conservation planning); Koeberg exclusion areas 	<ul style="list-style-type: none"> - If the DAFF ranching sites overlay with this area, it could be considered as a study area. To determine – is abalone ranching within the scope of the SEA? - However, due to of terrestrial conservation (CoCT BioNet and Saldanha conservation planning)

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	PROVINCE	SPECIES	RATIONALE AND COMMENTS	INPUT (08 March 2017)
					(confirm with Dean Impson) and Koeberg exclusion areas this area may well not be included.
9	False Bay (sea-based only)	Western Cape	Atlantic salmon (cage-culture)	<ul style="list-style-type: none"> - Opportunity for cage-culture - Launch points available - Processing facilities on the Cape Flats -Selecta (Viking groups) Philippi - marine finfish processing - Processing potential in Hout Bay (land product in Hout Bay / Gordons Bay) - (potential for sea-run trout) 	<ul style="list-style-type: none"> - The conditions in False Bay are suitable for mari-culture, but the area is very built-up. Furthermore, interested and affected parties will probably oppose mari-culture development here. - Other risks include coastal dynamics and waves.
			Mussels (long-lines)	<ul style="list-style-type: none"> - Potential for oysters on submerged long-lines - Risks: Waves may be a limiting factor - submerged long-lines could work, challenges to get vessels out to service; biodiversity risks; waste water outfalls, plumes, urban runoff 	<ul style="list-style-type: none"> - The conditions in False Bay are suitable for mari-culture, but the area is very built-up. Furthermore, interested and affected parties will probably oppose mari-culture development here. - Other risks include coastal dynamics and waves.
			Oysters (long-lines)	<ul style="list-style-type: none"> - Potential for oysters on submerged long-lines - Risks: Waves may be a limiting factor - submerged long-lines could work, challenges to get vessels out to service; biodiversity risks; waste water outfalls, plumes, urban runoff 	<ul style="list-style-type: none"> - The conditions in False Bay are suitable for mari-culture, but the area is very built-up. Furthermore, interested and affected parties will probably oppose mari-culture development here. - Other risks include coastal dynamics and waves.
10	Hermanus-Gans Bay	Western Cape	Atlantic salmon (land-based and cage-culture)	<ul style="list-style-type: none"> - Potential for land-based - Wave climate not suitable for cage-culture - Also identified in Anchor 2011 and Advance Africa 2016 studies. 	<ul style="list-style-type: none"> - This area also has potential for cage-culture of Atlantic salmon.
11	Kleinmond-Arniston	Western Cape	Abalone (land-based)	<ul style="list-style-type: none"> - Land availability limiting factor for abalone in Hermanus - Temperature may not be suitable along parts of this area - Existing Abalone farms near Oubaai 	<ul style="list-style-type: none"> - Warm water intrusions do occur here, but the area up to Arniston should be suitable for Abalone. - Good abalone growth has been recorded in this area.

National SEA for Aquaculture in South Africa

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	AREA	PROVINCE	SPECIES	RATIONALE AND COMMENTS	INPUT (08 March 2017)
				- Potential for Abalone decreases towards Arniston due to water temperature issues - warm water accumulates close to a reef in Arniston area.	
12	Gourits-George	Western Cape	Abalone (land-based)	<ul style="list-style-type: none"> - Constraints: Limiting factors for Abalone here are steep cliffs and slope along the coast and limited availability of kelp as feed. - Opportunities: land availability for land-based facilities - Mossel Bay Municipality has shown interest in abalone farming. 	- It was expressed that this is definitely a targeted expansion area for Abalone farming.
13	Vlees Bay – George	Western Cape	Mussels (long-line)	<ul style="list-style-type: none"> - Potential for long-line oysters and mussels - Risks: temperature profile needs to be verified; primary production may not be sufficient. 	- Even if this area is assessed in the SEA and protocols developed, a biodiversity risk assessment will still have to be conducted for areas outside of existing Mediterranean mussel populations. To be determined - what is the present distribution of Mediterranean mussels? This may be cross-checked along the coast to confirm / substantiate identified study areas for mussels.
			Oysters (long-line)	<ul style="list-style-type: none"> - Potential for long-line oysters and mussels - Risks: temperature profile needs to be verified; primary production may not be sufficient. 	<ul style="list-style-type: none"> - This area could still consider this area for oysters. - This area is not a very high ranking suitable area, there are some constraints (consider as expansion area for when Saldanha reaches its limits). - Are there current wild oyster concessions in the Mossel Bay area?
14	Port Elizabeth	Eastern Cape	Dusky kob (land-based and cage-culture)	<ul style="list-style-type: none"> - Potential (sub-optimal) for cage-culture, however, Yellow tail may do better here. - Also identified in Anchor 2011 and Advance Africa 2016 studies. 	<ul style="list-style-type: none"> - Coega IDZ has mari-culture proposed within its limits, but no operational developments yet. - What are the current plans in terms of mari-culture in the PE area?
			Mussels	- Potential area, but lower chlorophyll levels compared	- Sea-based

National SEA for Aquaculture in South Africa

Workshop Notes

	AREA	PROVINCE	SPECIES	RATIONALE AND COMMENTS	INPUT (08 March 2017)
			(rafts and long-lines)	to west coast means less food available and lower growth rates. - Food requirements for mussels are higher than oysters	
			Oysters (rafts and long-lines)	- Potential area, but lower chlorophyll levels compared to west coast means less food available and lower growth rates. - Food requirements for mussels are higher than oysters	- Sea-based
			Abalone (land-based)	- Localised warming in the bay - Risk: temperature variation may be a limiting factor.	- Abalone farm in PE closed down due to conflicts with Coega expansion. - Land-based
15	East London-Kei	Eastern Cape	Dusky kob (land-based)	- Potential to have land-based dusky kob facilities. - South of East London the potential for dusky kob becomes marginal due to colder water temperature.	- Dusky kob cultivation in land-based re-circulation systems is proving to not be that feasible.
16	East London-Kei	Eastern Cape	Abalone (land-based)	- Temperature becomes marginal – better growth in winter. - Modify management for warmer water farming. - Risks: Abalone farmers often look for rocky outcrops to anchor their pipelines; issues exist when crossing expansive sandy beaches in terms of servicing the pipe and keeping it anchored. Short pipeline distances are most optimal; also effluent from the facility may get stuck in the surf zone; freshwater influences from many estuaries.	- Suitable area for Abalone - confirmed that this is the most eastern boundary for Abalone. - This area includes the Qolora ADZ.
17	Durban-Richards Bay	KwaZulu Natal	Dusky kob (cage-culture) land-based)	- Cage culture concentrated around Richards Bay and Durban - Potential to have land-based dusky kob facilities with water intake from the sea. - Risks: river plumes, seasonal floods, urban runoff from	- This area includes the Amatikulu ADZ.

National SEA for Aquaculture in South Africa

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	AREA	PROVINCE	SPECIES	RATIONALE AND COMMENTS	INPUT (08 March 2017)
				Durban and Richards Bay - Promising results from Stellenbosch University Dusky Kob trial, but discontinued due to lease not renewed. - Richards Bay also identified in Advance Africa 2016 study.	

National SEA for Aquaculture in South Africa Workshop Notes

Key actions from the workshop:

1. LK to cross-check all DAFF ADZ information received from AB and provide location data to LSvdW. LSvdW to overlay current and planned DAFF ADZs, as well as KZN Ezemvelo suitable areas identified for aquaculture data sets onto the mapping of the green areas by 14 March 2017.
2. LK to follow up with Heather Terrapon at SANBI to obtain the latest version (viz Feb 2017) of the trout mapping data by 14 March 2017. LSvdW to overlay latest trout mapping before sending draft suitable freshwater areas to provincial authorities for further input and comment.
3. LK to ask provincial authorities to also comment on species specific water temperature ranges for the proposed freshwater areas. LSvdW to incorporate these into the final refinement of the study areas.
4. LK has obtained list of dams, from Oom Gerrie van der Merwe (Trout SA), with potential for trout aquaculture on 8 March 2017. LSvdW to cross-reference these dams with current suitable freshwater areas identified.
5. LK to obtain inputs received from Cape Nature re the EIA done for Silverstroom Strand area from MP by 14 March 2017
6. LK has requested spatial data of DAFF abalone ranching areas from MP. LSvdW to cross-check gazette abalone ranching zones with current identified marine areas suitable for land-based abalone mari-culture
7. LK has requested spatial data on current Mediterranean mussel distribution along the SA coast from MP. TP has mentioned studies done by Tammy Robinson at Stellenbosch University on mussel distribution. LSvdW to consider usefulness of overlaying and cross-check the current mussel distribution with areas identified suitable for mussel production
8. LK to verify information with MP re current concession areas for Pacific oyster in the Mossel Bay area.
9. LK has requested and obtained the following EIA related information from MP:
 - a. Doringbaai Abalone EIA study undertaken by SRK Consulting
 - b. DAFF Basic Assessment study for the Saldanha Bay ADZ undertaken by SRK consulting
 - c. Molapong Aquaculture EIA study for Saldanha Bay undertaken by Ecosence cc
 - d. Southern Cross Salmon Farming Pty Ltd EIA study for Saldanha Bay undertaken by Alastair Sempill Consulting.
10. LK to check the aforementioned EIA studies and cross-check which species and associated production systems are planned for the Saldanha Bay area. LSvdW to cross-check the areas (zoning) identified for aquaculture development in the Saldanha Bay area with the current green area mapped.

National Aquaculture SEA
Workshop to refine draft suitable Freshwater and Marine aquaculture areas
DAFF Marine Research Aquarium in Sea Point
Tuesday, 08 March 2017
Attendance Register

Please sign in and confirm your details below:

<u>Organisation/Institution</u>		<u>Name & Surname</u>	<u>Email</u>	<u>Telephone</u>	<u>Mobile</u>	<u>Signature</u>
Dept of Agriculture Forestry and Fisheries	DAFF	Michelle Pretorius	MichellePR@daff.gov.za	(021) 430 7034	082 647 2262	
Dept of Agriculture Forestry and Fisheries	DAFF	Maxhoba Jezile	MaxhobaAJ@daff.gov.za	(021) 430 7037	073 321 1388	
Dept of Agriculture Forestry and Fisheries	DAFF	Grant Pitcher	Grantp@daff.gov.za	(021) 430 7015	082 770 8507	
Dept of Agriculture Forestry and Fisheries	DAFF	Trevor Probyn	TrevorP@daff.gov.za	(021) 4307 014	084 726 8791	
Dept of Agriculture Forestry and Fisheries	DAFF	Kishan Sankar	KishanS@daff.gov.za	(021) 402 3631	083 225 6410	
Dept of Agriculture Forestry and Fisheries	DAFF	Ms Senyolo	Senyolot@daff.gov.za		079 724 6105	
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Council for Scientific and Industrial Research	CSIR	Lizande Kellerman	LKellerman@csir.co.za	(021) 888 2489	083 799 0949	
Council for Scientific and Industrial Research	CSIR	Luanita van der Walt	LvdWalt1@csir.co.za	(021) 888 2490	072 182 9718	
Council for Scientific and Industrial Research	CSIR	Karabo Mashabela	KMashabela1@csir.co.za	(021) 888 2408/2482	076 011 7641	

Workshop on Identifying and Co-ordinating Research as an Adaptation to Climate Change in the South African Marine Fisheries and Marine Aquaculture Sectors

Fisheries Research and Development Research Seminar Room
5th Floor Foretrust House
Foreshore, Cape Town
14th to 16th March 2017

The Climate Change Task Team (CCTT) of the Chief Directorate: Fisheries Research and Development, Branch: Fisheries, Department of Agriculture, Forestry and Fisheries, is developing a detailed Climate Change Adaptation and Mitigation Plan (CCAMP) for South Africa's marine fisheries and marine aquaculture sectors. This includes the identification of possible adaptation measures for all of South Africa's marine fisheries as well as elaborating implementation plans for such measures.

Research to better understand how climate is changing and how these changes will influence South Africa's marine fisheries and aquaculture is required. This is because improved knowledge can lead to informed predictions regarding changes in the abundance, distribution patterns and other characteristics (phenology, etc) of harvested species that may arise from climate change. Similar predictions regarding how climate change could impact cultured and wild-caught species via physiological effects arising from changes in temperature and water chemistry and ecological or ecosystem effects such as increased harmful algal blooms, altered freshwater runoff from land and changes in sediment dynamics may also be possible. In addition, research to better understand the direct effects of climate change on marine fishery and aquaculture operations, for example increased storminess and extreme weather events, is also necessary to enable appropriate adaptation measures.

The Fisheries Branch intends holding a workshop to identify and co-ordinate research as an adaptation to climate change impacts on South Africa's harvested or cultured living marine resources. The aims of the workshop will be to:

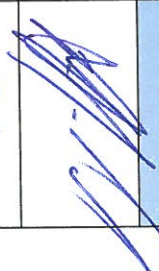





- a) inform interested and affected parties of current research on climate change impacts on South Africa's marine environment and harvested or cultured living marine and estuarine resources;
- b) discuss overarching questions and approaches regarding research into potential climate change impacts on living marine resources;

- c) discuss overarching questions and approaches regarding research into potential climate change impacts on marine fisheries and aquaculture;
- d) identify possible collaborators, institutions and funding agencies for such research;
- e) develop an integrated research plan, including the identification and prioritization of specific research projects to be implemented in the short, medium and long term, as part of developing a Fisheries-independent CCAMP.

The workshop will be held at Foretrust House from 14-16 March 2017. Stakeholders, including physical and biological oceanographers, climate and atmospheric scientists, fishery and aquaculture scientists, sector representatives and resource managers, and other interested parties from the South African marine science community, are welcomed. Interested parties are hereby requested to submit expressions of interest should they wish to participate in the workshop, providing a synopsis of their current research and its relevance to meeting workshop aims. Expressions of interest should be sent to C. van der Lingen (CarlVDL@daff.gov.za and Carl.vanderlingen@gmail.com) and G. Pitcher (GrantP@daff.gov.za) no later than 10th February 2017. Given space limitations the organisers may need to restrict participation.

National Aquaculture SEA
Meeting with WC DEADP re National Land-based Abalone Aquaculture
CSIR Offices, Stellenbosch
Tuesday, 09 May 2017
Attendance Register

Please sign in and confirm your details below:

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Dear Interested and Affected Party

STAKEHOLDER MEETING: THE LISTING OF NILE TILAPIA IN THE ALIEN AND INVASIVE SPECIES REGULATIONS

We would like to invite you to attend a stakeholder meeting to discuss issues pertaining to the listing of Nile Tilapia in the AIS Regulations. They are currently listed as Category 2 species.

The meeting will take place at the Environment House at the Corner Steve Biko and Soutpansberg road, Pretoria. The proposed date is Thursday **20 July 2017 from 10h00 - 15h00.**

The Secretariat will send out the agenda and any other related documentation prior to the meeting. This will include the associated documents.

Please do not hesitate to contact Ms Desiree Madlala on dmadlala@environment.gov.za or 021 441 2787 or 084 407 1108, indicating your availability and any specific dietary requirements.

Your sincerely

Dr Guy Preston
Deputy Director General: Environmental Programmes
Department of Environmental Affairs

Date *29/05/2017*

Lizande Kellerman - RE: Tilapia Meeting

From: "Etienne Hinrichsen" <etienne@aquaeo.co.za>
To: "'Lizande Kellerman'" <LKellerman@csir.co.za>
Date: 21/07/2017 15:48
Subject: RE: Tilapia Meeting
Cc: "'Karabo Mashabela'" <KMashabela1@csir.co.za>, "'Luanita Snyman-Van der ..."

Good afternoon Lizande

Just want to provide a brief synopsis of the Nile Tilapia / DEA meeting yesterday in Pretoria. It was very well attended by farmers (formal and rural), government, scientists etc.

A few presentations were made in the morning session (Guy Preston, Olaf, Nick James, Valdi). People still have wildly different views on the way forward, but a common thread (if I had to pick something out) was:

- Niloticus has invaded several systems and will continue to invade, regardless of permitting, regulations etc.
- Hybridisation with mossambicus (with resultant displacement), remains the primary concern.
- Conservation of areas with pure-strain mossambicus is important (personally, I am not convinced this will happen).
- Distribution mapping is critical, but denialisms of presence must be set aside. There are also constraints with genetic marking (mitochondrial DNA is maternal only).
- The tilapia sector wants to be responsible, but does not want to be dragged down by red tape.
- Rural tilapia farming is a concern
- Capacity is a concern
- KZN, Limpopo and Mpumalanga provinces seem to be where decision making is getting stuck – the other provinces are moving forward with issuing permits based on Risk Assessment (through DEA)
- There is a “fair” amount of tolerance for RAS systems that are well away from rivers.

There was much heated discussion (as expected) and by 4 pm things were not really moving. It was disappointing that DEA did not really come to the table with anything (no plans, no maps, no way forward). The decision that was eventually taken was for the establishment of a small task team that needs to meet again in August to hash out a “straw dog” document to guide the way forward. This task team consists of DEA, DAFF (co-convenor), the provinces that are able to attend, Nick James (co-convenor and representing AASA/AquaSA), SAIAB (Olaf), TAASA (Valdi), an aquaponics assoc. representative, Ben vd Waal and myself.

We can Skype further if you wish, but there is little else to report, unless you want to unpack the science, the nuances of temperature tolerance, the socio-economic issues that were raised, other threats etc. These are not new, but let me know if we need to discuss.

Olaf shared the SAIAB risk assessment for niloticus, as well as his full literature store on the subject with me, and indicated that I may reference it in the SEA risk assessments.

Regards

Etienne Hinrichsen *Pr.Sci.Nat*



Your Environmental Partner
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From: Lizande Kellerman [LKellerman@csir.co.za]
Sent: 10 July 2017 01:20 PM
To: etienne@aquaeeco.co.za
Cc: Karabo Mashabela <KMashabela1@csir.co.za>; Luanita Snyman-Van der Walt <LvdWalt1@csir.co.za>; Paul Lochner <PLochner@csir.co.za>
Subject: Re: Tilapia Meeting

Hi Etienne,

I trust you are well!

Our discussion on Monday afternoon last week, as well as the attached stakeholder meeting invitation from DEA re Nile tilapia refer.

Following from our internal discussion on this matter, we do consider attending this meeting very important and outcomes from it to be valuable inputs into our SEA; however, we do not currently have budget available to incur the traveling cost and hence would like to take you up on your offer to provide us with feedback afterwards since you've indicated that you are planning on attending.

Would you perhaps then be available for a Skype session to discuss the meeting on the 25th or 26th July?

Many thanks and kind regards

Lizande

>>> "Etienne Hinrichsen" <etienne@aquaeeco.co.za> 07/07/2017 08:41 >>>

As discussed – the DEA tilapia meeting that I think should be attended by CSIR.

Regards

Etienne Hinrichsen Pr.Sci.Nat



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AGENDA

STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

ASSESSMENT PHASE: MULTI-AUTHOR TEAM WORKSHOP

STRATEGIC ISSUE CHAPTERS

(FRESHWATER, MARINE, HERITAGE, VISUAL & SOCIO-ECONOMICS)

5TH SEPTEMBER 2017

DATE	TIME	VENUE
Tuesday, 5 th September 2017	09:30 – 16:00	Biodiversity Meeting Room (B207) CSIR Campus, Stellenbosch

Proceedings will be as follow:

TIME	ACTIVITY/DISCUSSION
09:30 - 10:00	Arrival with tea/coffee
10:00 - 10:15	Welcome, introductions and purpose of workshop
10:15 – 11:15	<u>Discussion</u> : Freshwater chapter
11:15 – 12:15	<u>Discussion</u> : Marine chapter
12:15 – 13:15	<u>Discussion</u> : Heritage chapter
13:15 – 13:45	Lunch
13:45 – 14:45	<u>Discussion</u> : Visual chapter
14:45 – 15:45	<u>Discussion</u> : Socio-Economics chapter
15:45 – 16:00	Closure and way forward

For any enquiries, please contact: Lizande Kellerman (CSIR), Tel: 021-888 2489 Email: lkellerman@csir.co.za



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National Strategic Environmental Assessment (SEA) for Aquaculture Development in South Africa
Workshop Notes

Assessment Phase: Multi-Author Team Workshop

Strategic Issue Chapters

Freshwater, Marine, Heritage, Visual & Socio-Economics

Date: Tuesday, 5th September 2017
Location: Biodiversity Meeting Room (B207), CSIR Stellenbosch

Attendees:

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National Strategic Environmental Assessment (SEA) for Aquaculture Development in South Africa

Workshop Notes

Apologies / Invited but did not attend:

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CSIR Environmental Management Services	Paul Lochner	PLochner@csir.co.za
CapeNature: Estuaries and Coast	Pierre de Villiers	estuaries@capenature.co.za
Department of Environmental Affairs	Simon Moganetsi	SMoganetsi@environment.gov.za

Agenda:

DATE	TIME	VENUE
Tuesday, 5 th September 2017	09:30 – 16:00	Biodiversity Meeting Room (B207) CSIR Campus, Stellenbosch

Proceedings were as follow:

TIME	ACTIVITY/DISCUSSION	PRESENTER
09:30 - 10:00	Arrival with tea/coffee	
10:00 - 10:15	Welcome, introductions and purpose of workshop	Lizande Kellerman
10:15 – 11:15	<u>Discussion:</u> Freshwater chapter	Liesl Hill
11:15 – 12:15	<u>Discussion:</u> Marine chapter	Steven Weerts
12:15 – 13:15	<u>Discussion:</u> Heritage chapter	Katie Smuts
13:15 – 13:45	Lunch	
13:45 – 14:45	<u>Discussion:</u> Visual chapter	Bernard Oberholzer
14:45 – 15:45	<u>Discussion:</u> Socio-Economics chapter	Surina Laurie
15:45 – 16:00	Closure and way forward	Lizande Kellerman

Note: In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion that influence the specialist assessment of the SEA process and not as detailed minutes of the entire workshop as only work-in-progress on the 1st draft was presented by the Integrating Authors of each Strategic Issue Chapter.

National Strategic Environmental Assessment (SEA) for Aquaculture Development in South Africa Workshop Notes

Purpose of the workshop:

- Presentation by Lizande Kellerman (CSIR)

A brief overview of progress to date on the SEA, as well as a summary of the five Strategic Issue Chapters comprising the Specialist Assessment Report, was presented. The purpose of the workshop was to i) provide an opportunity for the specialist authors to meet during the SEA's Assessment Phase; ii) for each Integrating Author to present his/her team's work-in-progress on the 1st Draft of their specific Strategic Issue Chapter; iii) to get an overview & understanding of the content and objective of each draft Strategic Issue Chapter; iv) to obtain inputs and comments from the workshop participants on each draft Strategic Issue Chapter; and v) to discuss cohesion between the five Strategic Issue Chapters.

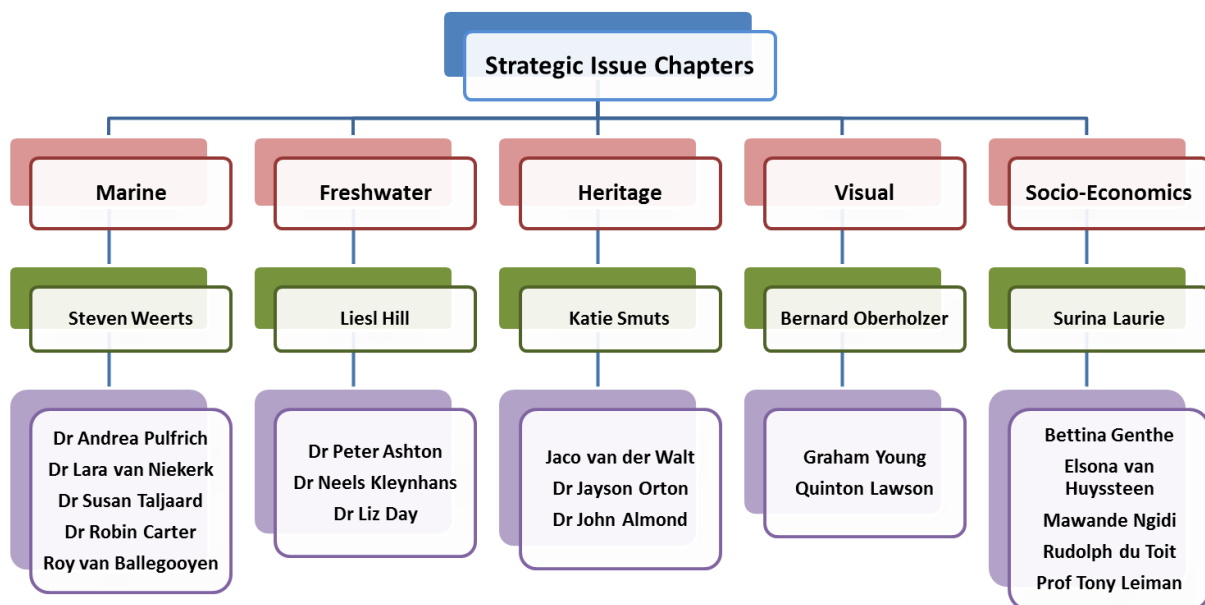


Figure 1: Outline showing each Strategic Issue Chapter comprising the specialist assessment report indicating the Integrating Authors (in green) and the Contributing Authors (in purple).

Key notes from the workshop discussions:

- Van der Kloof Dam's carrying capacity is estimated at approx. 13 000 tons per annum.
- Sterkfontein Dam's carrying capacity is estimated at approx. 1 000 tons per annum.
- When determining potential risk to flow rates in an ecosystem due to a new aquaculture development, it is important to consider the carrying capacity of that particular system.
- An important potential impact to consider in any aquaculture production system is the relation between the quantity of fish feed and the quantity of phosphorous and sodium that is added to any given receiving environment.
- The Operation Phakisa Lab looked at disease and parasitic issues in the aquaculture industry on a national level.
- The scope of Aquaculture SEA only includes Atlantic salmon and the Mediterranean mussel as priority species for consideration; it was mentioned that the production of salmonids in South Africa could include Sea-run Rainbow Trout (also known as Steelhead) and the indigenous Black mussels.
- To comply with the DWS Water Quality Guidelines (WQG) it is important to understand how these WQGs were developed and what impact it would have on for example 'limits of acceptable change'.

National Strategic Environmental Assessment (SEA) for Aquaculture Development in South Africa Workshop Notes

- Depending on the type of aquaculture facility to be developed and the potential risk associated with the planned farming activities, it is important that Marine Protected Areas (MPAs) or certain areas within a MPA still be considered for new development and not serve as an exclusion zone. The question remains however, would it be responsible to exempt applicants from environmental impact assessment or to streamline regulations in MPAs?
- When mussel farming is planned for a specific area, seeding of mussel spat has to come from the same area where the production facility is to be developed. Thus no import of foreign spat into that earmarked area.
- Recommendation from the Heritage specialist team is to have the national South African Heritage Resources Agency (SAHRA) as the single competent (and deciding-) authority for new aquaculture applications, instead of having each new application being considered on national, provincial and local authority levels, respectively.
- The Department of Trade and Industry's Aquaculture Development Enhancement Programme (ADEP) provides financial support to new aquaculture applicants based on a competitive selection process.
- Local and district municipalities relevant to each of the identified study areas will be engaged for review and comment during the Assessment Phase of the SEA process.
- The Mpumalanga Tourism and Parks Agency (MTPA) and Ezemvelo KZN Wildlife are aware of the presence of Nile tilapia in both the Crocodile and Komati rivers, Mpumalanga Province. The presence of Nile tilapia in these rivers is probably not a result of aquaculture.
- Clarification with regards to the production systems considered in the scope of the SEA. "In-stream" freshwater aquaculture in rivers is not within the scope of the SEA (no regulatory streamlining or exemption assumed). "In-stream" aquaculture for the purposes of the SEA refers to cage-culture in dams and ponds only.

Key actions resulting from the workshop discussions:

- LK to alert the authors to consider the draft Abalone and Trout Standards during their assessment.
- LK to provide the authors with the existing carrying capacity formula obtained from Western Cape Department of Agriculture (FE).
- LK to alert the authors to consider the final Operation Phakisa Lab Report (approx. 260pp) during their assessment.
- LK to alert the authors to consider the WWF Aquaculture Stewardship Standards and its relevance to the SA aquaculture industry during their assessment.
- LK to alert the authors of available best practice guidelines e.g. DAFF Feasibility studies conducted by Advance Africa.
- LK to formulate and describe generic aquaculture production types with key impacts associated with each type of system for purposes of the specialist authors:
 - Cage culture system (water-based)
 - Longline system (water-based)
 - Raft system (water-based)
 - Flow-through system (land-based)
 - RAS system (land-based)
- LK to add a table as appendix to the Project Description summarising the bio-chemical composites associated with each of the abovementioned generic aquaculture production types.
- LK to add a table as appendix to the Project Description summarising the minimum production capacity needed to ensure an economic viable and ecological sustainable production system e.g. minimum requirement for the development of an abalone farm is a 60—80 tons per annum farm.
- LK has alerted the Marine Author team of a mistake in their presentation – Abalone is only land-based flow-through and not land-based RAS.
- LK to confirm with the Heritage, Visual and Socio-Economic Author teams to consolidate study areas that overlap instead of having the sensitivity analysis and risk assessment repeated for each area.
- KM to source examples of case studies typical of "good" and "bad" aquaculture projects to gain an understanding of reasons why they have succeeded or failed – KM to contact AB, FE and HS.

*AB – Andrea Bernatzeder / FE – Ferdie Endemann / HS - Henk Stander / KM – Karabo Masahbela / LK – Lizande Kellerman



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DEPARTMENT OF ENVIRONMENTAL AFFAIRS
STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT
Multi-Author Team Workshop-05 September 2017
Attendance Register

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DEPARTMENT OF ENVIRONMENTAL AFFAIRS
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Multi-Author Team Workshop-05 September 2017
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University of Cape Town	Tony Leiman	Tony.Leiman@uct.ac.za	021-6502725	



Organisation	Name	Email	Telephone	Signature



Organisation	Name	Email	Telephone	Signature

National Strategic Environmental Assessment (SEA) for Aquaculture Development in South Africa
Workshop Notes

Nile tilapia meeting

Date: Monday, 11th September 2017
Location: AED Boardroom, 3rd Floor, Foretrust Building
Attendees:

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Department of Agriculture, Forestry and Fisheries	Maxhoba Jezile	MaxhobaAJ@daff.gov.za
CSIR Environmental Management Services	Lizande Kellerman	LKellerman@csir.co.za
CSIR Environmental Management Services	Karabo Mashabela	Kmashabela1@csir.co.za

Apologies / Invited but did not attend:

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CSIR Environmental Management Services	Paul Lochner	PLochner@csir.co.za
CSIR Environmental Management Services	Luanita Snyman-Van der Walt	LvdWalt1@csir.co.za

Note: In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion that influence the citizen science survey of the Nile tilapia mapping of the SEA process and not as detailed minutes of the entire meeting.

National Strategic Environmental Assessment (SEA) for Aquaculture Development in South Africa Workshop Notes

Purpose of the Meeting:

- by Belemane Semoli (DAFF)

Department of Agriculture Forestry and Fisheries needed to know progress to date on the SEA citizen Science Survey for Nile tilapia mapping in South Africa, time frames and the biodiversity risk assessment. Last week Belemane indicated they had a meeting at Pretoria with the farmers. Nile tilapia in South Africa is a bit of a challenge as some province are uncertain weather is there or not.

Key actions resulting from the workshop discussions:

- DAFF to meet with Guy Preston (DEA) regarding the appeal of provincial audiences
- CSIR to update the mapping to Green no permit required ;Orange permit required; and Red no go area
- Andrea (DAFF) to send the CSIR Biodiversity Risk Assessment for Gariep dam in Free state done by Dr Tom Shipton
- Andrea (DAFF) to send the contacts from DWS regarding water temperatures.
- Risk assessment approach to include water temperatures
- Daff to arrange a meeting in Pretoria end of October, CSIR to present the citizen science survey
- CSIR to send DAFF (Andrea) a generic map/ table for the specialist to work on especially heritage



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Dear Sir/ Madam

RE: RESEARCH ON THE FEASIBILITY OF AQUACULTURE SPECIES IN SOUTH AFRICA

The **Department of Agriculture, Forestry and Fisheries (DAFF)** is conducting research on the feasibility of eight (8) different aquaculture species in South Africa. The project will specifically focus on the feasibility and sustainability of the various aquaculture species farmed in South Africa.

The research project is done with assistance of **Urban-Econ Development Economists**. The contact persons are Mr. Ruan Oberholzer (082 874 3938, ruan@urbam-econ.com), Ms. Alisha Basdow (083 442 0043; basdow@urban-econ.com) and Ms. Lynné Roos (072 621 3135, lynne@urban-econ.com).

In order to succeed in this research project, researchers need to, among other things, make contact and interview you, and in some cases, request information from you.

We request your assistance and cooperation when contacted by **Urban-Economic Development** officials on our behalf. Once the study is completed the DAFF will be pleased to provide a summary of the results and findings as a partial thank you for your contribution, to the study. In the meantime, if you have any questions about the study please contact Ms. Masuping Mofokeng at cell: 081 767 7284; email: masupingM@daff.gov.za.

Your cooperation in this regard is much appreciated.

I trust you will find the above in order.

Yours sincerely

Kind Regard,

Ms. Khumo Morake

Director: Aquaculture Technical Services

Date : 05/07/2017

October 2017

Dear Sir/Madam

RE: DEVELOPMENT OF AN ECONOMIC MODEL ON AQUACULTURE SPECIES IN SOUTH AFRICA

The *Department of Agriculture, Forestry and Fisheries (DAFF)* has commissioned *Urban-Econ Development Economists* to develop a working economic model for some of the dominant aquaculture species, in relation to various (applicable) systems under which the species can be cultured. This will also entail a documentation of the current trends, risks, challenges, recommendations, etc., regarding the Aquaculture sector.

Among other things, the model should essentially provide:

- I. A benchmark for new/emerging farmer, policy makers, programme developers, etc.
- II. A holistic overview on various aspects surrounding certain systems and species.
- III. An estimated capital requirement that is needed to produce a certain tonnage of fish/crustacean per a specific system.
- IV. The expected return on investment, number of employees needed (of varying skill sets), and the permits required for the species, among other factors.

This model is expected to be made available to various parties, including, but not limited to: farmers, potential investors, industry experts, etc. Thus, the questionnaires/surveys designed for consultation with relevant stakeholders, are such that will provide insights into the above subject matters.

In view of the above, the DAFF has selected a number of stakeholders to be contacted and serve as critical role players for the purpose of the study. An introductory letter from the DAFF is attached.

We will be contacting you in the next few days following this email to confirm receipt and to set up an interview meeting with you.

Your cooperation will be appreciated.

Warm Regards,

Ruan Oberholzer
Urban-Econ Development Economist
012 342 8686
ruan@urban-econ.com

NILE TILAPIA MEETING MINUTES
Date: 09 NOVEMBER 2017
Venue: ENVIRONMENTAL HOUSE, PRETORIA
Time: 10:00 – 15:30

Members:

	<u>NAME</u>	<u>ORGANIZATION</u>	<u>E-MAIL ADDRESS</u>	<u>CONTACT NUMBER</u>
1.	Dean Impson	Cape Nature	dimpson@capenature.co.za	0824140020
2.	Nkashi Mphahlele	Rural Small Scale Aquaculture	nkashi@makwasia.com	0762447127
3.	Khathushelo Nelukalo	DEA	Knelukalo@environment.gov.za	(021) 441 2812 / 083 635 7353
4.	Belemanes Semoli	DAFF	Belemanes@daff.gov.za	082 457 0477
5.	Yolanda Nodendwa	DEA	Ynodendwa@environment.gov.za	(021) 441 2726
6.	Etienne Hinrichsen	Aqua Eco	etienne@aquaeco.co.za	0828221236
7.	Danie Reinecke	Aquaponic Association of South Africa	danier@lapieus.co.za	0837658343
8.	Ben van der Waal	Scientist	bcwvis@gmail.com	0729749581
9.	Andre Hoffman	MTPA	Andre.hoffman@vodamail.co.za	0824125756
10.	Stan Rodgers	LEDET	Rogdersssm@ledet.gov.za	0828860226
11.	Nick James	AASA	nickjames@intekom.co.za	0825759781
12.	Valdi Pereira	TAASA	valdi@mweb.co.za	0824480537
13.	Michelle Pretorius	DAFF	MichellePR@daff.gov.za	0214307034
14.	Lizander Kellerman	CSIR EMS	lkellerman@csir.co.za	0218882489 / 0837990949
15.	Heather Terrapon	SANBI	H.Terrapon@sanbi.org.za	0217998707
16.	Guy Preston	DEA	gpreston@environment.gov.za	0833258700

Apologies:

Olaf Weyl
Sikhumbuzo Khubeka
Desiree Madlala

Chairperson:

Dr. Guy Preston

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
1.	OPENING AND WELCOMING:				
	1.1. The chairperson, Dr. Guy Preston, opened the meeting and welcomed everyone present.	N/A	GP		N/A
	1.2. There was no agenda prior to the meeting being held. The chairperson tabled points for discussion, which were accepted for the agenda.	An agenda should be drafted and sent out to members who will attend the meetings prior to the meeting taking place	DEA	To be done before the next meeting.	N/A
	1.3. The points of discussion included: <ul style="list-style-type: none"> CSIR to show the work that has been done on the mapping for Nile tilapia and trout Presentation by industry showing mapping where they believe Nile tilapia is present Discussion on the principles discussed in the last meeting with regard to regulating Nile tilapia. Discussion of the mapping process. One point that was mentioned is that the Nile tilapia which occurs in certain areas needs to be confirmed through sample taking and not genetic confirmation. The Chairperson advised the meeting that funds have been set aside by DEA and that DAFF is supporting with additional funds for the verification process. SAIAB and SANBI will be handling this and a process needs to be identified to collect the samples Discussion of minutes from the last meeting held on Nile tilapia. Suggestion was to also discuss the actions and way forward at this meeting and to please to capture them correctly. 	N/A	LK/BS	N/A	N/A
		N/A	NJ	N/A	N/A
		Compile the minutes of the meeting and circulate to all members of the meeting.	VP and YN	N/A	Minutes have been drafted and awaiting inputs from industry members.
	1.4 Valdi Pereira offered to compile the minutes of the discussion and to circulate them to all present and absent members.				

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
2.	APOLOGIES:				
	3.1. All the invited members were present at the meeting except for those that tendered their apologies.	N/A	N/A	N/A	N/A
	3.2. Apologies were received from the following individuals: Sikhumbuzo Khubeka [Ezemvelo KZN Wildlife] Desiree Madlala [DEA] Olaf Weyl [SAAIAB].	N/A	N/A	N/A	N/A
	3.3 A concern was raised on the attendance of the meetings by provinces that may be affected by the decisions taken at these meetings. Members which are invited are urged to honour their invitations.	ALL	ALL	N/A	
4.	APPROVAL OF AGENDA & PREVIOUS MINUTES:				
	4.1. The agenda as proposed in 1.3 was adopted.	N/A	N/A	N/A	N/A
	4.2. The minutes of the previous meeting were adopted after the following:				
	<ul style="list-style-type: none"> Comment on demarcating areas where hybridization has occurred: The chairperson explained that the statement made referred to the need to be prove that hybrids occur in the area. He also mentioned that it meant that an independent verification needed to be done to confirm that hybridization had occurred in the particular catchments. Dean Impson suggested that SAIAB would be the best institution to confirm the species which occur in the system. 	N/A	N/A	N/A	N/A
	<ul style="list-style-type: none"> Comment on the types of catchments: Andre Hoffman suggested that the term “catchment” be changed to “sub-quaternary catchment”. 	Correct term to be amended on the minutes.	VP	N/A	Corrections have been made to statement during the meeting.

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<ul style="list-style-type: none"> Comment on Crocodile River: Andre Hoffman stated that the name of the river referred to should be changed from Crocodile River to Komatipoort Area. He also mentioned that aquaculture is allowed in the area. Etienne Hinrichsen mentioned that the comment should be marked as an alternative. Comment on Nile tilapia aquaculture in KZN: It was discussed that there is no knowledge of aquaculture taking place in KZN and it was suggested that the sentence with the statement be removed from the minutes. The comment was on page 4. Comment on the use of other Tilapia species for aquaculture and their treatment: Andre Hoffman mentioned that the line 'in Mpumalanga province, Risk Assessments don't need to be conducted for <i>Oreochromis</i> species', was incorrectly captured. He explained that the comment referred to any other Tilapia species that are not regulated by the DEA. Therefore Risk Assessments would have to be done for Nile tilapia. Comment on Nile tilapia in Komatipoort Area: The sentence was removed. Comment on allowing permits for Nile tilapia outside demarcated areas: The chairperson explained that permits for the use of Nile tilapia in areas where Mozambique tilapia occur will not be allowed. They won't be allowed outside demarcated areas. 	<p>Correct area to be amended on the minutes.</p> <p>The statement to be removed from the minutes on page 4.</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>VP</p> <p>VP</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>Correction have been made to the statement during the meeting.</p> <p>The statement was removed from the minutes during the meeting.</p> <p>N/A</p> <p>The sentence was removed during the meeting.</p> <p>N/A</p>

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<ul style="list-style-type: none"> Comment on the provision of pure Mozambique tilapia: The notes on the minutes need to be corrected. It must be changed to exclude the word “hybrid”. <p>Adoption of the Minutes Proposed by: Etienne Hinrichsen Seconded by: Belemane Semoli</p>	Corrections to be made to exclude the word “hybrid” from the statement.	VP	N/A	The word has been removed during the meeting.
5.	MATTERS OF DISCUSSION:				
5.1.	CSIR PRESENTATION:				
	<p>5.1.1. The chairperson explained the importance of the mapping exercise(s). The intention is to create maps that will identify demarcated areas (invaded areas) that will be denoted green zones for permitting purposes. Outside of these green zones Nile tilapia farming is not going to be encouraged. If there is an application outside these zones, based on specific conditions and it is deemed safe after assessment, permitting could be allowed.</p> <p>5.1.2. The mapping is also important to provide focus on areas where <i>Oreochromis mossambicus</i> needs to be protected. The Chairperson requested DAFF and TAASA to visit the hatcheries that are producing Nile tilapia and Mozambique tilapia for stocking fish farms to confirm they are using pure stock.</p> <p>5.1.3. The maps are also going to be used to streamline administrative processes and reduce recurring controls. DEA is aware that ordinances and regulations overlap in some instances. This will be reviewed and where</p>	<p>N/A</p> <p>DAFF & TAASA to agree on approach</p> <p>Ongoing</p>	<p>N/A</p> <p>VP/DAFF representative</p> <p>DEA legal</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	appropriate proposed at MINMEC that these be removed. It is important to note that in this instance the focus is on controls around invasives. Provinces may have ordinances that deal with specific issues and these will be looked at to see if any streamlining is possible.				
5.1.4.	DEA is conducting this process in consultation with provinces. The chairperson requested the DAFF delegation to take note of this and where possible to follow a similar process.	N/A	BS	N/A	N/A
5.1.5.	The chairperson acknowledged concerns from industry around the challenges related to obtaining consensus on decisions from various spheres of government. He pointed out this is the reason DEA are adopting the view that a science base approach is used, to differentiate between farming and conservation. He also noted there will be a special focus on this in the lead up to MINMEC.	Ongoing	DEA Legal	N/A	
5.1.6.	Lizande Kellerman gave a presentation on the mapping processes. She mentioned that the CSIR was approached by DAFF to develop a system of mapping the presence of <i>Oreochromis niloticus</i> in South African watercourses, and this will be done at a sub-quaternary/catchment level. She mentioned that they are also in the process of developing the Aquaculture Strategic Environmental Assessment (S.E.A) for aquaculture industry in SA.	N/A	LK	N/A	
5.1.7.	She mentioned that the main aim of the S.E.A is to provide a generic site specific assessment of areas where sustainable aquaculture development can be promoted. The objectives of the S.E.A is to classify the South African	N/A	LK	N/A	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>watercourses in relation to alien fish invasion, specifically with emphasis to Brown and Rainbow Trout and Nile tilapia. She mentioned that Objective G of the S.E.A requires the use of available distribution data on South African rivers and dams that satisfy the national scale criteria as being suitable for aquaculture, as well as to incorporate the existing mapping of SA watercourses in which trout occurs.</p> <p>5.1.8. With reference to the presentation by CSIR, the chairperson pointed out that the presenter should not refer to alien species, as there is no clarity on the amount of alien species that are present in the country. He suggested that the term invasive species should be used as the legislation used by DEA is focused on invasive species.</p> <p>5.1.9. Lizande Kellerman then mentioned that there are nine fresh-water areas which have been identified for Nile tilapia and Mozambique tilapia for potential farming development, which are Worcester for the Western Cape, Gariep Dam for the North West, Bethlehem, Richard's Bay for KwaZulu-Natal, Johannesburg and Klerksdorp for Gauteng, eMalahleni for Mpumalanga, Limpopo and Queenstown for the Eastern Cape.</p> <p>5.1.10. She mentioned that they hope that the mapping of areas for Tilapia aquaculture will assist, when the overlay of the map with the presence of Nile tilapia is done.</p> <p>5.1.11. Belemane Semoli mentioned that the reason for this mapping exercise is to guide potential investors. He mentioned that it is designed to get approval to simplify the regulatory regime in these areas, but does not stop any person from starting projects outside of these areas.</p>	<p>CSIR should amend the wording on the presentations to include "invasive species" and remove "alien species".</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>LK</p> <p>LK</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	5.1.12. Etienne Hinrichsen observed that it might lead to complications to force economic activity related to tilapia aquaculture into those areas where invasives are found. Lizande advised the meeting that the CSIR S.E.A. team had a meeting with Urban-Econ during which they explained the process they would be undertaking to develop the aquaculture zones. The purpose of the meeting was for Urban-Econ to be brought up to speed as they are responsible for the economic modelling in these zones.	N/A	LK	N/A	
	5.1.13. The chairperson stated that there needs to be clarity on what the S.E.A objectives are. It is being undertaken as a result of Operation Phakisa and the objective is to identify aquaculture zones where high end investment can be made by investors into aquaculture systems.	CSIR to include a clear map of Nile tilapia in the S.E.A	LK	N/A	
	5.1.14. Dean Impson mentioned that the S.E.A is an opportunity for DEA and DAFF to have maps identifying the best practice areas of Nile tilapia. He suggested that when the S.E.A is published, it needs to have a map for Nile tilapia because the current one is not clear.	N/A	N/A	N/A	
	5.1.15. Lizande Kellerman mentioned that the S.E.A is intending on creating a system called Nationwide Online Citizen Science Survey, the details thereof have been published in certain agricultural and special interest publications. She mentioned that it will allow people to populate their personal details and will also allow people who go out in field to catch Nile tilapia to provide information of where they have spotted the species, with the corresponding GPS co-ordinates. The survey will be allowed to run until the 31	CSIR to consider plan on how they can be involved	LK	N/A	

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	March 2018 with the S.E.A. She mentioned that the current problem with the survey is that they have not received enough feedback, recent data and photographs. There was consensus by meeting participants to try and use a different approach which will draw the public participation and possibly receive much feedback. TAASA will make contact with the head of Angling SA to determine how they can assist with the citizen survey.				
5.1.16.	Nkashi Mphahlele expressed concern that the survey will bypass rural farmers and that a mechanism needs to be put into place to assist them.	N/A	N/A	N/A	
5.1.17.	Belamane Semoli advised the meeting the DST in Limpopo is busy with an exercise with small scale rural farmers in order to cluster them together. He will request that the information regarding the location of farmers is passed onto the S.E.A. team.	Belamane to request information scale farmers from DST in Limpopo	BS	N/A	
5.1.18.	In terms of the Trout and Nile tilapia associations and what they are practicing with their members, the chairperson mentioned that it cannot be allowed that people introduce species in areas where they do not occur, which is what the Trout industry is allowing and is contradictory to their policy. He also urged the associations to emphasise the importance of not introducing species of Nile tilapia to their members where they do not occur as opposed to the trout association.	All associations to adhere to the request that members should not introduce species where they do not occur.	TAASA and AASA	N/A	
5.1.19.	In terms of the Nile tilapia BRBA which is currently being reviewed, Etienne Hinrichsen mentioned that the BRBA was already conducted by Dr. Barry Clark in 2012 and being reviewed by Anchor Environmental Consultants. He	N/A	N/A	N/A	

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	mentioned that the review is being done to get the BRBA's to meet the criteria of the DEA NEMBA Alien and Invasive Regulations.				
5.1.20.	It was re-affirmed by meeting participants that Nile tilapia should be used for aquaculture only and not for recreational purposes or for the promotion of recreational activities.	N/A	N/A	N/A	
5.1.21.	The chairperson asked all in attendance to guard against creating negativity around the zoning and permitting process. Farmers need to understand that they cannot profit from an activity and society must then carry cost of that activity. DEA is not interested in killing off industries but wants to see activities conducted in a responsible manner.				
5.1.22.	Dean Impson suggested that hatcheries of Mozambique tilapia be credited through the DEA and that they only be allowed to sell the species when accredited. The chairperson mentioned that activity of accrediting hatcheries will be done through the DAFF.	N/A	DEA/ DAFF	N/A	
5.1.23.	Nick James suggested the not only the listing of <i>Oreochromis niloticus</i> , be undertaken but also the similar species such as <i>Oreochromis andersonii</i> . The chairperson stated that there would need to be a risk assessment conducted prior to listing the suggested species. He mentioned that the amended regulations and lists have been sent to the Minister for signature and will be published for public comment.	Find out whether the Minister has already signed the amended regulations and lists so that the amendments done during the meeting can be included. If not possible, the amendments can be added as a comment.	KN	N/A	
5.1.24.	Lizande Kellerman requested that it be noted that the maps presented reflecting the proposed national-scale mapping of Nile tilapia distribution, were only for illustration purposes.	N/A	N/A	N/A	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
5.2.	NICK JAMES PRESENTATION ON DISTRIBUTION OF NILE TILAPIA & LISTING OF SPECIES 5.2.1. Nick James gave a presentation on the populations of Nile tilapia in South African dams and rivers. He highlighted the presence of Nile tilapia in the provinces (Limpopo, Mpumalanga and KwaZulu-Natal) where the species is not supported or allowed for aquaculture using mapping. He also highlighted the papers which have been published by (Zengaya, 2013) on the qualitative risk assessment for Nile tilapia and noted the inaccuracies that were present in a number of papers. He compared the data of the year 2000 when the presence of Nile tilapia was confirmed in Limpopo to the year 2012. Illustrating clear presence of the species. He had done so with the Mpumalanga province, as well as KwaZulu- Natal (Pongola River). 5.2.2. Some of the inaccuracies included: <ul style="list-style-type: none"> ▪ The point that the physiological tolerance limits of Nile tilapia in relation to minimum water temperature is very low. Correction is that Nile tilapia tolerates 8°C in the confinement of a laboratory and when it is isolated from parasites. ▪ The point that Nile tilapia is highly stressed under 15°C. Correct statement should be the fish is not cold tolerant and will die in the wild. The correct data should be written in each publication. ▪ A fish survey was conducted in Dec 2008, which he has not found any reference of the survey in any literature. ▪ He made reference to the Limpopo catchment where Zengaya did his work. This was the northwest 	N/A	NJ	N/A	N/A
		N/A	NJ	N/A	N/A

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>catchment which did not include the other tributaries which join the river.</p> <p>5.2.3. The consensus of meeting participants was that that <i>Oreochromis andersonii</i> should be listed on the AIS list as it is more invasive than the <i>Oreochromis niloticus</i> and their juveniles are hard to distinguish from <i>Oreochromis mossambicus</i>. <i>Oreochromis andersonii</i> are also more cold tolerant than <i>Oreochromis niloticus</i>. .</p> <p>5.2.4. Ben v.d. Waal also mentioned that there is a possibility that the fish that occur in the Limpopo River might be hybrids of <i>Oreochromis andersonii</i> and should not be distributed in other areas. He mentioned that hatcheries should be regulated because that is where the problem with fish species arises from.</p> <p>5.2.5. Valdi Pereira mentioned that there might be instances where people will start wanting to farm with <i>Oreochromis andersonii</i> because <i>Oreochromis niloticus</i> and <i>Oreochromis mossambicus</i> is not for various reasons providing them with satisfactory results and they start seeking alternatives.</p> <p>5.2.6. Stan Rodgers mentioned that they have detected a species called <i>Oreochromis macrochir</i> (Greenhead tilapia) in the Limpopo River which may cause problems. He mentioned that the Limpopo River always has populations of new fish which originates from the tributaries joining the river. Hence there is a suggestion to list <i>Oreochromis</i> as a genus on the AIS List, including their hybrids. The chairperson supported this, but mentioned that the indigenous <i>Oreochromis</i> species should be distinguished.</p>	<p>Suggestion to be considered for the amended AIS Lists. If not possible, they may be considered in the comments.</p> <p>N/A</p> <p>N/A</p> <p>Suggestion to be considered for the amended AIS Lists. If not possible, they may be considered in the comments.</p>	<p>GP/KN</p> <p>N/A</p> <p>N/A</p> <p>GP/KN</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	

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	5.2.7. As <i>Oreochromis andersonii</i> , <i>Oreochromis aureus</i> and <i>Oreochromis macrochir</i> all have invasive potential it was agreed by all present they will be listed (category 3 - this would mean that they cannot be introduced, sold or utilised).	N/A	N/A	N/A	
	5.2.8. <i>Oreochromis mossambicus</i> and <i>Oreochromis placedus</i> are the two indigenous species which are distinguished from these.	N/A	N/A	N/A	
	5.2.9. Ben v.d. Waal observed that floods in the Okavango from time to time brings a shockwave of fish from the Shashe River into the Limpopo River. It is a very dynamic system. Fish need to be monitored for presence on a regular basis.	N/A	N/A	N/A	
	5.2.10. With regard to the conditions of the listed fish, it was also advised to list hybrids. The chairperson noted either Category 1b or Category 2 can be used to control or permit restricted activities. This is premised on the need to accommodate poor rural people who are using hybrids and who need to be permitted to use them. In terms of the purchase of live and transporting of <i>Oreochromis</i> species, it was suggested that they be purchases from accredited or permitted hatcheries.	N/A	N/A	N/A	
	5.2.11. Khathushelo Nelukalo raised a question around the definition of the term 'permitted hatcheries or aquaculture facilities'. There are farmers who have permits for Nile tilapia but may not have a 'permitted facility' as there seems to be no definition for this. It will therefore be important to define what a permitted aquaculture facility is in the regulation. The chairperson explained there will be a process to regularise those situations where farmers do not	The DEA or the DAFF to consider putting permitting conditions in place to accommodate accredited hatcheries	KN/GP	N/A	

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	have a permit for an aquaculture facility. The use of term 'permitted aquaculture facility' negates the use of maps because these can bring their own complications to the regulations.				
	5.2.12. The chairperson stated there are two aspects which are important in terms of the regulations. (1) A permit is not automatically issued, certain requirements first need to be met. (2) There are changes in the regulations, prohibited species has been removed because it is ineffective and the approach will now be that you cannot bring any species into the country without a risk assessment and a permit.	N/A	N/A	N/A	
	5.2.13. Etienne Hinrichsen asked for confirmation that going forward anyone who buys live Nile tilapia will need to do so from a certified hatchery. The chairperson confirmed that this is what DEA, DAFF and industry will work towards. It is an area where DEA want to work with industry to establish self-administration – this approach with other taxa has yielded promising results.	N/A	N/A	N/A	
	5.2.14. There is a concern that poor farmers will be getting stock from 'uncertified' hatcheries. Nkashi Mphahlele pointed out that a process needs to be started to get suppliers certified	N/A	N/A	N/A	
	5.2.15. Nick James noted that DAFF can also acquire quality fingerlings for poor farmers to help kick start improved production	N/A	N/A	N/A	
	5.2.16. Belemane Semoli stated all hatcheries should be managed, because of disease challenges. With respect to certified local hatcheries importing brood stock, they will need to		BS	N/A	

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	import form hatcheries that are also certified. This certification is based on a number of other factors including veterinary certification of their 'disease-free' status. A list of criteria for accreditation/certification needs to be developed.	DAFF to determine their requirements for accreditation of international hatcheries			
	5.2.17. The chairperson stated that in the regulations the sales and transport of live tilapia will be prohibited unless undertaken by an accredited hatchery. The import of live tilapia is also prohibited unless by accredited hatcheries.	N/A	N/A	N/A	
	5.2.18. Nkashi Mphahlele observed that the proposed change to the regulations would prohibit him as a farmer from importing his own improved strain, he would then have to go through one of the certified hatcheries.	N/A	N/A	N/A	
	5.2.19. Belemane Semoli noted there is a difference between a farmer seeking to import brood stock for his own production use and a hatchery wishing to import brood stock for the purpose for selling fingerlings. This is a grey area and becomes a constitutional issue because you cannot inhibit an individual's freedom to trade.	N/A	N/A	N/A	
	5.2.20. Valdi Pereira said from TAASA's perspective farmers should be able to import from abroad to refresh there genetic brood stock for their own nursery/hatchery systems who are involved in the grow-out of fish for their production systems. It may be help to accredit five or six international suppliers who are the only ones that can supply Nile tilapia into South Africa to ease concerns with respect to rogue traders.	N/A	N/A	N/A	

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	5.2.21. The chairperson stated the intention is not to restrict an individual's rights to trade, nor is it about encouraging monopolies. A farmer will however need to have the correct permits to import the fish. Alongside this there is the question of promoting transformation in the industry and this must be a consideration. The regulations should not been seen as way to prevent transformation.	N/A	N/A	N/A	
	5.2.22. There may be a way for DAFF to pre-approve certain international suppliers so that when shipments arrive at ports there is a level of comfort that they are only supporting legitimate trade in the species.	DAFF to determine their requirements for accreditation of international hatcheries	BS	N/A	
	5.2.23. Belemane Semoli said this can be considered. He also pointed out elements of supply and demand will also play a role with five or six local hatcheries in operation at present he did not expect hundreds of applications for accreditation because economic viability would also play a role.		BS	N/A	
	5.2.24. Dean Impson said the real challenge will be backyard operators and their exploitation of sales channels like the internet. If these people are given time to operate under the radar it may in a few years have serious repercussions for the sector and present DAFF with a difficult situation to manage.	N/A	N/A	N/A	
	5.2.25. Belemane Semoli noted that these people would in terms of the new regulations be deemed illegal. He also believes that if you are creating an opportunity for people to come on board and support a structured approach to industry, it is far better than the open ended situation that currently exists.	N/A	N/A	N/A	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>5.2.26. The chairperson proposed the following: 'The sale and transport of live tilapia is prohibited except from accredited hatcheries. The import of live tilapia is prohibited except by hatcheries with permits or from international hatcheries accredited by the Department of Agriculture, Forestry and Fisheries.' All in agreement in this regard.</p> <p>5.2.27. This would mean that DAFF will have some form of application process for these hatcheries and an agreement in place with them that would require them to adhere to certain stipulations, which if broken by them, will lead to a loss of accreditation.</p> <p>5.2.28. The chairperson thanked everyone for their input. He noted that depending how far the process has moved in the Minister's office it will either be include in the proposed regulations or will be held over to the commentary phase on the regulations. He encourage all present to consider the proposed regulations when they are published and to add further comment if they felt it is necessary.</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>	
5.3.	<p>MAPPING PROCESS:</p> <p>5.3.1. The chairperson requested that Limpopo province consider the maps provided by industry and identify the areas of agreement with respect to invasion and those areas where the province disputes the presence of Nile tilapia. Stan Rodgers mentioned that there are areas in Limpopo where he does not want Nile tilapia to be permitted and he will identify these.</p>	Stan Rodgers to provide map of Limpopo areas invaded by Nile tilapia.	SR	N/A	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>5.3.2. The process Limpopo province must follow is to identify the core areas (not rivers or tributaries) that province would be willing to consider issuing permits for RAS, pond or cage farming, bearing in mind that the permits would stipulate any requirements/conditions under which the permit would be allowed.</p> <p>5.3.3. Areas of consensus with respect to where invasion has occurred is an important first step in the mapping. It will allow for the mapping process to start. The mapping will be for permitting purposes only. It is not going to be published for any other purpose as it leads to complications.</p> <p>5.3.4. The chairperson stated that there will be a group of scientists which will be sent out to work together with the provinces to evaluate the presence of Nile tilapia in the disputed areas. Nick James requested that the industry be included in the evaluations as they might be reluctant to accept the results of the survey if they are not included in the process. The chairperson responded that industry can be involved in the process but cannot lead the process because this opens the mapping process up to criticism from other stakeholders who will argue that the industry had a high level of influence over the process.</p> <p>5.3.5. In those areas where there is no agreement or where more information is need to confirm invasion, systematic investigation will take place to determine if they can be converted to green areas. In the case of trout consideration is being given to 30 year permits which are transferable. This is simply because there is no value in making people</p>	<p>The industry and provinces to provide maps for the areas which have Nile tilapia.</p> <p>N/A</p> <p>N/A</p>	<p>KZN, LIMP and MPU</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	renew their permits on an annual basis. Policing/compliance will be conducted and if people are transgressing, the permits will be taken away. It makes sense for a similar process to be followed with tilapia.				
5.3.6.	Heather Terrapon pointed out that mapping is done per sub-quaternary catchment which normally ends up being one river or one branch of a river.	N/A	N/A	N/A	
5.3.7.	Stan Rodgers said that a part of the Nwanedi River has very high salinity and therefore the Nile tilapia will not get past this barrier. This is the type of area he would not presently map until further investigation. There are also areas along the Luvuvhu River that he would like to investigate. He has spoken to NkMbashi Mphahlele to identify some of the farmers in this region so he can see what they are farming with in their ponds.	Identification of small scale/rural farmers close Luvuhu river.	NM	N/A	
5.3.8.	The chairperson observed these are the type of areas where we can send people in to catch fish and send their finding to the scientist for further assessment. Industry can have oversight of this and we can then make a decision based on the results of the scientific feedback because the focus is on areas where the egg has been scrambled.	N/A	N/A	N/A	
5.3.9.	There may be areas where Nile tilapia are present between two natural barriers and in those areas the right by the provincial authorities to attempt extermination in the interests of conservation is reserved.	N/A	N/A	N/A	
5.3.10.	Stan Rodgers also expressed concern about human intervention, where for instance a dam may contain Nile tilapia but the river above it does not contain Nile tilapia.	N/A	N/A	N/A	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>What is stopping someone from taking fish out of this dam and placing them in the river? He proposed a 10km radius around such an area where aquaculture cannot take place</p> <p>5.3.11. Belemane Semoli said that management issues should not be conflated with the matter of identifying where the fish are present. The chairperson added that the permit issued for the area will specific what type of aquaculture will be allowed in an area. This will need to be done in conjunction with DAFF to determine what type of aquaculture (RAS, pond, cage) they want to promote in a particular area along with approaches to the management thereof.</p> <p>5.3.12. If the provincial authorities have concerns with respect to issuing a permit for Nile tilapia and if these can stand up in a court of law, then a permit will not be issued.</p> <p>5.3.13. Heather Terrapon advised that with trout they mapped presence and then they looked at risk factors, e.g. are there fish sanctuaries that can be identified? This helped take it from a question of identifying its presence to moving onto the actual permitting thereof.</p> <p>5.3.14. Belemane Semoli suggested that the industry and provinces send their maps individually and where areas overlap, they can be marked as areas which are rejected.</p> <p>5.3.15. Ben v.d. Waal asked how the assessment would be conducted. The chairperson advised the intention is that there will be sub-contracting through SAIAB of people that they would need to do any independent verification and that ben v.d. Waal is one of the identified individuals in this regard.</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>Maps to be sent to SANBI</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>Provinces/industry</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	5.3.16. The chairperson stated the process to find the funding has been challenging because the work undertaken by DEA covers more than just the listed species. Belemane Semoli (DAFF) is providing funding support via DAFF	N/A	N/A	N/A	
	5.3.17. The funding will go to both SANBI and SAIAB – the contracts with the two institutions and DEA are in place.	N/A	N/A	N/A	
	5.3.18. Ben v.d Waal stressed that raising awareness with farmers and land owners and creating fish reserves is absolutely critical. The focus should be on conserving areas. He noted that if you reflect on the map presented by industry there are huge parts of the country under threat as far as <i>Oreochromis mossambicus</i> are concerned.	N/A	N/A	N/A	
	5.3.19. The chairperson said the regulations (including proposed revisions discussed during meeting) are rather strong. In addition the mapping exercise will indicate where farming can be done. The creation of fish reserves or sanctuaries is important. However, it cannot be the only effort to conserve the species because it takes only one irresponsible person transferring Nile tilapia into an <i>Oreochromis mossambicus</i> reserve/sanctuary for everything to be undone.	N/A	N/A	N/A	
	5.3.20. Andre Hoffman stated that they will be willing to work with industries to do their surveys for areas with invasion of Nile tilapia within Mpumalanga. However, the province is still firm that permits are still not allowed even in rivers where one specimen may be found and which has previously not known to be present. The rest of the members suggested that permits should be allowed because the Mpumalanga	N/A	N/A	N/A	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>province will not have a way to back up their argument for rejecting permits.</p> <p>5.3.21. The chairperson advised the meeting that at this stage Mpumalanga is not following the same procedure as Limpopo. In Mpumalanga the authorities will look at the maps provided by industry and seek scientific verification as they do not agree with the maps presented by industry reflecting the presence of Nile tilapia. A similar process is to be followed in KZN.</p> <p>5.3.22. Belemane Semoli stated there is pressure to survey the catchment areas around Durban and he wanted to know why the same process could not be followed as in Limpopo.</p> <p>5.3.23. The chairperson stated permitting is not being stopped by the process, it is a question of where it is going to be allowed. He would like to move rapidly for Andre and his people to be in a position to verify presence or lack thereof of Nile tilapia in contested areas, this can then be confirmed by independent scientists - SAIAB, DAFF and the industry will have sight of this. This can be an ongoing process and as the results will start revealing the extent of the invasion, a 'cloud' meeting can take place to assess where permits can be issued while the process continues to be finalised and avoid the cost and inconvenience of travelling.</p> <p>5.3.24. There can be a smaller working group that that reviews what is being found and systematically places the information on the maps. People can be sent in within the next couple of weeks to look at the issues.</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>5.3.25. Mpumalanga is willing to entertain RAS applications in the interim and each application will be considered on its merit.</p> <p>5.3.26. The chairperson said that he is happy for industry and the provincial authorities to work together to collect samples as the process of independent verification will be the same at the end of the day. His understanding of the process is that provincial authorities are under pressure to meet their work commitments and would not be able to participate in surveying.</p> <p>5.3.27. It is therefore suggested that unemployed graduates be utilised to build capability and to contribute to job creation and transformation for unemployed graduates</p>	<p>N/A</p> <p>N/A</p>	<p>N/A</p> <p>SANBI/SAIAB/GP</p>	<p>N/A</p> <p>N/A</p>	
6.	<p>Way Forward:</p> <ul style="list-style-type: none"> An agreed upon protocol for the collection and recording of samples needs to be developed. Andre Hoffman advised that he has a protocol which he uses for genetic testing. He will make this available for assessment by the scientists to determine if it can be adapted or utilised for the process. A suggestion was made that SAAIB needs to provide the criteria/protocol for assessment. The chairperson gave a way forward and stated that the industry will provide maps which will indicate where <i>Oreochromis niloticus</i> occur and where they are likely to spread overtime. These maps and data need to cover all the provinces where the species occurs and need to be sent via the mapping experts to 	<p>SAIAB needs to draw up a protocol for identifying fish and to share it with the task team. This needs to then be sent through to Michelle v.d. Bank from University of Johannesburg. The general committee will need to provide inputs on the requirements.</p> <p>Industry to provide maps of areas where <i>Oreochromis mossambicus</i> occurs and where it is most likely to spread to the DEA.</p> <p>The responsible persons in this regard need to be identified.</p>	<p>Olaf Weyl/AH</p> <p>NJ and VP</p> <p>GP/SANBI/SAIAB</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>	<p>The week of the 13 to 17 November 2017 – (update the maps have been sent to S.E.A. and SANBI).</p>

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<p>the general committee. A response will then be sought through the provinces for the mapping as it was done for the trout to say in whether they agree or not to the mapping results.</p> <ul style="list-style-type: none"> ▪ The chairperson also mentioned the importance of getting the input of the three absent provinces (Eastern Cape, North West and Free State) which will be affected by the surveys. They surveys will not be done on the genetics. ▪ Each province should indicate what they need in terms of maps they get given and areas which will be disputed with the fish sampling project. DEA will provide support and will see if they can find MSc students who will assist in conducting the work. It was suggested around the table that the chairperson look at employing graduates with the relevant qualification and skill to assist in the project. ▪ The industry and the province will do surveys, which they may choose to do them themselves, or whether they would like to source external services to do the surveys. The results from the surveys will then be verified by scientist in order to know where the green areas are and whether permits for species will be allowed in those areas. Nick James noted that November through to March is a good time for field work. ▪ With regard to the co-ordination, the chairperson mentioned that SANBI will be the ideal institute to co-ordinate this project. The process for appointing people to do the survey needs to be done. Dean Impson suggested to the chairperson to consult with Olaf Weyl on the research costs for funding the project and employing the graduates. 	<p>Provinces and industry to conduct surveys.</p> <p>SANBI will be responsible for the co-ordination.</p>	<p>NJ/VP and KZN, MPU, LIMP</p> <p>SANBI/GP</p>	<p>January 2018</p>	

NR	ITEM	ACTION	RESPONSIBLE PERSON	DUE DATE	PROGRESS
	<ul style="list-style-type: none"> The chairperson suggested the formation of a sub-task team is to be comprised of Khathutshelo Nelukalo, John Donaldson (SANBI) and SAIAB. They will need to get the feedback form the provinces on what they think of the maps, what the disputed areas are and what is the capacity will be needed to deal with work. He mentioned that the general committee could decide on who forms part of the small group that ensures that enough capacity is put in place. 	N/A	KN/SANBI/SAIAB	N/A	
	<ul style="list-style-type: none"> The DEA needs to provide feedback on the work that has already been put in place to ensure that we are ready to pull together capacity to carry out the work on the surveys. 	N/A	GP/KN	N/A	
	<ul style="list-style-type: none"> It was noted that the KwaZulu- Natal and Eastern Cape are not present in the meeting and may not be present in forthcoming meetings. It was noted that the KwaZulu-Natal province has to survey the Tongaati and Pongola Rivers to check for any presence of Nile tilapia and Trout. 	N/A	N/A	N/A	
	<ul style="list-style-type: none"> Khathutshelo Nelukalo to find someone from Biodiversity and Conservation, along with Nick James and Dean Impson to get recommendation around fish reserves. SANBI to also provide input on the processes that have been undertaken in the past. 	N/A	KN	N/A	
7.	CLOSURE: The meeting was adjourned at 15:45.				

Minutes adopted/approved: (Chairperson)

Date:



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

NILE TILAPIA MEETING

DATE: 08 NOVEMBER 2017

VENUE: ENVIRONMENTAL HOUSE, C2-G-14, PRETORIA

TIME: 10:00 – 15:30

ATTENDANCE REGISTER

NAME	ORGANIZATION	CONTACT NUMBER	E-MAIL	SIGNATURE
U.D. Tapsen	Cape Nature	082 414 0020	umprisa@cape.nature.co.za	U.D.
Nkashu Ntshwale	Rural small scale Aquaculture	076 244 7127	nkashu@mbakaria.co.za	Nkashu Ntshwale
F. NELUKHALO	DEA	021 441 2212	fnelukhalo@environment.gov.za	F. NELUKHALO
B. Semoloi	DAFF	082 457 0447	Belemene@daff.gov.za	B. Semoloi
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Etienne Hirschsen	AquaEco	082 822 1236	etienne@aquaeo.co.za	Etienne Hirschsen



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Danie Reinecke	Aquaponic Association of Southern Africa.	0837658343			danier@lapieus.co.za.	
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Andre Hoffmann	NTPA	082 412 5756			andre.hoffmann@vodanet.co.za	
Stan Rodgers	LEDET	082 886 0226			Rodgers55MP@adnet.gov.za	
Dick Jones	AATSA	0825759781			nickjones@inklab.co.za	
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Michelle Pietrus	DAFF : SAM	0214307034			Michelle.P@daff.gov.za	
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Heather Terrapon	SANBI	081 799 8707			H.Terrapon@sanbi.org.za	
Guy Nuhn	DEA	083 325 8700			gpreston@environment.gov.za	

Lizande Kellerman - REMINDER: OCIMS HAB DeST: User Engagement Session

From: Riette Easton
To: Lizande Kellerman; Riette Easton; Karabo Mashabela; Pat Morant; Chri...
Date: 05/12/2017 12:30
Subject: REMINDER: OCIMS HAB DeST: User Engagement Session
Attachments: OCIMS_HAB_TAG_Agenda_7Dec2017.docx; OCIMS-brochure-small.pdf

Dear Colleague,

You are hereby invited to attend the first **OCIMS HAB User Engagement Session** on **Thursday 7 December 2017** from **14:00 - 17:00** at **The Heart of Abagold - Hermanus** (directions available at <http://www.heartofabalone.co.za>)

The Department of Environmental Affairs (DEA) and the Department of Science and Technology (DST) have started an exciting process to develop a National Oceans and Coasts Information Management System (OCIMS) for South Africa and also to extend earth observation capability. This project forms part of the Operation Phakisa (Marine Protection Services and Ocean Governance - Initiative 6: "National Ocean and Coastal Information System and Extending Earth Observation Capability") Action Plan endorsed by Cabinet. Please see attached OCIMS brochure for more information.

The web-based Harmful Algal Bloom (HAB) tools form part of the OCIMS system (www.ocims.gov.za). It uses remote sensing and other data to enable users to monitor bloom locations and persistence in real time, in addition to providing the ability to analyse bloom risks over decadal time scales.

Please find attached the DRAFT Agenda for your information.

Please RSVP by **CLOSE OF BUSINESS TODAY** by replying to this email (heaston@csir.co.za).

Kind regards

Riette Pretorius

CSIR Project Manager

012 841 2623

082 800 5883

>>> Riette Easton 30/11/2017 10:26 >>>



NATIONAL OCIMS

AGENDA

Oceans and Coastal Information Management System (OCIMS) Harmful Algal Bloom User Engagement Session

Date: 7 December 2017
Time: 14:00 – 16:30
Venue: Heart of Abalone in Hermanus
Chair: Dr Stewart Bernard

	TIME	AGENDA ITEM	LEAD
1.	14:00 – 14:10	Welcome, introductions and outcomes	Chair
2.	14:10 – 14:30	OCIMS project background	Dr Niel Malan
3.	14:30 - 15:00	Scientific and earth observation overview	Dr Marie Smit
4.	15:00 – 15:30	HAB DesT demonstration and walkthrough	Dr Stewart Bernard Mr Graeme McFerren
5.	15:30 – 16:00	Interactive discussion <ul style="list-style-type: none">- General Questions- Requirements- User Feedback	Chair
6.	16:00 – 16:15	Next steps	Chair

OCEANS AND COASTS FAST FACTS

South Africa

Land size ~1.2 million km²

EEZ* size ~1.5 million km²

Effective governance of South Africa's oceans and coasts remains a challenge

3 200 km of coastline

20 key departments and institutions in the marine environment with distinct roles and maritime policies

50 national acts regulating marine governance

4 coastal provinces with their own socio-economic context and development goals

OCEANS ECONOMY

312 000 tonnes

of seafood is annually consumed in South Africa, 6.24 kg per capita

South African fisheries consist of 22 sectors, with 2 900 rights holders and 1 788 legal fishing vessels with an annual production value of **R7 billion per annum**

South Africa's aquaculture industry is growing steadily (**0.2% contribution to GDP****)



The South African coastline is mined for heavy metals (titanium and zirconium) that **supplies 30% of world production**, mineral sands, cement and aggregates

8 ports and 12 proclaimed fishing harbours
12 000 ships visit our ports each year

25 Marine Protected Areas

Fishing sector

is responsible for the direct employment of **2 700 people** and for the indirect employment of **100 000 people**

South Africa is positioned along one of the world's busiest shipping routes with more than **120 million tonnes** of oil and bunker fuel carried aboard ships each year and 12 000 ships visiting South Africa's ports

98% of the EEZ* is subject to a right or lease for offshore oil and gas exploration or production

60 licenced effluent pipelines that discharges **287m³ of waste water** per annum into marine resources

R2 billion - value of ecotourism to South African economy

22% of South Africa's coastal development is threatened by **sea level rise**

The estimated total contribution of coastal resources is over **R57 billion** (marine fishing, port and harbour development, attractive lifestyles, recreation and tourism) that is estimated to contribute to **35% of South Africa's GDP****. Indirect contribution that includes waste assimilation, detoxification, recycling etc. is estimated at **28% contribution to South Africa's GDP****

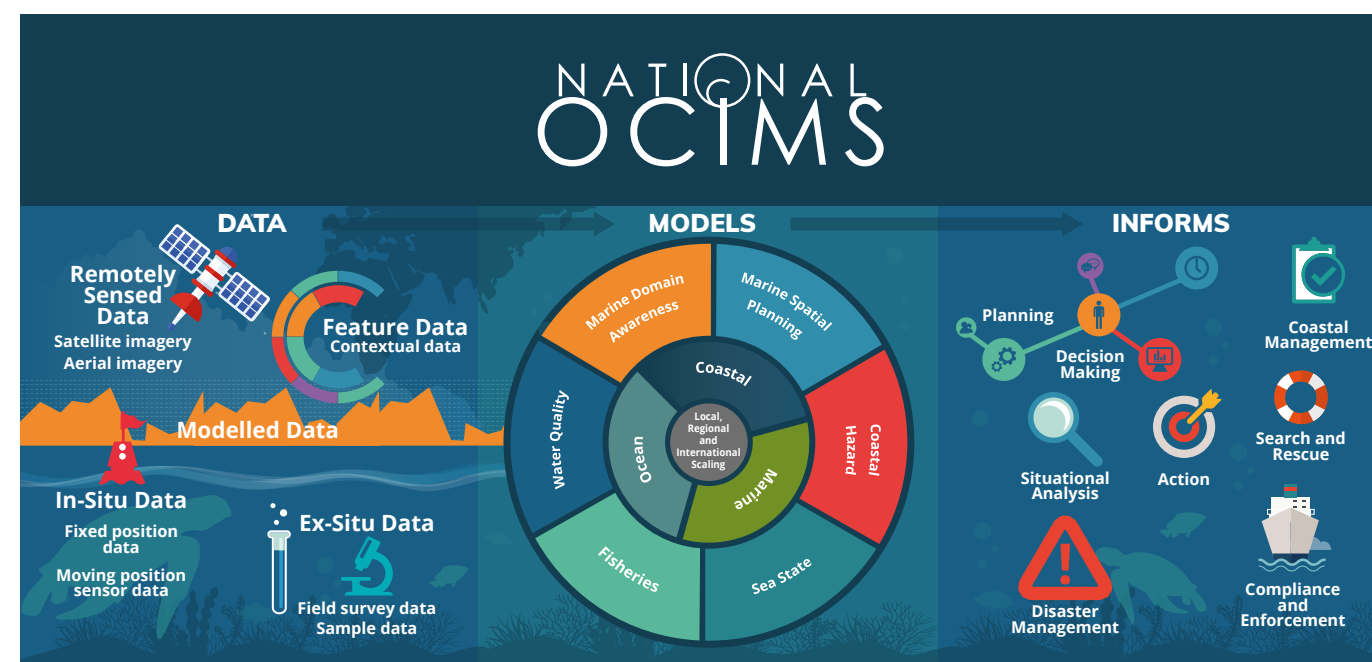
* EEZ - Exclusive Economic Zone ** GDP - Gross Domestic Product



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science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



www.ocims.gov.za

The Department of Environmental Affairs (DEA) and the Department of Science and Technology (DST) have initiated the development of the National Oceans and Coastal Information Management System (OCIMS) for South Africa– referred to as the OCIMS project.

The OCIMS project forms part of the Operation Phakisa Marine Protection Services and Oceans Governance workstream Initiative 6: "National Ocean and Coastal Information System and Extending Earth Observation Capability" action plan that is endorsed by Cabinet. Operation Phakisa focuses on unlocking the economic potential of South Africa's oceans.

OCIMS will support a variety of oceans and coastal initiatives by providing information and decision support to key stakeholders for the day-to-day management of South Africa's oceans and coasts.

The OCIMS 2019/2020 project outcomes are:

- Establish earth observation technology capacity for the South African Exclusive Economic Zone as well as the extended continental shelf;
- Deliver an operational system;
- Establish and implement the data and earth observation infrastructure.

The project outcomes will be achieved through the development of an Information Management System (IMS) that will integrate current and future oceans and coastal systems, information and expertise into a user-friendly and cost-effective IMS for the benefit of relevant stakeholders. In June 2015, the Council for Science and Industrial Research (CSIR) was nominated by DEA as a service provider to facilitate the implementation of the project and to co-develop OCIMS.

CSIR
our future through science

OCIMS project vision

Develop a locally relevant and globally cognisant technological solution that supports the ecological conservation and economic potential of South Africa's oceans and coasts through information and decision-support for effective governance.

NATIONAL
OCIMS

IMPACT
TO DATE

The rock lobster industry contributes R200 million per annum to South Africa's GDP and a red tide event in 2015 caused a walk-out of lobster stock worth R114 million

In 2016 the OCIMS Integrated Vessel Tracking tool assisted with the tracking of foreign vessels that entered South Africa's EEZ without declaring 600 tonnes of squid

In 2017 a harmful algal bloom caused aquaculture farm losses to the excess of R50 million. The harmful algal bloom tool can predict these events

In South Africa, 30% of the population stay within 60 km of our oceans. Many coastal communities are dependent on our oceans and coasts for their livelihood, while others reside there because of the lifestyle and recreational opportunities it offers. OCIMS will support the unlocking of the oceans economy through enhanced oceans and coastal management planning and decision support. This will also include integration of data collection, data processing, data analysis, reporting and alerting to effectively and efficiently identify, monitor and predict events and threats.



OCIMS Core

The OCIMS Core System allows the user access to a variety of oceans and coastal related data, Decision Support Tools, documents and other related systems.

Decision Support Tools

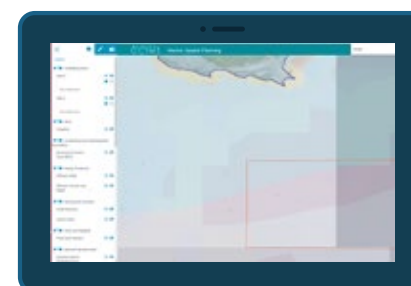
OCIMS is currently involved in the development of a number of Decision Support Tools. The OCIMS project will continue to develop additional Decision Support Tools based on priority, maturity of existing tools and according to an agreed technology roadmap.

www.ocims.gov.za

Contact us

- Initiative 6 Project Owner **Mr Lisolomzi Fikizolo** - DEA: 021 819 2608 or lfikizolo@environment.gov.za
- Earth Observations Coordinator **Mr Humbulani Mudau** - DST: 012 843 6857 or humbulani.mudau@dst.gov.za
- Project Director **Dr Niel Malan** - DEA: 021 405 9495 or dmalan@environment.gov.za
- Contract Manager **Mr Lee Annamalal** - CSIR: 012 841 4546 or lannamalal@csir.co.za
- Project Manager **Ms Riëtte Pretorius** - CSIR: 012 841 2623 or heaston@csir.co.za

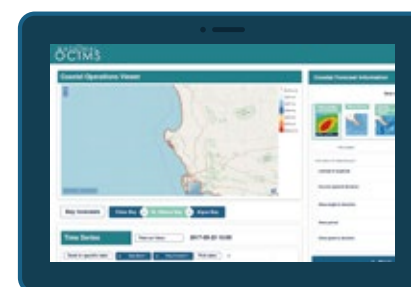
NATIONAL OCIMS Decision Support Tools



1

Marine Spatial Planning (MSP) Viewer

Provide users with an overview of MSP related data and will allow users to discover available MSP data, generate and view intersecting zones and assist in MSP.



2

Operations at Sea - Search and Rescue

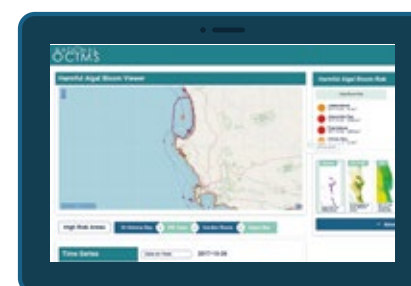
Simulates and predict ocean currents and waves that enable ocean users (National Sea Rescue Institute and Maritime Rescue Coordination Centre) to view forecasts and plan their operations at sea.



3

Coastal Flood Hazard

Allows users to view inundated areas from simulations of predetermined water levels that indicate possible vulnerability as a result of sea level rise and flooding during storm events.



4

Harmful Algal Bloom (HAB)

Provides a capability for the daily monitoring and risk assessment of HAB events along the 3 200 km of the South African coastline extending to approximately 50 km offshore. The HAB Decision Support Tool can be used to predict rock lobster walkouts.



5

Integrated Vessel Tracking

Allows authorised users access to monitor vessel activity within the full Exclusive Economic Zone of South Africa including the Prince Edward and Marion Islands. It uses data sources that are co-operative i.e. Automatic Identification System (AIS), Vessel Monitoring System (VMS), and non co-operative i.e. Terrestrial Radar, Satellite Synthetic Aperture Radar (SAR).

www.ocims.gov.za

National Strategic Environmental Assessment (SEA) for Aquaculture Development in South Africa
Meeting Notes

Meeting to discuss concerns raised by Mr Roger Kröhn (Chairman: AquacultureSA) on 1st draft of Chapter 2 – Freshwater Biodiversity and Ecology

Date: Thursday, 25th January 2018
Location: DAFF AED Boardroom, 3rd Floor, Foretrust Building, Foreshore, Cape Town
Time: 14:00 – 15:30

Attendees:

Organisation	Name	Email
Department of Agriculture, Forestry and Fisheries	Michelle Pretorius	MichellePR@daff.gov.za
Department of Agriculture, Forestry and Fisheries	Kishan Sankar	KishanS@daff.gov.za
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Attended via Telephone:

Organisation	Name	Email
Aquaculture South Africa	Roger Kröhn	roger@hik.co.za

Apologies:

Organisation	Name	Email
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Note: In pursuit of efficiency, these notes are intended to capture the key outcomes from the discussion with the Chairperson of Aquaculture South Africa, Mr Roger Kröhn regarding his concerns raised and submitted to DAFF and CSIR (letter dated 12 December 2017 – see Appendix 1) following his review of Chapter 2 – Freshwater Biodiversity and Ecology as part of the Scientific Assessment of the Aquaculture SEA.

Purpose of the Meeting:

- The primary purpose was to discuss the concerns raised by the chairman of Aquaculture South Africa, Mr Roger Kröhn about the Aquaculture SEA, in particular the findings from the scientific assessment of freshwater biodiversity and ecology (Chapter 2), being considered too restrictive for the development of new aquaculture projects.
- The main concerns raised which required discussion for clarification were:
 - The data that is used is hopelessly outdated and incomplete and compromises the whole project;
 - The whole document is incredibly biased in favour of a strict conservation biology and environmental control ethos; and

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- 2.3. None of the agreements that were negotiated during the eight weeks of Operation Phakisa have been taken into consideration.

Key discussion points from the Meeting:

1. Only existing, available environmental spatial data was used during the screening phase (Phase 2) of the SEA to assist in identifying strategic-level study areas most suitable to aquaculture development for specialist assessment in Phase 3. No new spatial data was generated and although some datasets used in the screening phase are currently being updated e.g. National Biodiversity Assessment (NBA), more recent data was not available to the CSIR Project team at the time.
2. Although maps produced by DEA and SANBI (dated December 2016) showing presence/absence of trout in SA waterbodies were used during the screening phase (Phase 2) of the SEA to assist in identifying strategic-level study areas most suitable to trout aquaculture development, the scientific assessment (Phase 3 of the SEA) of specifically freshwater biodiversity and ecology did not consider the legal classification of the trout maps in the sensitivity analysis. The legal classification of the trout maps refers to a three-tiered colour-code with i) green indicating areas where no permitting is required; ii) orange where permitting and a biodiversity risk assessment are required; and iii) red as 'no-go' areas such as indigenous fish sanctuaries where trout farming is not allowed. These maps were not available to the CSIR and the specialist author team to consider in the freshwater biodiversity sensitivity analysis.

Key outcomes from the Meeting:

1. The SEA mapping and sensitivity analysis for freshwater biodiversity and ecology need to include the maps indicating declared trout areas in green, orange and red.
2. The SEA outputs should be updated in future when new spatial data e.g. the proposed national Nile Tilapia mapping becomes available.
3. Lack of locality data on existing aquaculture facilities weakens the ability of the SEA to identify suitable aquaculture development areas.
4. There is a strong request from Mr Kröhn (on behalf of the aquaculture industry) for additional discussion (workshops) on the freshwater scientific assessment, specifically to incorporate the industry's perspective.
5. DAFF to provide input on how agreements from Operation Phakisa inform the SEA (e.g. linked to issues around trout being declared an alien invasive species).
6. Mr Kröhn will provide further, more specific input and comment on the freshwater scientific assessment for this SEA.
7. The freshwater scientific assessment is also to be reviewed by other knowledgeable aquaculture industry specialists for expert comment and input – Mr Kröhn to provide CSIR with names and contact details.



environmental affairs

Department:
Environmental Affairs
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agriculture,
forestry & fisheries

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our future through science

DEPARTMENT OF ENVIRONMENTAL AFFAIRS
STRATEGIC ENVIRONMENTAL ASSESSMENT FOR AQUACULTURE DEVELOPMENT
CSIR and DAFF Meeting-25 January 2018
Attendance Register

Organisation	Name	Email	Telephone	Signature
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AGENDA

STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR MARINE AND FRESHWATER AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

WORKSHOP TO CLARIFY THE OUTCOMES AND APPLICABILITY OF THE SEA: WHAT DOES ECOLOGICAL SENSITIVITY MEAN TO THE INDUSTRY?

DATE	TIME	VENUE
Wednesday, 22 May 2019	09:00 – 15:00	Mountain View Seminar Room CSIR Campus, Stellenbosch

Proceedings will be as follow:

TIME	ACTIVITY/DISCUSSION
08:30 - 09:00	Arrival with tea/coffee
09:00 - 09:30	Welcome, Introductions & Purpose of Workshop
09:30 – 10:15	Overview of the SEA <ul style="list-style-type: none"> Envisaged outcomes of the SEA
10:15 – 11:15	Specialist freshwater ecology study: Methods and key outcomes Discussion
11:15 – 11:30	Tea/coffee
11:30 – 12:00	Interpretation of sensitivity maps <ul style="list-style-type: none"> How do the sensitivities relate to modified land and trout layers? Translating sensitivity maps into risk maps
12:00 – 12:45	Lunch
12:45 – 14:55	<u>Case study</u> : What does the SEA results mean for a hypothetical trout aquaculture Environmental Authorisation application?
14:55 – 15:00	Closure and way forward

For any enquiries, please contact: Lizande Kellerman (CSIR), Tel: 021-888 2489 Email: lkellerman@csir.co.za

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WORKSHOP TO CLARIFY THE OUTCOMES AND APPLICABILITY OF THE SEA: WHAT DOES ECOLOGICAL SENSITIVITY MEAN TO THE INDUSTRY?

Date: Wednesday, 22 May 2019
Location: CSIR Stellenbosch - Mountain View Seminar Room
Time: 09:00 – 15:00

Attendees:

Organisation	Name	Email
AquaEco	Etienne Hinrichsen	etienne@aquaeeco.co.za
CapeNature	Dean Impson	dimpson@capenature.co.za
CSIR	Paul Lochner	PLochner@csir.co.za
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Invited but did not attend:

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Abalone Farmers Association of Southern Africa	Nigel Dorward	nigel@southafricanabalone.com
Aquaculture South Africa	Roger Kröhn	roger@hik.co.za
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14:55 - 15:00	Closure and way forward

Note: In pursuit of efficiency, these notes are intended to capture the key discussion points and outcomes from the workshop on the Freshwater Specialist Study undertaken for the Aquaculture SEA and not as detailed minutes of the entire workshop. The workshop participants are encouraged to add their comments/inputs to these notes.

Purpose of the Workshop:

The purpose of the workshop was to:

- Provide a quick overview of the Aquaculture SEA and progress to date;
- Highlight the envisaged outcomes of the SEA;
- Provide an overview of the Freshwater Ecology Specialist Study with emphasis on the methods and key outcomes;
- Interpret the ecological sensitivity maps produced during the specialist study; and

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- Discuss a hypothetical trout aquaculture development scenario and what the SEA results could mean in terms of an application for Environmental Authorisation using the National Online Screening Tool.

Key discussion points from the Workshop:

1. Overview of the Aquaculture SEA – Presentation by Lizande Kellerman

Ian Cox: Commented on the NFEPA maps and other SANBI Databases that are referred to in the Draft Freshwater Biodiversity and Ecology Specialist Study Report which he said could not be accessed by the public. He also said that members of the public cannot use the NFEPA spatial mapping tool to drill down into a fish sanctuary area and discover what “threatened” fish species were found in that area or why the fish sanctuary area had been identified. He went on to point out that it looked like the IUCN status of some fish species had been misrepresented in the NFEPA maps thus increasing the likelihood of the area being identified as a fish sanctuary area. He used the *Barbus anapolus* as an example. This fish which is found throughout most of South Africa is listed as of least concern in the IUCN Red List. The NFEPA maps incorrectly record it as being listed as data deficient in terms of the IUCN which means that it must be treated as threatened. (Note metadata supplied to Ian Cox by Dr. Day during the workshop show that the electronic data that inform the NFEPA spatial tool list the species as being endangered.) He stated that the Draft Freshwater Biodiversity and Ecology Specialist Study Report compounded this by relying on a list of so-called threatened species supplied by SANBI. But 9 of the 23 species listed or 41% are identified as being of least concern in the IUCN Red Data Lists. Moreover only 2 of them are listed under TOPS. Ian Cox further commented that the Draft Freshwater Biodiversity and Ecology Specialist Study Report by making extensive use of this incorrect data has resulted in the sensitivity status of areas containing the species being incorrectly escalated and exaggerated. This is one of several instances where incorrect basic assumptions have exaggerated the sensitivity of an impact. Ian Cox went on to make the point that these issues will result in any decision based upon these assessments being set aside as unjust.

Dean Impson: This issue will be raised at the next Freshwater Network Meeting with SANBI i.e. to have the NFEPA maps reviewed and updated using new/latest data.

Ilán Lax: The existing NFEPA maps are widely used to form opinions or advice on decisions, despite having no legal status, are not being the subject of a public consultation process and being seriously data deficient in some respects. The consequence is that they are not fit for purpose with the result that bringing them into use is very problematic. Furthermore, the underlying data is not generally available. It is important that the Freshwater Network will share this data with the aquaculture industry. He further emphasized that the use of the NFEPA maps as a spatial planning tool is unlawful. This is because the NFEPA maps have not been adopted as a prescribed environmental planning tool in terms of Section 24(5) of NEMA. Worse still the regulations necessary to develop, implement and review such a tool are also not yet in place making it impossible to assess the basic integrity or legal compliance of such tools.

Dee Fischer: The National DEA Screening Tool provides the best available data, but usually the moment data is published the information is already outdated. The SEA aims at assisting the

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development of the aquaculture industry, so important to note that the SEA is providing guidance as opposed to hindering/limiting development. DEA will engage with SANBI to make the data available and drill down to detail levelled data layers. Ian Cox and Ilan Lax both disputed that the Draft Freshwater Biodiversity and Ecology Specialist Study Report did indeed provide guidance. They both said it would in fact limit the development of aquaculture and pointed to its sensitivity analysis of the trout aquaculture focus areas as an example of this.

Ilan Lax: A major concern of the industry is that aquaculture outside the proposed Aquaculture Development Zones (ADZs) or focus areas, when gazetted, will be rejected or blocked by provincial authorities even though the SEA states clearly that this is not intended. Provincial authorities will each act differently.

Ian Cox/Ilan Lax: The industry queried whether existing infrastructure i.e. aquaculture (e.g. trout) farms, recreational fishing, etc. was overlaid onto the sensitivity maps as these facilities could be located in the Very High or High sensitivity areas within the proposed aquaculture focus areas. Industry does not want the continued operation or development of new aquaculture farms adjacent to existing trout facilities to be prohibited. They expressed concern that the location of existing trout facilities should be incorporated into the sensitivity mapping. *(Note: After the meeting, in comments on the meeting notes, they expressed concern that the DEA screening tool discourages trout based aquaculture in areas where trout based aquaculture already occurs and where government wants to promote the growth of trout based aquaculture.)*

Dee Fisher: The SEA is only a guiding tool and not a legal instrument, thus there is always room for motivation to facilitate decision-making. It is important to note that the National DEA Screening Tool can make data/information available and more importantly, no maps informing other legal processes e.g. Alien and Invasive Species (AIS) maps will be changed. Ian Cox disputed this. He pointed out that the Draft Freshwater Biodiversity and Ecology Specialist Study Report and the NFEPA maps made recommendations that impacted directly on existing trout farms. He quoted from page 80 (line 5) of the Draft Freshwater Biodiversity and Ecology Specialist Study Report and the conclusion that "Flow-through systems and in-stream dams are permissible with mitigation measures, only in areas mapped as being of low sensitivity. In areas of medium sensitivity; alternative production systems would be required". He pointed out that most existing trout farms in the trout aquaculture focus areas were identified as either high or medium sensitivity areas. Ian Cox expressed concern that even if the Screening tool, SEA and/or NFEPA maps are intended as a "guiding tool", the officials may rely on these tools in making decisions. The cost and effort of challenging these decisions will then create further disincentives for aquaculture.

Etienne Hinrichsen: Important to note that the AIS trout maps are not accurate and not agreed on by authorities and industry due to data discrepancies. In fact, the AIS maps were appealed. Ilan Lax pointed out that the mapping exercise was halted when DEA's Dr. Guy Preston reneged on the agreement reached at the Phakisa Ocean Labs conference that trout would not be listed as invasive in areas where they already occur. The industry is not sure what these trout maps look like. The "final maps" have thus not yet been verified or agreed. A discussion ensued as to when SANBI's trout maps were last modified in order to get a sense what they might look like relative to Trout SA's maps.

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Ian Cox: If the AIS Regulations, as amended, apply, it will render trout farming impossible. He has expanded on this saying that in accordance with law and our international treaty obligations invasive species had to be eradicated or where this was not possible their spread and propagation had to be prevented. This legal obligation was incompatible with trout farming and indeed the recreational fishing that underpins much of the trout value chain.

Lizande Kellerman: Important to emphasize that the key aim of the SEA is to avoid the need for AIS permits within the proposed aquaculture focus areas, especially for trout in the "purple areas" i.e. areas where trout already occur as reflected in the SANBI trout maps.

Ian Cox: Noted, but unfortunately this is not what Dr. Guy Preston and the National DEA want from the AIS Regulations. He pointed out that proposed amendments which are being challenged in court would see trout being listed as Category 2 Invasive throughout South Africa.

Etienne Hinrichsen: Aquaculture already only requires a Basic Assessment (BA) and not a full Scoping/EIA, thus currently there is no real benefit for industry to develop within the proposed ADZs. The question was posed whether new aquaculture applications cannot be 'scaled down' from say a BA to an "exemption" or perhaps a "standard" i.e. no need for Environmental Authorisation (EA). Reference was made to a similar action gazetted by the Gauteng provincial government whom has scaled down the requirement to obtain Environmental Authorisation in the form of a standard and exclusion of associated activities, some of which is specific to aquaculture. [Note: After the workshop, Etienne Hinrichsen has provided the CSIR with a copy of the adopted Gauteng Provincial Environmental Management Framework which were published in the Government Gazette Notice 164 of 02 March 2018].

Dee Fischer: Noted, however it is important to note that any new aquaculture application will still require a site-specific specialist assessment to verify sensitivity on the ground due to a number of variable impacts that could result from aquaculture operations and the use of complex production systems, which means a standard may not apply. The ideal would be to have a one-stop-shop for aquaculture applications, but this will require an interdepartmental level integrated mandatory approach.

Ilan Lax: A standard could apply to specific aquaculture systems that are clearly defined and understood, with low environmental risk.

Dean Impson: Agreed, for example, some RAS systems have very low environmental risk.

2. Freshwater Specialist Study results – Presentation by Dr. Liz Day

Ian Cox: A query was raised regarding the extent to which the data that was used in the specialist study has captured recent changes/updates made to the datasets.

Ian Cox: Ian Cox asked why the study used a definition of invasive species that was different to the one used in NEMBA. He pointed out that this study was intended to inform decision making by government in terms of law and thus should use the same definition as that contained in the legislation. He said that there was a big difference between the two definitions.

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Ilan Lax: Trout have been present in KwaZulu-Natal rivers for >120 years and it is acknowledged that these river systems, although presently healthy are no longer pristine. It was questioned why the sensitivity mapping was not based on the actual status quo of the river systems and whether this was considered. A further issue raised was that within the proposed ADZs, large areas are assigned Very High and High sensitivity which are considered a major constraint to aquaculture development partly because assumptions by the specialists are very conservative/cautious.

Liz Day: Reasons for not basing sensitivity mapping on actual status quo of river systems include inter alia the scale of data used (i.e. too coarse), lack of data in certain areas and only the best data available at the time of the assessment could be used. Ian Cox went on to query if it was sensible to use a pristine ecosystem as a basis against which to measure impacts. Liz day said that the impacts were measured against ecosystems that were near pristine.

Ilan Lax/Ian Cox: Actual water quality data from trout farms shows little or low impact on water resources.

Liz Day: Noted, but there is evidence based on scientific studies that confirm trout farms can have an impact on water quality, immediately below the trout farm but that this dissipates a short distance downstream. Ian Cox made the point in response that data on trout farm impacts had been collected for years and that this data needed to be brought into the study and made available.

Ian Cox: It was also queried whether the effect of climate change on future trout farming was considered in the ecological sensitivity mapping.

Ian Cox: Important to note that 41% of IUCN species are considered 'Least Threatened'. [Note from TSA: Feedback is required on how this material error will be rectified and how this will affect any findings that are made regarding the environmental impacts of freshwater trout farming].

Ilan Lax: The assumption that aquaculture cannot take place in a Protected Area was challenged. It was stated that the assumption by specialists that "no aquaculture is allowed in Protected Areas" is incorrect. The objectives of the specific Protected Area should be considered as to whether aquaculture can be allowed within that particular Protected Area. Trout can co-exist in Protected Areas without denigrating the system i.e. conservation imperatives and aquaculture are synergistic. Escapee potential risk needs to take into account existing fish presence.

Ian Cox/Ilan Lax: It was reiterated that the legal definitions of terminology such as 'alien' and 'invasive' are used in the study as per the NEMBA.

Dean Impson: It is important to consider the inclusion of both Nile and Mozambique Tilapia as candidate species in the proposed Western Cape ADZ as there are currently numerous applications lodged with CapeNature and Western Cape DEA&DP for these species. Also, the inclusion of marron and catfish in proposed ADZs other than the ones already selected for these species should be considered. Furthermore, the SEA could possibly modify the sensitivity by overlaying the location of existing trout facilities, as well as trout presence as per the SANBI maps.

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Liz Day: Existing sensitivity maps from the Freshwater Biodiversity and Ecology Specialist Study do not currently consider actual trout occurrence or the presence of existing trout facilities. Dean Impson proposed that the sensitivity be modified based on an overlay of existing trout occurrence and facility locations.

Ilán Lax: It is suggested that exemption from Environmental Authorisation for aquaculture in the Low and Medium sensitive areas within the proposed aquaculture focus areas are considered.

Lizande Kellerman: Possible recommendation for an approach to interpreting the sensitivity areas (for further discussion with DEA during the Decision Support Framework phase of the SEA):

- High to Very High Sensitivity = Basic Assessment with full specialist studies;
- Medium Sensitivity = Compliance Statement with specialist walk-through;
- Low Sensitivity = Possible exemption or exclusion from EA for aquaculture activities (assuming that the level of confidence is very high based on site verification).

Dee Fischer: Existing protocols for specialist studies on the National DEA Screening Tool allow for ground-truthing of SEA sensitivity mapping and could be used to obtain a Compliance Statement.

Ilán Lax: A key issue raised relates to the very limited freshwater specialist capacity among authorities in several provinces e.g. Eastern Cape, Northern Cape, North West, etc. These authorities tend to interpret 'red' and 'dark red' sensitive areas as "no go" areas or recommend the need for an EIA.

Etienne Hinrichsen: Concerns were raised regarding the 'production systems' table in the Freshwater Biodiversity and Ecology Specialist Study Report indicating High sensitivity (red), Medium sensitivity (orange) and Low sensitivity (green) i.e. a person without any aquaculture knowledge/background will find it difficult/challenging to understand/interpret this table.

3. DEA Screening Tool demonstration for Aquaculture – Presentation by Lizande Kellerman

Dean Impson: A question was raised regarding what fish species are present in farm dams and whether any information/data is available in this regard. It was suggested that Citizen Science can be used to capture data e.g. presence of species on a national scale. Information can be captured using an electronic/online application similar to capturing bird data by SABAP.

Ilán Lax: Raised the concern around the lack of trust among stakeholders that the information might be used to prosecute people. There needs to be an undertaking that this won't happen.

Etienne Hinrichsen: The issue of current time consuming authorisation/permitting processes for aquaculture was raised and is based on the following timeline i.e. Basic Assessment from Province (±6 months) PLUS General Authorisation (±6 months) or WULA from DWS (approx. 300 days) PLUS an AIS permit application from DEA (60+ days) = It takes an exceedingly long time to obtain all authorisations/permits and investors may go elsewhere. It is highly recommended that a possible exemption for aquaculture activities (at least within Low sensitivity areas in the aquaculture focus areas) are considered as was done for Gauteng Province.

Ian Cox: It was noted that a change in production systems can result in changes in affordability e.g. Recirculating Aquaculture Systems (RAS) are very expensive and generally require huge

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investments. Small SMMEs cannot afford RAS and would rather prefer implementation of small scale pond systems. Also, in many cases depending on the annual production volume and area occupied, small scale pond culture does not require Environmental Authorisation.

Etienne Hinrichsen: It was noted that the SEA needs to be careful when using the term "Aquaculture Development Zone" since the National DAFF under Operation Phakisa is undertaking several EIAs to declare ADZs e.g. the Algoa and Saldanha ADZs. It is suggested that the SEA rather changes the title of these proposed areas to "aquaculture focus areas".

Ian Cox: A concern was raised about existing trout farms in for example the Dullstroom area that require annual operating permits. Some of these farms are in existence for more than 50 years and based on the sensitivity mapping are now located in a High sensitivity (red) area within the proposed Mpumalanga ADZ. This could have negative consequences for existing aquaculture operations because should they would like to expand or continue current operations, now being located in a High sensitivity area, these activities could be considered unlawful and cause the industry in certain areas to collapse.

Dee Fischer: It was subsequently inquired why an existing aquaculture farm (e.g. Lunsclip Trout) needs a permit on an annual basis.

Ilan Lax: Annual operating permits for aquaculture farms in Mpumalanga is a legal requirement in terms of provincial legislation. However, there is no legislated time limit in terms of the Mpumalanga provincial legislation. Thus, the requirement of an annual permit is one that officials have taken unilaterally.

Etienne Hinrichsen: National DAFF has included the requirement for annual permits in the new Aquaculture Bill as a convenient way to keep track of all aquaculture applications.

Dee Fischer: Changing 'annual permits' to 'long-term permits' could be considered; however, this will require changes in provincial mandates through a coordinated approach by both national and provincial authorities.

Ilan Lax: Operation Phakisa wants a "one-stop-shop" for aquaculture development in South Africa but to facilitate such a process will require the coordination of both national and provincial regulations and decision-making authorities.

Liz Day: It was acknowledged that recommendations made regarding required mitigation measures and management actions in the Freshwater Specialist Study will be changed/ updated/enhanced. Comments received on the consequence/impact tables and sensitivity criteria will be reconsidered and could influence/modify the mapped outcomes. It was also agreed that it was inappropriate for the report to make recommendations and that the final report would make no recommendations.

Dee Fischer: It is important that the SEA remains practical about how data/information is used and how to change colouring of sensitivity maps accordingly.

Ilan Lax: It is imperative that the demarcation of Critical Biodiversity Areas (CBA) are clearly understood i.e. there is a need to interrogate the data such as threatened species/ecosystems, specific land use, etc., especially in terms of its relevance to aquaculture development, in order to improve the sensitivity mapping.

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Key actions from the Workshop:

1. CSIR to provide workshop notes and participants to provide comment.
2. CSIR to include the following on the sensitivity maps, and then re-assess the sensitivity mapping:
 - a. Location of existing aquaculture facilities (including trout, tilapia, catfish and marron, if and where available).
 - b. Draft trout occurrence data (maps) received from SANBI dated 2017.
 - c. Latest modified land use cover data.
3. CSIR to confirm that the draft trout maps dated 2017 with purple colouring indicating "where trout occur" are the most recent and correct maps received from SANBI.
4. CSIR and the Freshwater specialist team to update the specialist study report based on comments received from the workshop, such as correct legal definitions of terms such as alien and invasive species, check if more recent NFEPA updates on Endangered, Critically Endangered and Vulnerable species are available and can be included, and updated sensitivity mapping by adding the aforementioned data layers (see no 2 above).
5. The Trout Industry would like to provide input and comments on these trout occurrence maps. [Note from CSIR: This comment will be conveyed to SANBI by the CSIR SEA project team. Addressing this comment is outside the scope of the SEA].
6. Feedback to be provided to the aquaculture industry from the next Freshwater Network Meeting with SANBI with regards to having the NFEPA maps including Important Fish Areas data reviewed and updated using new/latest data. [Note from CSIR: This comment will be conveyed to SANBI by the CSIR SEA project team. Addressing this comment is outside the scope of the SEA].
7. DEA and CSIR to explore scaled-down approach in view of the fact that aquaculture only requires a Basic Assessment (BA). Consider the approach taken by Gauteng provincial government i.e. no need for an Environmental Authorisation for specific aquaculture activities and production systems within certain areas, e.g. in low sensitivity areas due to limited risks to the receiving environment (as per comments from Etienne Hinrichsen and Dean Impson).
8. DEA and CSIR to assist and facilitate access to reference information and spatial data layers [Note: During a break, Dr Liz Day showed Ian Cox how to access GIS spatial data on BGIS].
9. The base data used to inform guiding tools such as the NFEPA maps and associated protocols for assessing sensitivities need to be made available along with the SANBI data that Dean Impson refers to.
10. The Specialist Study Report will to be reworked taking all comments made into consideration. Once the revised Freshwater Biodiversity and Ecology Specialist Study Report is ready, all draft specialist assessment reports and the Draft SEA Report will go out for broader stakeholder review and comment.
11. Recommendations made in the Specialist Study Report are to be updated based on the discussion.

National Aquaculture Strategic Environmental Assessment (SEA)

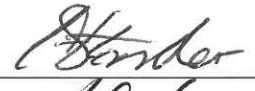








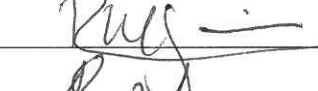




Workshop to clarify the outcomes and applicability of the SEA: What does Ecological Sensitivity mean to the Industry?

ATTENDANCE REGISTER

CSIR Stellenbosch – Mountain View Seminar Room

Wednesday, 22 May 2019

Please sign in and confirm / complete your details below:

Organisation/Institution/Company	Name & Surname	Email	Telephone	Mobile	Signature
University of Stellenbosch	Herk Stender	hbs@sun.ac.za	0218082546	0823318761	
Three Streams	Paul Luckhoff	paul@threestreams.co.za		0799380810	
CSIR EMS	Lizande Kellerman	lkellerman@csir.co.za	083 799 0949	021 888 2489	
CSIR	Luanita Snyman	Ludwalt1@csir.co.za	072 18 2 9718 →		
Cape Nature	Daan Imfisa	dianfisa@capenature.co.za	0824140020 →		
Liz Day Consulting	E. DAY	lizday@mweb.co.za	083 454 2309		
Liesl Hill	L. Hill	liesl.hill@gmail.com	083 241 4414		
Deon Erasmus DEA	Deon Erasmus	deon@environment.gov.za	0827729837		
CSIR	Paul Lochner	plochner@csir.co.za	084 442 3646		
TSA	Richard Viljoen	rhviljoen@absamail.co.za	0824694541		
TSD	Gerrie van der Merwe	gerrie.vansterkorp@gmail.com	0834882248		
TSA	Ilan Lax	ilaulax@axxess.co.za	0823244822		
NT	Ian Cox	iancox@coxattorneys.co.za	0825743722		
AquaEco	Etienne Hurnichsen	etienne@aquaeeco.co.za	0828221236		

AGENDA

STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) FOR MARINE AND FRESHWATER AQUACULTURE DEVELOPMENT IN SOUTH AFRICA

WORKSHOP TO DISCUSS LEGAL REVIEW FOR STREAMLINING OF VARIOUS ENVIRONMENTAL APPROVALS UNDER ONE DEPARTMENT i.e. DEPARTMENT OF ENVIRONMENT, FORESTRY AND FISHERIES (DEFF)

DATE	TIME	VENUE
Friday, 6 th Sept 2019	09:00 – 15:00	CSIR Campus, Stellenbosch

TIME	ACTIVITY/DISCUSSION
08:30 - 09:00	Arrival with tea/coffee
09:00 - 09:30	Welcome, Introductions & Purpose of Workshop
09:30 – 10:15	Brief overview of the current requirements for environmental approvals and permitting for aquaculture developments
10:15 – 11:00	<u>Discussion:</u> Comments from DEA and DAFF on their current approval mandates and what the departmental merger will mean for each authority in terms of development of aquaculture projects
11:00 – 11:20	Tea/coffee
11:20 – 13:00	Proposed Decision Support Framework for possible streamlining of environmental authorisation and permitting requirements within the Aquaculture Focus Areas identified and assessed during the SEA
13:00 – 13:30	Lunch
13:30 – 14:55	<u>Discussion:</u> Comments/inputs from DEA and DAFF on the proposed Decision Support Framework relating to inter alia use of Basic Assessments, sensitivity mapping, role of the Screening Tool, repeal of provincial Acts and Ordinances, General Authorisation for water use, integrated permit application forms and A&IS permits/risk assessments
14:55 – 15:00	Closure and way forward

For any enquiries, please contact: Lizande Kellerman (CSIR), Tel: 021-888 2489 Email: lkellerman@csir.co.za



environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA






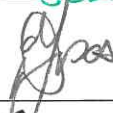


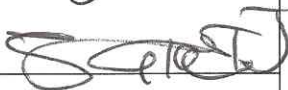
**agriculture,
forestry & fisheries**
Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

ATTENDANCE REGISTER

Meeting Name: AQUACULTURE SEA - WORKSHOP TO DISCUSS LEGAL REVIEW FOR
STREAMLINING OF VARIOUS ENVIRONMENTAL APPROVALS UNDER ONE DEPARTMENT i.e. DEFF

Venue: CSIR Stellenbosch – EMS Meeting Room

Date: Friday, 6th September 2019 from 09:00 – 15:00

No	Name & Surname	Organisation	Contact Details	Signature
1	LIZANDE KELLERMAN	CSIR	021 888 2489 lkellerman@csir.co.za	
2	Luanita Snyman-vd Walt	CSIR	072 192 9718 Lvdwalt@csir.co.za	
3	MAXHOBA JEGZILE	DAFF: SAM	021 430 7037 MaxhobaAJ@daff.gov.za	
4	DOE FISCHER	DEA	0827729837	
5	Paul Lochner	CSIR	084 442 3646	
6	Imtiyaz Ismail	DAFF: SAM	021 402 3673	
7	Shepa Sebake	DAFF: SAM	021 402 3116	
8				
9				
10				
11				
12				

Lizande Kellerman - RE: AquaSEA: Marine / Draft Models proposed for streamlining of approvals for review and comment by DAFF by Friday, 13 Sept 2019

From: Lizande Kellerman
To: Maxhoba Jezile; Michelle Pretorius; TshepoSE; zimasaj@daff.gov.za
Date: 13/09/2019 12:17
Subject: RE: AquaSEA: Marine / Draft Models proposed for streamlining of approvals for review and comment by DAFF by Friday, 13 Sept 2019
Cc: Luanita Snyman-Van der Walt; Paul Lochner; Andrea Bernatzeder; Asanda...

Dear Michelle and Colleagues,

Thanks so much for taking the time to consider our proposed models for possible streamlining. Your response and support of these proposals are duly noted and much appreciated.

The inputs and clarifications provided will be taken into consideration in the Decision Support Framework of the SEA Report.

We will let you know should we have questions or require further input.

Best regards
 Lizande

>>> MichellePR <MichellePR@daff.gov.za> 13/09/2019 11:59 >>>

Dear Lizande

Please find our responses to the proposed models mentioned below:

MODEL A: CONVERT "RIGHT" TO A REGISTRATION PROCESS

The current legislation under the MLRA does not allow for a registration process however the Draft Aquaculture Bill allows for licencing (commercial and small scale activities for 30 years validity) and registration (subsistence aquaculture and recreational sector no validity period at this stage). The proposed registration exempts these operators for requirements of certain environmental authorisations (NEMA, ICMA etc.) as these are low risk operations. Please refer to section 26 (2) of the Bill for the details of the proposed process.

The DAFF is in support of a registration process as one option that should be compared with the licence model proposed under the Aquaculture Development Bill. The MLRA currently does not allow for registration and the Aquaculture Development Bill would need to be amended through the parliamentary process if the registration model is adopted. At this stage, both models should be kept on the table and taken forward based on further consideration.

Kindly also note that freshwater aquaculture does not fall under the MLRA and registration would therefore only apply to Marine projects in this regard but ideally, they should all streamlined through a similar model and regulations. The Aquaculture Development Bill allows for this option.

MODEL B: INTEGRATED PERMIT(S) FOR ENGAGEMENT IN MARICULTURE

The DAFF has already completed an integrated permit for farm operations in line with Operation Phakisa, where five permits types have been integrated into one permit (permit to engage in marine aquaculture, fish processing, vessel, broodstock collection, and transport) and the same applies to marine aquaculture hatcheries.

The DAFF is in support of an integrated permitting system however the mechanism used to achieve this is still to be determined. The risk associated with integrated permits would need to be investigated. Currently the MLRA only applies for validity for a maximum of a year however the Aquaculture Development Bill will in future allow validity for a permit for up to 2 years. Please note that the fees for permits under MLRF relate to one year period, and changes would require changes for the permits.

Permit validity period should be related to the type of activity. For example, in the bill activities such as import, export and collection of wild caught brood stock are 12months vs transportation and ranching which are 24 months. There is a concern regarding increasing the validity of the permit period to 3-5 years relates to monitoring in relation to compliance with certain permits i.e. import and export.

It should also be noted that permits of some sort would be required, for licences or registration processes as there are operational matters that need to be managed in terms of permit conditions which also change from time to time based on

the latest available information and research. Should permit validity increase, it must make allowance for amendments to conditions.

I trust that the above responds adequately however if there are further queries on this please let us know.

Kindest regards
Michelle

From: Lizande Kellerman <LKellerman@csir.co.za>
Sent: 09 September 2019 10:44 AM
To: ImtiyazI <ImtiyazI@daff.gov.za>; MaxhobaAJ <MaxhobaAJ@daff.gov.za>; TshepoSE <TshepoSE@daff.gov.za>
Cc: Luanita Snyman-Van der Walt <LvdWalt1@csir.co.za>; Paul Lochner <PLochner@csir.co.za>; AndreaB <AndreaB@daff.gov.za>; MichellePR <MichellePR@daff.gov.za>; DFischer@environment.gov.za
Subject: AquaSEA: Marine / Draft Models proposed for streamlining of approvals for review and comment by DAFF by Friday, 13 Sept 2019

Dear Tshepo, Maxhoba and Imtiyaz,

CC: Andrea, Michelle and Dee

A key objective of the Aquaculture SEA is to recommend options for streamlining environmental approvals and permits. This objective is in line with the aim of Operation Phakisa to facilitate responsible aquaculture development.

As discussed in our workshop on 06 September at CSIR, two models are proposed based on the SEA findings to reduce duplication of legal requirements under different Departments, and to integrate and streamline the environmental legislation applying marine aquaculture development and operation. These models are summarised below and will be presented in the SEA Report.

MODEL A: CONVERT "RIGHT" TO A REGISTRATION PROCESS

Background: The "right to engage in a marine aquaculture activity" was created under the MLRA (1998). At some stage the department stopped issuing rights. Permits were granted based on exemptions from having a "right". However, DAFF then wanted to draw-in operations that were operating under exemptions without "rights". Therefore in 2009, Notice 313 was passed in the Government Gazette of 27/03/2009 that specified the requirements (i.e. criteria) to apply for a right, and specified that a right was required in order to obtain a permit. The rights are currently allocated for 15 years. They are also applied to new farmers.

Our discussion:

There is a lot of duplication between the application for a "right" - that is required in terms of the MLRA - and other environmental legislative processes required under *inter alia* the National Environmental Management Act (NEMA), the NEM: Biodiversity Act (NEM:BA) and the NEM: Integrated Coastal Management Act (NEM:ICMA). For example, the requirements under the "right" are already addressed under existing applications for Environmental Authorisation, Coastal Waters Discharge Permit and Alien & Invasive Species permits. This seems to create additional barriers to entry for potential aquaculture farmers.

Proposed model:

Under the MLRA, DAFF needs to ensure that the potential impact of an aquaculture development on marine living resources is properly understood, assessed and managed. Since the promulgation of the MLRA in 1998, the EIA Regulations have evolved to address the impacts of proposed mariculture projects. The recommendation from the Aquaculture SEA is that the application for a "right" be converted into a registration process. The applicant will register with Fisheries (the exact name of the entity is to be confirmed within the new DEFF) and provide the required supporting approvals such as the Environmental Authorisation (EA), Coastal Waters Discharge Permit and Alien & Invasive Species permits (if applicable). The registration will require uploading of information such as the name and details of the legal entity that is the applicant, the location of the project and the project description. If the right holder changes, or the project description changes, there is an existing legislated amendment process under the EIA Regulations for processing such amendments (with set timeframes). This process will have to be followed for the EA. And then the registration can be updated accordingly.

Request to DAFF:

Do you foresee any fatal flaws with this model? If so, please elaborate.

Are there ways of improving this model so that it better meets your needs in terms of your mandate?

MODEL B: INTEGRATED PERMIT(S) FOR ENGAGEMENT IN MARICULTUREBackground:

There are currently approximately 12 different permits issued for engaging in mariculture activities. They are as follow:

- a) To engage in marine aquaculture activity (incl. transport, vessel and on site Fish Processing Establishment)
- b) To collect brood stock to engage in marine aquaculture activities
- c) To possess brood stock and operate a hatchery
- d) To transport marine aquaculture products (incl. renewal of fishing vessel licenses)
- e) To process marine aquaculture products
- f) To dive in banned areas and possess prohibited gear
- g) To possess and sell undersized cultured abalone
- h) To possess and sell undersized cultured kob species
- i) To conduct marine aquaculture scientific investigations and practical experiments
- j) To import marine aquaculture fish and fish products (incl. cultured and ornamentals)
- k) To export marine aquaculture fish and fish products
- l) To operate a land-based Fish Processing Establishment (FPE)

DAFF aims to issue these permits within 7 days of receiving the applications, though it usually takes a month. The permits are each valid for 12 months.

Currently for permits to be issued, an applicant first require a "right", except for permits for import, export and processing of marine aquaculture fish and fish products.

Our discussion:

The first permit in (a) is over-arching and includes overall operational requirements. It also seems to capture information already provided in the "right". DAFF further requires reports on water quality, production, grow-out and biomass, transport requirements, export volumes etc. There also seems to be overlaps in the processing permits.

Proposed model:

To have **one integrated permit application form** that lists all the current permit requirements for mariculture [as per the list (a)-(l) above] and then the applicant ticks off what they are applying for.

This illustrates an example of what we are proposing - this is taken from Section A of the Northern Cape provincial general biodiversity permit application form:

A. KIND OF DOCUMENT APPLIED FOR:

Mark Applicable box with "X"

<input type="checkbox"/> NEW APPLICATION	<input type="checkbox"/> RENEWAL	<input type="checkbox"/> AMMEND / CANCEL
ORDINARY (Short term period)	STANDING (Medium Term period)	POSSESSION (Long Term period)
Maximum period: 12 Months	Maximum period: 12- 36 Months	Maximum period: 36 -54 Months
<input type="checkbox"/> Appeal <input type="checkbox"/> Authorization <input type="checkbox"/> Book - Game Farm Hunting <input type="checkbox"/> Book - Personal Effects <input type="checkbox"/> Book - Nursery Possession <input type="checkbox"/> Breed / Grow / Propagate <input type="checkbox"/> Catch / Capture / Release <input type="checkbox"/> Gather / Collect / Pluck <input type="checkbox"/> Pick / Cut / Chop / Damage / Destroy <input type="checkbox"/> Hunt / Cull / Catch / Capture / Kill <input type="checkbox"/> Process / Prepare / Cure / Tan / Treat <input type="checkbox"/> Sell / Trade / Buy / Receive / Donate <input type="checkbox"/> Research	<input type="checkbox"/> Game Farm / CAE <input type="checkbox"/> Registration Certificate <input type="checkbox"/> Protected Area / Nature Reserve <input type="checkbox"/> Facility-Aquarium / Zoo <input type="checkbox"/> Facility-Exhibition / Education <input type="checkbox"/> Facility-Breeding <input type="checkbox"/> Facility-Trading-Fauna/Game Capture <input type="checkbox"/> Facility-Trading-Flora / Nursery <input type="checkbox"/> Facility-Rehabilitation <input type="checkbox"/> Facility-Sanctuary <input type="checkbox"/> Facility-Scientific / Veterinarian	<input type="checkbox"/> Possession - Living - Fauna <input type="checkbox"/> Possession - Living - Flora <input type="checkbox"/> Possession - Derivatives / Dead

Thus, the aquaculture farmer then gets issued one integrated permit authorising all selected activities. If the farmer is non-compliant on one aspect of the permit, then the other aspects would still apply and be valid i.e. no need to revoke the entire permit. Important to note that some aspects (such as import and export) do not require a right. Import, export and transport could be included in this integrated form, or it could have its own permit application form, and be issued a separate permit. The agreed processing time for the integrated permit would need to be reasonable. Also, feedback from the SEA stakeholders is that the permit validity period needs to be longer e.g. 3-5 years, on condition that compliance to the permit conditions for each activity selected be audited on an annual or bi-annual (every 2 years) basis to ensure continuance of operations relating to that specific activity.

Request to DAFF:

Do you foresee any fatal flaws with this model? If so, please elaborate.

Are there ways of improving this model so that it better meets your needs in terms of your mandate?

NB! Response required by 13 Sept please.

The contract between CSIR and DEA ends 21 September 2019 and the final SEA report will be submitted to DEA by end of Monday 16 September for verification. Please can you therefore submit your comments on these models **by end of Friday, 13 September 2019**, so we can include them in the final report.

Kind regards,
Paul, Lizande and Luanita

Lizande Kellerman *Pri.Sci.Nat*

Principal Environmental Assessment Practitioner

SMART Places: Environmental Management Services

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