



forestry, fisheries  
and the environment

Department:  
Forestry, Fisheries and the Environment  
REPUBLIC OF SOUTH AFRICA

# SALDANHA BAY SEA BASED AQUACULTURE DEVELOPMENT ZONE SPECIALIST ENVIRONMENTAL MONITORING QUARTERLY MONITORING REPORT 4



**August 2022**





## 1 INTRODUCTION

The Marine Living Resources Fund (MLRF), a Schedule 3A Public Entity established in terms of the Public Finance Management Act, 1999 (Act No 1 Of 1999), under the auspices of Department of Forestry, Fisheries and the Environment (DFFE), has appointed Anchor Research & Monitoring (Pty) Ltd, part of the Anchor Environmental group of companies, to undertake specialist monitoring according to the environmental Sampling Plan for the sea based Aquaculture Development Zone (ADZ) located within Saldanha Bay in the Western Cape, in compliance with the stipulations in the Environmental Authorisation (EA) and the Environmental Management Plan (EMP) for the ADZ, for a period of two years.

This Quarterly Environmental Monitoring Report details activities completed during the fourth quarter (June, July and August 2022), and the plans for the next quarter (September, October, November 2022). This report is to be shared with the Aquaculture Management Committee (AMC) and the Consultative Forum (CF) to inform all stakeholders regarding the progress of ongoing monitoring within the ADZ as it relates to the Environmental Authorisation and Environmental Monitoring Programme for the ADZ.

## 2 PROGRESS TO DATE

### 2.1 Quarter 3 progress meetings and reporting

The Quarter 3 progress report was submitted to DFFE for comment on 31 May 2022, and the Quarter 3 progress meeting between the DFFE and Anchor Research and Monitoring (Pty) Ltd (Anchor) was held on the 31 May 2022.

### 2.2 Retrieval, maintenance and redeployment of oxygen probes and nitrate sensor

All four DO instruments and the nitrate sensor were successfully recovered, serviced and redeployed on 4-5 July 2022.

The second servicing trip of the quarter was scheduled for the week of 29 August – 2 September 2022, and this was successfully completed during the 1-2 September 2022. During this service interval the nitrate sensor and mooring were relocated to the Small Bay Farm site as requested by Dr Pitcher.

### 2.3 Raw data collection for dispersion model

Sixteen water samples were collected during the servicing of instruments in the surface and bottom waters for determination of total nitrogen concentrations. Samples were collected at three of the PRDW model monitoring sites to validate the far field results of the model. To assess near field impacts, four sites were sampled 100 m from the edge of the finfish area.

The final winter sampling trip, and the continuation of the seasonal (spring, summer, autumn and winter) collection of raw nutrient data for the dispersal model was completed during the 1-2

September trip. Samples were submitted to Element Materials Technology South Africa (Pty) Ltd (SANAS T0729) for analysis of Ammonia (NH<sub>3</sub>) as N, Nitrate (NO<sub>3</sub>) as N, Nitrite (NO<sub>2</sub>) as N, Phosphate (PO<sub>4</sub><sup>3-</sup>) and total nitrogen.

## 2.4 Big Bay hard substrate survey

A rocky reef dive survey of three impact sites took place on 26 November 2021, while in the second quarter, the three control sites were surveyed on 10-11 January 2022.

A shot-line was deployed at each site and a team of scientific divers descended to the sea floor. One scientific diver swam three 10 m video transects radiating from the shot-line centre, whilst the other diver conducted ten photo-quadrats (0.04 m<sup>2</sup>) on reef habitat in the vicinity of the shot-line base. Qualitative collection of biota was undertaken at all three sites to aid in the identification of cryptic biota observed in video transects and photo-quadrats. Specimens were scraped into sample bags brought to the surface, preserved on ice and then frozen back in the laboratory for later identification. A draft report was submitted to the DFFE on 31 May 2022. The reef survey report has been reviewed by DFFE and the AMC and the finalised report was submitted to the DFFE on the 26 August 2022.

## 2.5 Scientific recommendations for the management and expansion of operations

The Saldanha Bay ADZ environmental monitoring, compliance monitoring and other documents available on the management of the ADZ to date (both past and recent) were reviewed and used to formulate scientific recommendations to inform management and expansion of aquaculture operations in conjunction with the Environmental Authorisation for the ADZ. Best practice protocols were followed to advise on the expansion. Additionally, relevant academic, aquaculture industry and aquaculture best practice protocol literature were consulted and considered in conjunction with the specific and unique conditions present in Saldanha Bay to provide AMC with adequate information to make informed management decisions. Specific focus was placed on how this phased expansion should be distributed between the precincts. The scientific recommendations towards management and expansion of ADZ operations was compiled into a report and submitted to the DFFE for approval during the third quarter. During the fourth quarter, comments were received from the DFFE and the AMC and were addressed by ARM. The recommendations in this report were discussed with the AMC in a MS teams meeting on the 26 July 2022.

## 2.6 Annual non-quantitative sampling of fouling organisms Report 1

Fouling organisms were collected from the aquaculture farm structures in the Big Bay and Small Bay shellfish precincts on 2 September 2021. Organisms were identified to species level where possible to give an indication of the biofouling communities inhabiting the structures in the different lease areas of the ADZ. The results of this taxonomic analysis were compared to the data collected by Lloyd Sassman (DFFE) and are presented in the first of two annual qualitative biofouling reports to be submitted to the DFFE by the 31 August 2022. Sampling will be conducted on an annual basis and a

second round of biofouling sampling from precincts in Small Bay, Big Bay and Outer Bay was undertaken during the 4-5 July 2022 survey. These results will be supplemented with DNA barcoding of select specimens, and included in a report due in July 2023.

## 2.7 Peer review of the Annual Benthic Chemical Survey report

This report was presented to the AMC on the 26 July 2022. Dr Trevor Probyn was appointed as the suitable independent aquaculture expert/marine scientists to review the 2022 annual benthic chemical survey report. Dr Probyn compiled an independent peer review report, and this was submitted directly to the DFFE on the 31 August 2022.

## 2.8 Update of the Sampling plan

During the fourth quarter the Sampling Plan was updated and amended by ARM allowing for the inclusion of recommendations as well as exclusions, modification, or replacement of biological and chemical indicators. This is an ongoing process in collaboration with DFFE scientists and Dr Probyn who are currently reviewing ARM's proposed changes and making other edits before being finalised and shared with stakeholders for their noting.

## 3 PLANS FOR THE NEXT QUARTER (Q5)

The following activities are planned for the next quarter:

- Quarter 5 progress meeting and report.
- Instrument service 10 is scheduled for the week of 24-29 October 2022.
- Quarterly environmental sampling report 5.
- Co-supervision of an MSc student to develop an oxygen model for Saldanha Bay to assess the impact of shellfish farming on the biogeochemistry of the Bay should one be identified.



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