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Environmental Management Plan for Romansbaai Abalone Farm

AQUNION

Remainder Portion 2 of the Farm Klipfonteyn. No. 711, Gansbaai, Caledon

Updated 24 March 2026

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1. INTRODUCTION

This Environmental Management Plan (EMP) serves as a guideline document for the construction and post commencement/ operational phase of the existing Romansbaai Abalone Farm located on the Remainder of Portion 2 of the Farm Klipfonteyn No. 711, Gansbaai. This EMP serves as an update of the original Romansbaai EMP, as authorised in Record of Decision issued by the Department of Environmental Affairs and Development Planning on the 2/03/2009 (DEA&DP Ref. E12/2/3/1-E2/11-0252/07). The updated EMP is drafted in line with the National Environmental Management Act, 1998, Act No. 107 of 1998 and Appendix 4 of the Environmental Impact Assessment Regulations, as amended (2014) and will be applicable to all the post commencement / operational activities of the abalone farm as well as any newly authorised or minor construction and maintenance works which may take place on site from time to time on the subject property. Any significant new construction, expansion or changes to the intake or discharge infrastructure, may not take place without the relevant Environmental Authorisation.

This updated EMP (May 2025) now also incorporates environmental management requirements and mitigations in response to the proposed expansion of the Abalone Farm. The aim of the Romansbaai expansion project is to increase the production output by an additional 150 tons per annum. In order to achieve this targeted production output, the expansion includes the following components:

- → **A new production area (grow out tanks):** The production area containing new grow out tanks will be developed for to accommodate the living abalone species.
- → **Expansion of the existing pumphouse**: Located at the high-water mark of the sea, the pumphouse will undergo modifications to accommodate the increased seawater requirements to feed the two new production grow-out platforms.
- → **Addition of four new pipelines**: This is required to allow for the constant supply of seawater to the new production areas and reservoir site. The installation of these pipelines will require excavation works. These pipelines are essential for the intake and discharge of seawater, a critical element of the farm's operation.
- → **Construction of a new seawater reservoir**: A seawater holding reservoir will be included in the expansion application. The aim of the reservoir is to allow for continued operations during power outages when pumping from the sea may not be possible as well as during peak tariff hours, to reduce the cost associated with the continual abstraction of seawater. The seawater will not be held on a permit basis and needs to be refreshed at a maximum, every 8 hours.
- → **Placement of a solar array**: To promote sustainability and reduce the cost of electrical requirements on the farm, a ground mounted solar power array will be installed, providing renewable energy to support the farm’s operations and reduce reliance on external energy sources.

The updated EMP prescribes mitigation measures and assigns specific tasks to responsible individuals or organizations during both the operational and decommissioning phases. The aim is to ensure that any potential impacts on the environment are minimized or avoided entirely. As the farm's activities evolve, this EMP remains an open-ended document, subject to updates to reflect any changes on-site. The original EMP should be kept as an addendum to this updated version to provide a comprehensive management framework for Romansbaai Abalone operations.

2. CONSTRUCTION ACTIVITIES

The applicability of the National Environmental Management Act (Act 107 of 1998), the EIA Regulations (2014) (as amended) and any other possible legislation, must be determined prior to commencement of any new large scale construction activities or significant changes to the existing site layout. Small scale, maintenance type construction and upkeep should be undertaken in line with the recommendations herein.

2.1. Maintenance Management

- Inspection and cleaning of pipelines: may require the removal or movement of sand within 100 m of the high-water mark (Listing Notice 1; Activity 19A)
- Maintenance of buildings within 100 m of the high-water mark, including the sump, pumphouse, fences and access routes.
- General maintenance and upkeep of the grounds, infrastructure and buildings takes place on site on a daily basis.

2.2. Romansbaai Expansion project

The holder is making application to expand existing operations at Romansbaai Abalone Farm. An expansion of existing production and grow out area to increase the production output by additional 150 tons / annum is proposed. In order to accommodate this, the existing pumphouse will be increased in size to allow for the increased abstraction of sea water. Additional sea water lines will also be added to transport the seawater to the farm. A lined seawater reservoir is also proposed to temporarily hold seawater which can be used during peak electricity tariff periods or during electricity outages.

The following is proposed:

Production Area (New grow out platform):

→ Additional production area: **20000m^2 (2 ha)**

→ Production additions:

- Production capacity increase: 150 tons (wet weight)
- Number of tanks: 1 850
- Number of baskets: 12 950
- Seawater usage: 2 400 m^3/hour
- Aeration fans / blower room: 4 units
- Split/grading station: 1 unit

Lined Seawater Reservoir:

→ Storage capacity: 41 000 m^3

→ Surface area: 8000m^2 (0.8 ha)

→ Depth: 3.5 meters

→ Fill-up time: 8 hours

→ Coverage footprint: **8000m^2 (0.8 ha)**

Solar Array:

→ Power generation capacity: 4 MW (backup)

→ Coverage footprint: **40000 m^2 (4 ha)**

Expansion of the existing pumphouse

→ The existing pumphouse will be expanded by 140 m^2 to house the 4 new pipelines used to abstract seawater

→ Coverage footprint: **140 m^2**

4 additional Pipelines:

→ Four additional pipelines will be installed.

→ The pipeline will be placed alongside the existing network of pipeline situated within a disturbed area.

→ Each pipeline will be

- Length: 600 meters
- Diameter: 500 mm
- Total area per pipeline = 300 m^2 / pipeline
- Total area required for 4 new pipelines is **1200m^2**

Total additional footprint summary:

	Description	Volume	Size (m^2)
2.	Production area / grow out tanks	150 tons / annum	20000
3.	Lined seawater reservoir	41000 m^3	8000
4.	Solar array	4 MW	40000
5.	Pumphouse expansion		140
6.	4 additional pipelines		1200
		Total size	**69 340 (6.9 ha)**

3. OPERATIONAL ACTIVITIES

Operational activities on site will generally be split into the following portfolios:

- Hatchery
- Grow-out
- Export
- Processing
- Technical and maintenance
- IT and Security
- Administration (Finance, Human Resources etc.)
- Solar power generation

The abstraction and discharge of water takes place on a continual basis. During weekdays, staff clean tanks and baskets on a rotational basis. Tanks are cleaned by draining and sweeping them. Splitting and grading of abalone also takes place. The animals are fed on a daily basis by hand. Pipe cleaning also takes place as required.

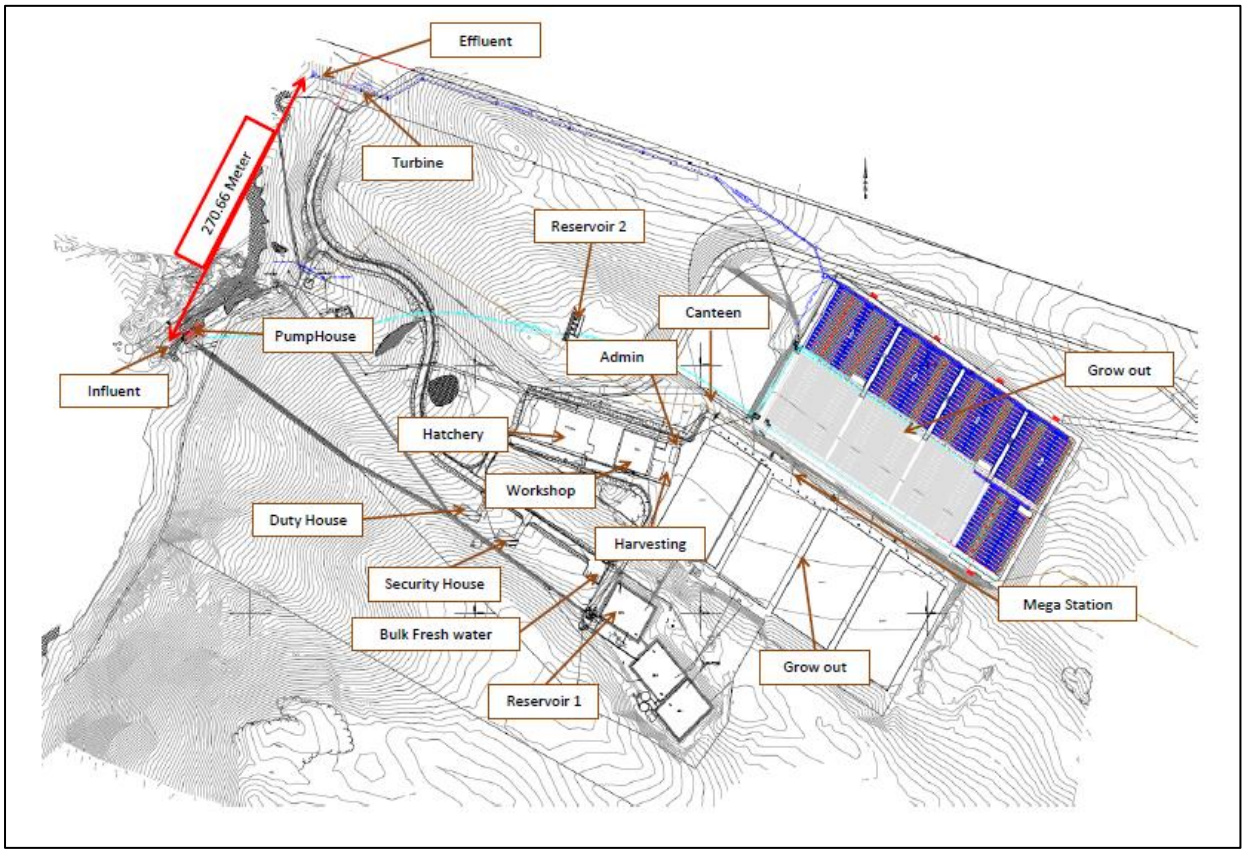

Figure 1. Site plan as of 2022 excluding 2025 expansion application

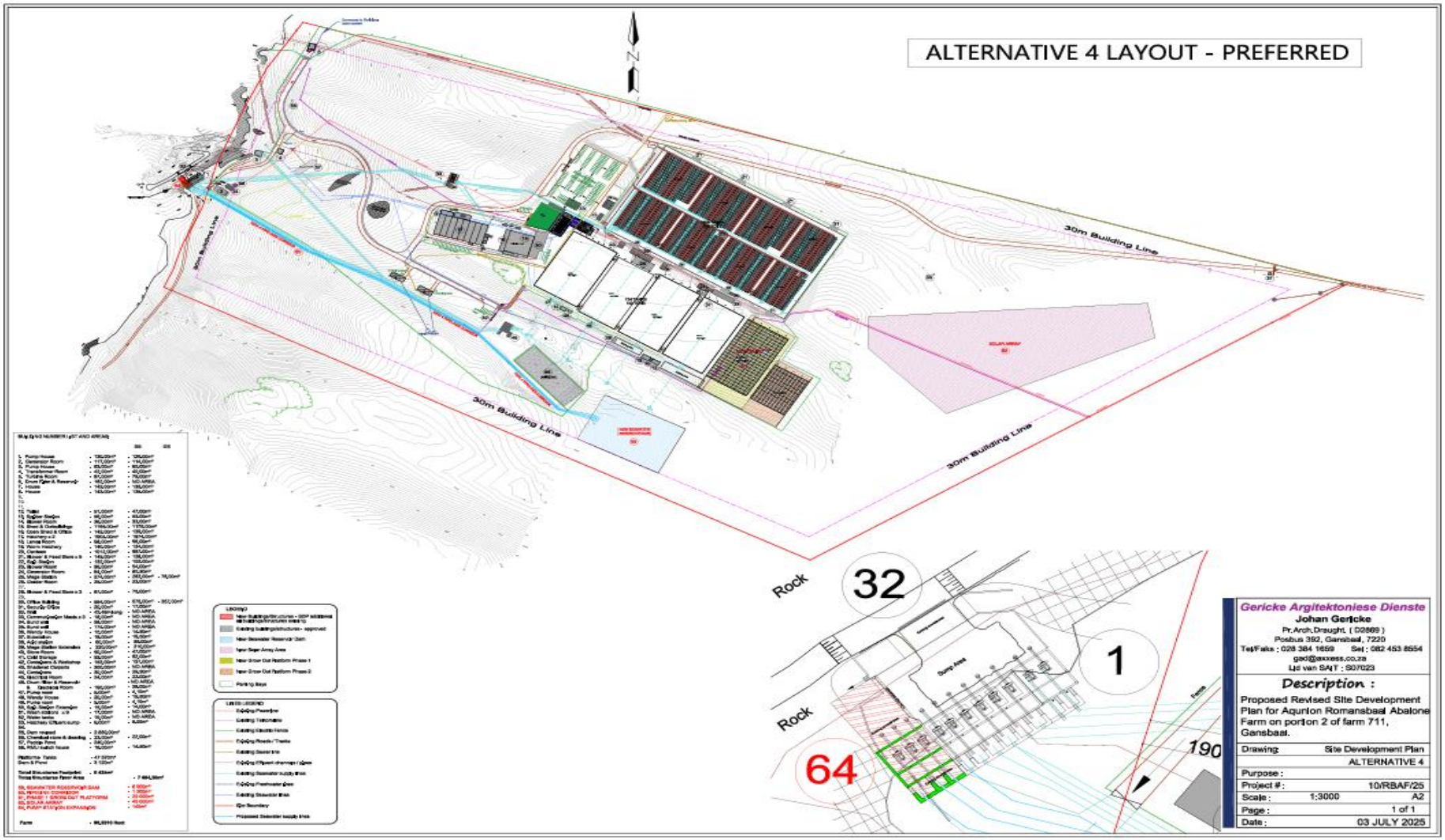

Figure 2. Romansbaai Expansion project (2025)

4. DECOMMISSIONING

Decommissioning is not applicable.

5. KEY TERMS AND ABBREVIATIONS

BAR	Basic Assessment Report
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
GDA	General Discharge Authorisation
DFFE	Department of Forestry, Fisheries, and the Environment
EA	Environmental Authorisation
ECA	Environment Conservation Act (Act No. 73 of 1989)
ECO	Environmental Control Officer
EHSR	Environmental, Health and Safety Representative
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM:BA	National Environmental Management Biodiversity Act (Act No. 10 of 2004)
NEM:WA	National Environmental Management Waste Act (Act No. 59 of 2008)
PPE	Personal Protective Equipment
SDS	Safety Data Sheets
SHE	Safety Health and Environmental

Basic Assessment - Process followed to receive Environmental Authorisation from the Competent Authority, necessitated by NEMA. Basic Assessment Report (BAR) is drafted in line with the legislation.

Competent authority - The Department of Environmental Affairs and Development Planning (DEA&DP)

Developer / Applicant – Aqunion (Pty) Ltd – Romansbaai Abalone Farm, Gansbaai

Environmental Control Officer (ECO) - a suitably qualified person to be appointed by the Developer / Applicant, to oversee the implementation of the EMP and environmental authorisation through the operational phase and into decommissioning (if applicable)

Environmental, Health and Safety Representative (EHSR) – Aqunion has appointed a full time EHSR for all their sites

Environmental Management Plan (EMP) - this document, approved by the competent authority, to control the implementation of the works on the site in such a way as to ensure that they do not result in undue or reasonably adverse impacts on the environment

General waste - Waste that does not pose an immediate hazard or threat to health or to the environment, and includes domestic waste, building and demolition waste, business waste and inert waste

Hazardous waste - Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical, or toxicological characteristics of that waste, have a detrimental impact on health and the environment. Infectious mortalities are also considered hazardous

Project manager - Overall responsible and accountable person for the site during the construction, operation, and decommissioning of the facility.

Project Management team - The responsibility of the EMP implementation resides with this team. This team includes a Project Manager and appointed contractors and consultants.

Safety, Health, and Environmental Representative (SHE Representative) - A representative from each contractor, appointed as a Safety Health and Environmental Representative, assisting the construction manager on Safety, Health, and Environmental aspects of the project on the construction site.

6. ENVIRONMENTAL CONTROL ON SITE

6.1. Approach

The Table below illustrates the various approaches to be undertaken to manage potential scenarios as a result of the operation of the activity on site:

Table 1: Impact management

Avoidance	Avoiding activities that could result in adverse impacts and/or resources or areas considered sensitive.
Prevention	Preventing the occurrence of negative environmental impacts and/or preventing such an occurrence having negative impacts.
Preservation	Preventing any future actions that might adversely affect an environmental resource.
Minimisation	Limiting or reducing the degree, extent, magnitude, or duration of adverse impacts through scaling down, relocating, redesigning and/or realigning elements of the project.
Mitigation	Measures taken to minimise adverse impacts on the environment.
Enhancement	Magnifying and/or improving the positive effects or benefits of a project.
Rehabilitation	Repairing affected resources, such as natural habitats or water resources.

Restoration	Restoring affected resources to an earlier (possibly more stable and productive) state, typically, 'background' or 'pristine' condition. These resources may include soils and biodiversity
Compensation	Compensating for lost resources, and where possible, the creation, enhancement or protection of the same type of resource at another suitable and acceptable location.

6.2. Organisational Structure and Responsibilities

The operation of the abalone farm will follow a typical management hierarchy. A suitably qualified Environmental Control Officer (ECO) / Environmental, Health and Safety Representative (EHSR) has been designated and their role should include the following:

Environmental Control Officer / Environmental, Health and Safety Representative

A suitably qualified person / member of staff should be appointed as the Environmental Control Officer / Environmental Officer, to oversee operations on site and ensure compliance with conditions of the EMP as well as additional requirements in terms of permitting conditions. The ECO / EHSR, particularly if a staff member, should act as a custodian for the environment during operations. Professional input should be sought as required and audits on the performance and adherence to the EMP's should be undertaken by an independent qualified person as required. This ECO can also be appointed to attend to any new construction or expansion activities which may take place over time.

The following is a list of typical responsibilities of an ECO / EHSR:

- To environmentally educate and raise the awareness for environmental education on site and to facilitate the spread of the correct environmental attitude during operation
- To review method statements and to determine the most environmentally sensitive options
- To oversee the implementation of environmental procedures set out in this document and the EA
- To attend meetings, as required and report on environmental issues
- To receive notices and minutes of all operational meetings regarding the environmental and operational activities, changes, renovations, complaints, problems etc.
- To take immediate action where infringements are recorded
- To keep an up-to-date record of operations, as they relate to environmental issues
- To be contactable by the public regarding matters of environmental concern during the operation

Romansbaai Abalone Farm has a permanent Environmental, Health and Safety Representative who oversees operations and compliance for the entire Aqunion Group.

As stated in the introduction, this EMP is an open-ended document and will evolve as activities on site evolve, change, grow etc.

An Environmental Authorisation was granted to the holder in 2009 for activities described therein, this is referred to as the 2009 EA. Conditions of authorisation are contained herein and must still be managed and met.

The EA which will be applicable to the proposed expansion of Romansbaai Abalone farm as well as the 2009 EA, as well as the EMP, should be filed on site and easily accessible. All originally authorised documents must be kept as an addendum to this document.

6.3. Conditions of previous Environmental Authorisation (2009)

The Environmental Authorisation (DEA&DP reference E12/2/3/1-E2/11-0262/07; date 02/03/2009) contained the following conditions of Authorisation, as per Section G of the EA:

Table 2a: Conditions of Environmental Authorisation (2009)

COND. NO.	CONDITION	CURRENT APPLICABILITY
1	An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use, and disposal, where appropriate - Any solid waste that cannot be recycled or re-used shall be disposed of at a waste disposal facility licensed in terms of Section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989). The Departments Waste Minimization Guideline Document for Environmental Impact Assessment Reviews (May 2003, available on request from the Department) must be considered	Romansbaai has a site-specific waste management plan in place which provides guidance for any new construction activities and all operational activities relating to waste management, reuse, reduction, and recycling on site
2	No surface or groundwater may be polluted due to any activity on the property	Monitored by onsite EHSR
3	The necessary approval from the relevant Department, should any trimming, cutting or disturbance of the protected Milkwood trees be necessitated	Monitored by onsite EHSR Contact person relating to milkwood tree trimming/ removal: Thando Ndudula DFFE 021 944 1416. Nndudula@dffe.gov.za
4	The laying of the pipes and cables must comply with the relevant regulations in terms of the Sea Shore Act, 1935 (Act No. 21 of 1935)	Lease agreement in place with Cape Nature
5	The necessary lease must be obtained from the Provincial Department of Public Works should the pipes and cables traverse state owned land	Lease agreement in place with Cape Nature
6	Should any Heritage remains be exposed during excavation, these must immediately be reported to the Provincial Heritage resources Authority of the Western Cape, heritage Western Cape (in terms of the National Heritage Resources Act 1999) (Act No. 25 of 1999). Heritage remains uncovered or disturbed during earthworks must not be disturbed further until the necessary approval has been obtained from Heritage Western Cape. - If any archaeological remains (including but not limited to fossil bones and fossil shells, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, marine shell heaps, stone artefacts and bone remains, structures and other built features, rock art and rock engravings) are discovered during construction they must immediately be reported to Heritage Western Cape and must not be disturbed further until the necessary approval has been obtained from Heritage Western Cape. - If any graves or unmarked human burials are discovered, they must be treated with respect and South African Heritage Resources Agency ("SAHRA") must be notified immediately and the burials must not be disturbed further until the necessary approval has been	Area demarcated and maintained as required and inspected by the EHSR

	obtained from SAHRA. An archaeologist must be contracted to remove remains as the expense of the developer.	
7	Any effluent released from the activity back into the sea must be to the standards and satisfaction of the Department of Environmental Affairs and Tourism: Marine and Coastal Management (MCM).	Coastal Waters Discharge Permit in place and valid. The General Discharge Authorisation (GDA) is now applicable to operations as of 15 July 2022 (GN 2290 in GG 47019) *Note – responsible Department name change. Responsible department regarding the discharge of effluent into the marine environment is Department of Forestry, Fisheries and Environment (DFFE) in terms of Section 69 of the National Environmental Management: integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
8	A suitably qualified coastal ecologist must be appointed to monitor and ensure the safekeeping of coastal birds and marine animals during rock blasting activities as a precautionary measure. This should be done in close consultation with the Department of Environmental Affairs and Tourism: MCM.	Responsible Department name change. Responsible department is Department of Environmental Affairs: Oceans and Coasts. *Since the major works have been completed in this zone, it is recommended that the works is overseen by the EHSR.*
9	All blasting activities must be conducted during low tide so as to limit the impacts of shock waves. Marine animals found in the vicinity of the proposed blasting activities must be rescued and placed in another location similar to its original habitat before such activities commence.	Bulk works completed. Operational maintenance undertaken in line with permit conditions and overseen by the EHSR
10	The infrastructure associated with the proposed expansion of the facility must be designed and planned to minimise risk or harm to the environment and the local fauna inhabiting the area.	Compliant, overseen by EHSR
11	The runoff from the road must first be directed to a catch pit before it is to enter the sea.	Compliant
12	All infrastructure associated with the proposed expansion of the facility must be designed and planned to minimise risk or harm to the environment and local the local fauna inhabiting the area.	Complaint
13	All building material / rubble must be removed upon completion of construction activities	Compliant
14	The development must incorporate water and energy saving technologies. This must include, but not be limited to, the following: - Low energy light bulbs must be installed on the grounds of the proposed development. Replacement bulbs must also be low energy. - External lighting must be kept to a minimum to reduce energy wastage. All external lighting must be switched off during the day. - Waterwise landscaping must be done. Indigenous plans and plants that require very little water must be used. The use of Kikuyu grass must be prohibited. Non-invasive, low water use grass must be used for lawns. - All toilets installed on the property must be dual flush toilets. - All shower heads must be fitted with water-saving devices i.e., low-flow showerheads. Tap aerators and/or flow restrictors must also be installed on all taps	Compliant Dual Flush toilets to be applied to all new or faulty systems as repaired

15	Suitable screening measures incorporating the planting of locally found indigenous vegetation and trees are to be used to mitigate the visual impacts of the development	Implemented as far as practically possible
16	The mitigation measures detailed in the Botanical Assessment Report dated a 1 March 2008 compiled by Nick Helme of Nick Helme Botanical Surveys must be complied with (refer to Appendix A) - The high sensitivity limestone outcrop should not be impacted upon by any new infrastructure and a minimum of 10 m buffer of natural vegetation around it must be drawn into all plans and taken into account on the ground. - All Milkwood's to be avoided - Search and rescue required in the grow out area before construction, with suitable horticulturist - An adequate ecological corridor of natural vegetation must be maintained between the eastern and western parts of the site along the northern boundary. The corridor should be at least 40 m wide at the narrowest part - Invasive alien vegetation must be cleared from the property and alien vegetation management must be ongoing - Pipelines to be excavated with minimum disturbance to surrounding area	Noted and compliant
17	The recommendations detailed in the Archaeological Impact Assessment dated November 2008, complied by Dr Lita Wabley of the Archaeology Contracts Office must be complied with (Refer to Appendix B) - Realignment of access road to avoid Midden 1 - Water storage tank located to be discussed with archaeologist - Mariculture location to be discussed with archaeologist - Excavated rock and shingle from installation of pipeline must be undertaken in consultation with archaeologists to avoid disturbance of Midden 3 - When excavating, works must be stopped in the event that dense shell middens are exposed	Noted and compliant
18	The mitigation measures and recommendations as detailed in the revised Basic Assessment Report ("BAR") dated December 2008 compiled by Pierre Joubert of Pierre Joubert Landscape Architect and Environmental Consultant cc, must be adopted, and implemented (Refer to Appendix C) Construction 1. Rock blasting - Implement blast mast and staggered detonation - Detonations to occur outside of the breeding seas of marine and avian species, during low tides, at least 800 m from fauna and employ staggered detonation 2. Heavy construction vehicles - Vehicles to remain on allocated roads and demarcated areas - Maintain vehicles in good working condition 3. Construction activities of infrastructure and abalone farm facilities - Limit destruction of vegetation to footprints of abalone facilities and infrastructure, search and rescue plants for areas which can be rehabilitated - Phased clearance of the site - Limit work to acceptable working hours and keep equipment in good working conditions - Maintain site in good condition - Use shade net to limit and screen activities - Stockpile topsoil for Rehabilitation Purposes - Construction to occur in consultation with archaeologist Operational 1. Abalone farm effluent - Monitor effluent and water temperature 2. Sea water pumps - Maintain pump in good working condition and monitor performance 3. Effluent channel and water supply pipelines	Noted and compliant

	- Strict compliance to Civil Engineers design and construction specification of channel and pipelines - Maintain effluent channels and water supply pipelines in good leak free conditions - Monitor condition and repair any possible damage immediately 4. Visual impacts - Screen grow out tans with indigenous trees and shrub planting (suitable to area), planted on the perimeter of the platform area e.g., Milkwood trees - Conceal pipelines by laying it sub surface i.e., underground	
19	The Construction Phase Environmental Management Plan ("CEMP") submitted as part of the application for Environmental authorisation is accepted and must be implemented	Updated herein
20	The relevant sections and regulations of the National Water Act, 1998 (Act No. 36 of 1998) regarding water use must be adhered to	Complaint
21	The holder of the authorisation must appoint a suitably experienced Environmental Control Officer ("ECO") (or Site agent, where appropriate) for the construction phase of the development before commencement of the any land clearing or construction activities to ensure compliance with the provisions of the CEMP	Full time EHSR on site
22	The ECO must, at all times, ensure that the construction activities comply with the Noise Regulations in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989)	In accordance with the Overstrand Municipality Bylaws
23	The Operational Phase Environmental Management Plan ("OEMP) submitted as part of the application for Environmental Authorisation is accepted and must be implemented	Updated herein
24	With reference to the Operational Phase Environmental Management Plan ("OEMP"), the applicant must submit Environmental Audit Reports ("audit reports") to this Directorate within 1 years after the first phase of the development has become operational and upon completion of the entire development - The audit reports must indicate the date(s) on which construction was completed, detail compliance within the conditions of this environmental authorisation as well as recommendations for improved environmental management - Records of all audits must be maintained with the OEMP for safekeeping and must be made available to the Department upon request. - This Directorate may require remedial action should the audit reports reflect that rehabilitation is inadequate - If the audit reports are not submitted, this Directorate may give 30 days' written notice and may authorise any person to take such measures necessary for this purpose	Annual audits undertaken in line with the EIA Regulations 2014 as amended
25	The applicant must in writing, within 10 calendar days of being notified of the Departments decision to authorise the activity	Compliant
26	The holder of the authorisation shall be responsible for ensuring compliance with the conditions by any person acting on his behalf, including but not limited to, an agent, sub-contractor, employee, or any person rendering a service to the holder of authorisation	Compliant
27	Any changes to, or deviations from, the project description, set out in this authorisation must be approved, in writing, by the Department before such changes or deviations may be affected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further authorisation in terms of the regulations	-
28	The holder of the authorisation must notify this Directorate and any other relevant authority, in writing, within 24 hours thereof if any condition of this authorisation is not adhered to	-
29	A copy of the authorisation must be kept at the property where the activities will be undertaken. The authorisation must be produced to any authorised official of the Department who requests to see it and must be made available	-

	for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property	
30	Where any applicants contact details change, including the name of the responsible person, the physical or postal address and / or telephonic details, the applicant must notify the Department as soon as the new client details become known to the applicant	-
31	Non-compliance with a condition of this authorisation may result in the withdrawal of the authorisation and may render the holder liable for criminal prosecution	-
32	This Department must be notified, within 30 days thereof, of any changes of ownership and / or project developer. Conditions imposed in this authorisation must be made known to the new owner and / or developer	-
33	Department official shall be given access to the property referred to in B above for the purpose of assessing and / or monitoring compliance with the conditions contained in this environmental authorisation, at all reasonable times	-

The following recommendations were made by the Directorate in the Environmental authorisation

- The pipelines are to be constructed and completed during the dry season, so that rainwater will not erode loose soil and deposit it as mud on the beach. This is also to allow for natural rehabilitation to take place during the winter growing season
- The blasting activities are to take place outside the breeding season of the African Black Oystercatcher (October to April) and precautions to be taken if they are found in the vicinity.
- People from the local surrounding communities should be employed during the construction and operational phases of the proposed expansion of the existing facility.

6.4. Conditions of the Environmental Authorisation (2026)

Application for expansion of the production area, pumphouse and pipelines was undertaken in 2024 / 2025. The conditions listed below apply to the proposed expansion of the Romansbaai Abalone farm for the expansion of existing pumphouse, proposed increase of the production area construction of the new seawater reservoir and solar array. Note that this table should be updated with the official conditions to be issued by DEA&DP upon EA.

Table 2b: Conditions of Environmental Authorisation (2026)

CONDITION NO.	CONDITION
1	Any approved development footprints should be clearly demarcated on site prior to any development. No disturbance of natural vegetation outside of these demarcated areas should be allowed, either during construction or thereafter.
2	All listed invasive alien plant species should be removed from the site within one year of any project authorisation, using approved methodology (see Martens et al 2021). The main invasive species are rooikrans (*Acacia cyclops*) and *manitoka* (*Myoporum serratum* and M *tenuifolium*).
3	Search and Rescue of all translocatable bulbs (geophytes) should be undertaken from the approved development footprints for Phases 1 & 2 and the new dam prior to construction. This should be done at the end of the flowering season for the relevant species (ranges from April to October). Material should be translocated to other parts of the property where it will not be disturbed in future, and which is ecologically similar.
4	No large-scale soil disturbance or site clearing should happen in the proposed PV area, and instead vegetation can be trimmed to a maximum height of 1m, maintaining the bulk of the plant cover, whilst allowing for the solar panels to be positioned at a minimum of 1m above ground level. If the vegetation grows above the panels it may be trimmed on a regular basis, as needed, but should never be cut below 300mm above the ground. Cut material can be used as mulch to stabilise and cover any loose sand nearby.
5	The necessary lease must be obtained from the Provincial Department of Public Works or Cape Nature as applicable, should the pipes and cables traverse state owned land
6	Should any Heritage remains be exposed during excavation, these must immediately be reported to the Provincial Heritage resources Authority of the Western Cape, heritage Western Cape (in terms of the National Heritage Resources Act 1999) (Act No. 25 of 1999). Heritage remains uncovered or disturbed during earthworks must not be disturbed further until the necessary approval has been obtained from Heritage Western Cape. - If any archaeological remains (including but not limited to fossil bones and fossil shells, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, marine shell heaps, stone artefacts and bone remains, structures and other built features, rock art and rock engravings) are discovered during construction they must immediately be reported to Heritage Western Cape and must not be disturbed further until the necessary approval has been obtained from Heritage Western Cape. - If any graves or unmarked human burials are discovered, they must be treated with respect and South African Heritage Resources Agency ("SAHRA") must be notified immediately and the burials must not be disturbed further until the necessary approval has been obtained from SAHRA. An archaeologist must be contracted to remove remains as the expense of the developer.
7	Any effluent released from the activity back into the sea must be to the standards and requirements in terms of the GDA.
8	All blasting activities must be conducted during low tide so as to limit the impacts of shock waves. Marine animals found in the vicinity of the proposed blasting activities must be rescued and placed in another location similar to its original habitat before such activities commence.
9	All infrastructure associated with the proposed expansion of the facility must be designed and planned to minimise risk or harm to the environment and local the local fauna inhabiting the area.
10	All building material / rubble must be removed upon completion of construction activities
11	The development must incorporate water and energy saving technologies. This must include, but not be limited to, the following: - Low energy light bulbs must be installed on the grounds of the proposed development. Replacement bulbs must also be low energy. - External lighting must be kept to a minimum to reduce energy wastage. All external lighting must be switched off during the day.

	- Waterwise landscaping must be done. Indigenous plans and plants that require very little water must be used. The use of Kikuyu grass must be prohibited. Non-invasive, low water use grass must be used for lawns. - All toilets installed on the property must be dual flush toilets. - All shower heads must be fitted with water-saving devices i.e., low-flow showerheads. Tap aerators and/or flow restrictors must also be installed on all taps
12	Suitable screening measures incorporating the planting of locally found indigenous vegetation and trees are to be used to mitigate the visual impacts of the expansion as far as possible
13	The mitigation measures detailed in the Botanical Assessment Report dated 2024 compiled by Nick Helme of Nick Helme Botanical Surveys must be complied with (refer to **Appendix G)** - Any approved development footprints should be clearly demarcated on site prior to any development. No disturbance of natural vegetation outside of these demarcated areas should be allowed, either during construction or thereafter. - All listed invasive alien plant species should be removed from the site within one year of any project authorisation, using approved methodology (see Martens et al 2021). The main invasive species are rooikrans (*Acacia cyclops*) and manitoka (*Myoporum serratum* and *M. tenuifolium*). - Search and Rescue of all translocatable bulbs (geophytes) should be undertaken from the approved development footprints for Phases 1 & 2 and the new dam prior to construction. This should be done at the end of the flowering season for the relevant species (ranges from April to October). Material should be translocated to other parts of the property where it will not be disturbed in future, and which is ecologically similar. - No large scale soil disturbance or site clearing should happen in the proposed PV area, and instead vegetation can be trimmed to a maximum height of 1m, maintaining the bulk of the plant cover, whilst allowing for the solar panels to be positioned at a minimum of 1m above ground level. If the vegetation grows above the panels, it may be trimmed on a regular basis, as needed, but should never be cut below 300mm above the ground. Cut material can be used as mulch to stabilise and cover any loose sand nearby. - The monetary compensation for Alien Clearing on Brown Dog Farm, as per the Grootbos Agreement, must be implemented one month ahead of construction of the seawater reservoir.
14	The recommendations detailed in the Heritage Impact Assessment (2024): - Vegetation clearing and all construction phase excavations must be supervised by a professional archaeologist to ensure that any archaeological resources are identified and managed appropriately. - Archaeological monitoring should be conducted during vegetation clearance in foredunes, and shovel testing may be required if archaeological sites are discovered. - Should any human remains be uncovered during excavations, all work must cease immediately, and the findings must be reported to the Environmental Control Officer and the contracted archaeologist (Jonathan Kaplan 082 321 0172). Human remains must not be disturbed until inspected and managed by the archaeologist. - The Fossil Finds Procedure (FFP) must be included in the Environmental Management Plan (EMP) to provide guidelines for handling fossil finds during excavations.
15	The mitigation measures and recommendations as detailed in the Basic Assessment Report ("BAR") for the proposed expansion of the farm must be adopted and implemented. Construction 4. Rock blasting - Implement blast mast and staggered detonation - Detonations to occur outside of the breeding seas of marine and avian species, during low tides, at least 800 m from fauna and employ staggered detonation - 5. Heavy construction vehicles - Vehicles to remain on allocated roads and demarcated areas - Maintain vehicles in good working condition 6. Construction activities of infrastructure and abalone farm facilities - Limit destruction of vegetation to footprints of abalone facilities and infrastructure, search and rescue plants for areas which can be rehabilitated - Phased clearance of the site - Limit work to acceptable working hours and keep equipment in good working conditions - Maintain site in good condition

	- Use shade net to limit and screen activities - Stockpile topsoil for Rehabilitation Purposes - Construction to occur in consultation with archaeologist Operational 5. Abalone farm effluent - Monitor effluent and water temperature in line with GDA requirements 6. Sea water pumps - Maintain pump in good working condition and monitor performance 7. Effluent channel and water supply pipelines - Strict compliance to Civil Engineers design and construction specification of channel and pipelines - Maintain effluent channels and water supply pipelines in good leak free conditions - Monitor condition and repair any possible damage immediately 8. Visual impacts - Screen grow out tanks if possible - Conceal pipelines by laying it sub surface i.e., underground
16	The Construction Phase Environmental Management Plan ("CEMP") submitted as part of the application for Environmental authorisation is accepted and must be implemented
17	The relevant sections and regulations of the National Water Act, 1998 (Act No. 36 of 1998) regarding water use must be adhered to, as and if required.
18	The holder of the authorisation must appoint a suitably experienced Environmental Control Officer ("ECO") (or Site agent, where appropriate) for the construction phase of the development before commencement of the any land clearing or construction activities to ensure compliance with the provisions of the CEMP
19	The ECO must, at all times, ensure that the construction activities comply with the Noise Regulations in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989).
20	The Operational Phase Environmental Management Plan ("OEMP) submitted as part of the application for Environmental Authorisation is accepted and must be implemented.
21	Prior to the commencement of construction activities, particularly those associated with the seawater reservoir, an appropriate financial mechanism or contribution towards ongoing invasive alien plant clearing and ecological management must be secured and implemented.
22	As outlined under Appendix L – the proposed Alien vegetation plan for Brown Dog Plan must be included as a condition of Environmental Authorisation. Area to be cleared – 8 hectares Agulhas Sand Fynbos (critically endangered) on Brown Dog Farm. This is a strategic priority in terms of alien invasive species control in the Walker Bay Fynbos Conservancy. The conservation servitude on the property provides a crucial corridor for ecological functioning in the Walker Bay Protected Environment. The property owner together with the Walker Bay Fynbos Conservancy and Grootbos Foundation has invested significant resources in the restoration of this site. The eight hectares earmarked for this offset funding is protected through a conservation servitude in favour of Fauna and Flora (www.fauna-flora.org) and managed by Grootbos Foundation - ensuring its long-term protection and sound management. The site was burnt in a management burn 18 months ago and it is vital that the post-fire regrowth be removed before seeding. Costs: R32 000 per hectare including initial clean and two follow up sweeps through the site. Total cost of project: R256 000. The project will be implemented by one of the local qualified Green Stewards teams and will be administered and managed by the Grootbos Foundation. The trigger for the above action is one month prior to construction of the 0.8 ha seawater reservoir on Romansbaai Abalone Farm.

7. ENVIRONMENTAL AWARENESS

Contractors and employees associated with the operation of the proposed activity must receive the appropriate level of training and awareness to ensure that continual environmental due diligence and conservation is applied at all levels of operation. Employees, contractors, and sub-contractors, must be made aware of their responsibilities in terms of relevant legislation, guidelines, as well as conditions of this EMP and the EA.

7.1. Aim of the Environmental Awareness

- Promote environmental education and conservation on site
- Inform employees and any new contractors on the applicable environmental procedures and plans

7.2. Environmental Awareness Training and content

- All personnel should undergo induction, which as a minimum should include Safety, Health, and Environmental awareness
- All attendees should sign an acknowledgement register upon receiving and understanding the induction
- Staff should be trained on the implementation of emergency procedures where applicable
- Definitions as used in this EMP should be provided
- How and why environmental protection is necessary, should be explained
- Management measures required to prevent environmental impacts should be outlined
- Awareness should be made of emergency and spills response procedures
- Site specific mitigations must be communicated to relevant personnel

Environmental training should be implemented at the onset of operation and repeated at regular intervals, or as required.

8. LEGISLATIVE REQUIREMENTS

A Basic Environmental Assessment process was applicable in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and the Environmental Impact Assessment (EIA) regulations (2014) (as amended). Appendix 4 of the NEMA EIA Regulations (GN. R982) sets out the minimum requirements for the drafting of an Environmental Management Plan (EMP). This EMP has been created in fulfilment of these prescribed requirements for the operational and maintenance management phase of the approved activity. The implementation of this EMP is a condition of the Environmental Authorisation (EA). Failure by the applicant, to comply with this EMP, will therefore constitute an offence, and the applicant and / or the appointed contractors can be held liable for penalties and / or legal action. It is therefore important that a copy of this EMP be issued to each contractor, preferably at the appointment stage, in order to allow for the costs of implementing the EMP, to be included in cost proposals. This will also ensure that the contractor is aware of his responsibilities prior to appointment and commencement. Each appointed contractor involved in the project, as well as the project manager (as applicable), will be required to sign for and thereby acknowledge contents of, the approved EMP and therefore abide by the specifications of the document and any amendments thereto.

Other applicable legislation

The Constitution of The Republic of South Africa (Act 108 of 1996)

The Constitution of the Republic of South Africa states that everyone has a right to a non-threatening environment and those reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment, and which require authorisation from the relevant competent authorities. NEMA is a National Act, which is enforced by the Department of Environmental Affairs (DEA). These powers are delegated in the Western Cape to the Department of Environmental Affairs and Development Planning (DEA&DP).

National Environmental Management: Biodiversity Act (Act 10 of 2004)

Chapter 4 of the National Environmental Management: Biodiversity Act, 2004 (NEMBA) deals with threatened and protected ecosystems and species. The need to protect listed ecosystems is addressed (Section 54). Section 73 deals with Duty of Care relating to invasive species, while Section 76(2) calls for development of invasive species monitoring, control and eradication plans by all organs of state in all spheres of government, as part of environmental management plans required in terms of Section 11 of NEMA.

National Environmental Management: Waste Act (Act No. 59 of 2008)

The National Environmental Management: Waste Act (NEM: WA) provides for specific waste management measures (disposal and storage) and the remediation of contaminated land.

National Environmental Management: Air Quality Act (Act No. 39 of 2004)

Section 32 provides provision for the control of dust, section 34 provides provision for the control of noise and section 35 provides provision for the control of offensive odours, all which may be experienced during the construction or operation of an applicable development.

Environment Conservation Act (Act No. 73 of 1989)

The Environment Conservation Act (ECA) provides provision for the prevention of littering by employees and subcontractors during construction and the maintenance phases of development.

Occupational Health and Safety Act (Act No. 85 of 1993)

Section 8 outlines the general duties of employers to their employees and section 9 outlines the general duties of employers and self-employed persons, to persons other than their employees.

Hazardous Substances Act (Act No. 5 of 1973)

This Act provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances.

Marine Living Resources Act (Act No. 18 of 1998)

Covers the various permitting requirements and associated conditions / mitigation measures.

National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)

Covers the various permitting requirements and associated conditions / mitigation measures.

8.1. Operational Permits

The following operational permits for environmental, health and / or safety purposes, are required:

- → Right to Engage in Marine Aquaculture in terms of Section 18 of the Marine Living Resources Act, 1998 (Act No. 18 of 1998)
- → Coastal Waters Discharge Permit in terms of Section 69 of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) – replaced by GDA
- → General Discharge Authorisation in terms of Section 69(2) of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) (15 July 2022, No. 2290)
- → Permit to Engage in Marine Aquaculture Activities in terms of Section 13 of the Marine Living Resources Act, 1998 (Act No. 18 of 1998) and Right to Operate a Fish Processing Facility (FPE) (if applicable) – combined as one permit
- → Permit to possess broodstock and operate a hatchery in terms of Section 13 of the Marine Living Resource Act, 1998 (Act No. 18 of 1998)
- → Permit to Transport cultured marine species or any product thereof in terms of Section 13 of the Marine Living Resources Act, 1998 (Act No. 18 of 1998)
- → Flammable Substance certificate issued for the storage and use of flammable substances in terms of Section 38(1) of the Community Fire Safety By-Law (Diesel)
- → Certificate of Acceptability: Food premises in terms of Regulation (3)3 of R638 of 22 June 2018 (if applicable)
- → NRCS Certificate of Approval for Fish Factories and other Fish Handling and Processing Establishments (if applicable)
- → Permit to Export cultured marine fish species and product thereof in terms of Section 13 of the Marine Living Resources Act, 1998 (Act No. 18 of 1998)

Each permit contains specific conditions and mitigation measures and once these permits are issued, the conditions must be added to this document.

NOTE: Additional permits may be required should the holder need to dive for broodstock in restricted areas or conduct additional activities which are not covered in the above permits.

9. ENVIRONMENTAL MANAGEMENT ON SITE RELATING TO CONSTRUCTION

Romansbaai Abalone Farm has completed the expansion construction as per the Environmental Authorisation. However, small scale maintenance and general site management construction may be required from time to time. The following principles must be implemented to any construction activities which may take place on site. It is also important to note that any large-scale construction or construction requiring removal of vegetation or works close to any watercourses or the coast, must obtain confirmation that the proposed activities do not require Environmental Authorisation in terms of the National Environmental Management Act (NEMA) (Act 107 of 1998).

9.1. Method statements

Method Statement(s) must be submitted to the ECO / EHSR by the appointed contractors during all phases of construction. The Method Statement must be provided to the ECO / EHSR prior to commencement of any construction activities. Any amendments to the Method Statement must be lodged with and approved by the ECO / EHSR. The method statements must include the following information:

- Construction procedures and location of the construction site including description of the work to be undertaken; sketch maps can be used
- Start date and duration of the procedure
- Materials, equipment, and labour to be used
- How materials, equipment and labour would be moved to and from the site as well as on site during construction
- Storage, removal and subsequent handling of all materials, excess materials, and waste materials of the procedure
- Emergency procedures in case of any potential accident / incident which could occur during the procedure
- Mitigation measures that will be employed
- Compliance / non-compliance with the EMP Specification and motivation if non-compliant

It is the contractor's responsibility to ensure that Method Statements are submitted at a reasonable time prior to commencement.

Method Statement title:		
Date:		
Description of activities:	*Brief description of work to be undertaken*	
Frequency / duration:	*How often will the works be required*	
Commencement date:	*When*	
Location on site:	*Where*	
Required materials, machinery, and equipment:	*What*	
Details of how actions will be carried out:	*Detailed description of the activities, step by step detail, methods*	
Storage of materials:	*Description of materials required and how and where they will be stored*	
Storage and disposal of waste:	*Description of materials required and how and where they will be stored*	
Contractor Details:		
APPROVAL		
	ECO	**CONTRACTOR**
Signature:		
Date:		

9.2. Specific conditions contained in the EA (2009)

9.2.1. Botanical

- The high sensitivity limestone outcrop should not be impacted upon by any new infrastructure and a minimum of 10 m buffer of natural vegetation around it must be drawn into all plans and taken into account on the ground.
- All Milkwood's to be avoided
- Search and rescue required in the grow out area before construction, with suitable horticulturist
- An adequate ecological corridor of natural vegetation must be maintained between the eastern and western parts of the site along the northern boundary. The corridor should be at least 40 m wide at the narrowest part
- Invasive alien vegetation must be cleared from the property and alien vegetation management must be ongoing
- Pipelines to be excavated with minimum disturbance to surrounding area

9.2.2. Archaeological Impact Assessment

- Realignment of access road to avoid Midden 1
- Water storage tank located to be discussed with archaeologist
- Mariculture location to be discussed with archaeologist
- Excavated rock and shingle from installation of pipeline must be undertaken in consultation with archaeologists to avoid disturbance of Midden 3
- When excavating, works must be stopped in the event that dense shell middens are exposed

9.2.3. Basic Assessment

Rock blasting

- Implement blast mats and staggered detonation
- Detonations to occur outside of the breeding seas of marine and avian species, during low tides, at least 800 m from fauna and employ staggered detonation

Heavy construction vehicles

- Vehicles to remain on allocated roads and demarcated areas
- Maintain vehicles in good working condition

Construction activities of infrastructure and abalone farm facilities

- Limit destruction of vegetation to footprints of abalone facilities and infrastructure, search and rescue plants for areas which can be rehabilitated
- Phased clearance of the site
- Limit work to acceptable working hours and keep equipment in good working conditions
- Maintain site in good condition
- Use shade net to limit and screen activities
- Stockpile topsoil for Rehabilitation Purposes
- Construction to occur in consultation with archaeologist

9.3. Specific conditions for the EA (2026)

9.3.1 Terrestrial Biodiversity

- Any approved development footprints should be clearly demarcated on site prior to any development. No disturbance of natural vegetation outside of these demarcated areas should be allowed, either during construction or thereafter.
- All listed invasive alien plant species should be removed from the site within one year of any project authorisation, using approved methodology (see Martens *et al* 2021). The main invasive species are rooikrans (*Acacia cyclops)* and manitoka (*Myoporum serratum* and *M tenuifolium*).
- Search and Rescue of all translocatable bulbs (geophytes) should be undertaken from the approved development footprints for Phases 1 & 2 and the new dam prior to construction. This should be done at the end of the flowering season for the relevant species (ranges from April to October). Material should be translocated to other parts of the property where it will not be disturbed in future, and which is ecologically similar.
- No large-scale soil disturbance or site clearing should happen in the proposed PV area, and instead vegetation can be trimmed to a maximum height of 1m, maintaining the bulk of the plant cover, whilst allowing for the solar panels to be positioned at a minimum of 1m above ground level. If the vegetation grows above the panels it may be trimmed on a regular basis, as needed, but should never be cut below 300mm above the ground. Cut material can be used as mulch to stabilise and cover any loose sand nearby.
- As outlined under Appendix L – the proposed Alien vegetation plan for Brown Dog Plan must be included as a condition of Environmental Authorisation. Area to be cleared – 8 hectares Agulhas Sand Fynbos (critically endangered) on Brown Dog Farm. This is a strategic priority in terms of alien invasive species control in the Walker Bay Fynbos Conservancy. The conservation servitude on the property provides a crucial corridor for ecological functioning in the Walker Bay Protected Environment. The property owner together with the Walker Bay Fynbos Conservancy and Grootbos Foundation has invested significant resources in the restoration of this site.
    - The eight hectares earmarked for this offset funding is protected through a conservation servitude in favour of Fauna and Flora (www.fauna-flora.org) and managed by Grootbos Foundation - ensuring its long-term protection and sound management. The site was burnt in a management burn 18 months ago and it is vital that the post-fire regrowth be removed before seeding.
    - Costs: R32 000 per hectare including initial clean and two follow up sweeps through the site. Total cost of project: R256 000. The project will be implemented by one of the local qualified Green Stewards teams and will be administered and managed by the Grootbos Foundation.
    - The trigger for the above action is one month prior to construction of the 0.8 ha seawater reservoir on Romansbaai Abalone Farm.

9.3.2. Heritage Impact Assessment (AIA, VIA and PIA)

- Vegetation clearing and all construction phase excavations must be supervised by a professional archaeologist to ensure that any archaeological resources are identified and managed appropriately.
- Archaeological monitoring should be conducted during vegetation clearance in foredunes, and shovel testing may be required if archaeological sites are discovered.
- Should any human remains be uncovered during excavations, all work must cease immediately, and the findings must be reported to the Environmental Control Officer and the contracted archaeologist (Jonathan Kaplan 082 321 0172). Human remains must not be disturbed until inspected and managed by the archaeologist.
- The Fossil Finds Procedure (FFP) must be included in the Environmental Management Plan (EMP) to provide guidelines for handling fossil finds during excavations.
- According to the Cultural and Heritage Landscape assessment, no additional mitigation measures are deemed necessary (Lategan 2024).
- Large structures should be located in low-lying positions on the site to minimize visual impacts, taking into account the site's topography to reduce the extent of earthworks and site disturbance.
- Solar photovoltaic (PV) arrays should be positioned in low-lying areas, away from dune ridges, and in harmony with the natural topography to reduce their visual footprint.
- The construction camp and associated storage and stockpile areas should be situated in locations that are visually unobtrusive and not visible from the beach, to minimize the visual impact on the landscape.

9.4. General construction impacts and requirements

In addition to the conditions listed in the Environmental Authorisation, as outlined in Table 2 above, the following general principles for construction must also be implemented:

9.4.1. Noise Impacts

Responsibility – Contractor / ECO / EHSR

The contractor must take appropriate measures to limit the impact of unreasonable noise from construction activities. Predetermined working hours must be adhered to at all times during the construction phase. Should working hours fall outside of regular hours, the immediate / affected public should be notified. Construction hours in line with Municipal bylaws. It should be noted that some of the marine works will take place at night due to requirements for calm seas and low tides. Noisy machinery should be fitted with silencers and excessively noisy work should be conducted during work hours, as far as possible. Where blasting is required, low velocity detonators (Nonex) must be used.

9.4.2. Construction Traffic Management and internal access

Responsibility - Project Manager / Contractor / ECO / EHSR

All construction vehicles which carry construction materials, must use sheeting or a suitable cover, to prevent loss of load during travelling or due to wind or rain. Any spills should be cleaned immediately.

The Contractor must ensure that construction vehicles do not spill or drop any construction materials (sand, cement, debris, etc) onto public or private roads. If this should occur, it is the responsibility of the Contractor to ensure that the roads are suitably cleaned, and debris cleared immediately.

Construction vehicles must not travel at speeds in excess of 40 km / hr on site, in particular the eastern jeep track / access road. Existing tracks to be used as far as possible.

Access to the coastal portions of the site must be via existing roads and access points only.

9.4.3. Health and safety

Responsibility - Project Manager / Contractor / EHSR

Correct Personal Protective Equipment (PPE) must be worn at all times by the personnel on site. Personnel must be trained on the use of PPE. Each contractor must employ their own Safety Officer to monitor the safety conditions during the construction phase. Suitable warning and information signage should be erected at the commencement of construction. The handling of hazardous materials must only be done by trained personnel. Safety Data Sheets (SDSs) must be readily available for all hazardous substances on site and employees should be aware of the risks associated with any hazardous materials used. All provisions of the Occupational Health and Safety Act (Act No. 85 of 1993) must be complied with. In the event of an emergency relating to a hazardous substance, procedures detailed in the SDSs must be immediately implemented.

9.4.4. Fire risk management and control

Responsibility - Project Manager / Contractor / ECO / EHSR

The contractor must take appropriate measures to guard against accidental fire, and it will be presumed that any fire which starts on the site, or within 100 m thereof, during the construction period would be the responsibility of the contractor who would incur legal liability thereof.

The Operator / Project manager / contractor must identify a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Fire Officer shall ensure that there is basic fire-fighting equipment available on site at all times. Any fires must be reported to the fire officer immediately.

Fire beaters are to be kept on site, and easily accessible at all times. In the case of any welding, grinding or other “hot work”, a fire extinguisher is to be readily available to extinguish any fire that may result from these activities.

All excavation equipment must carry fire extinguishers, and all staff must be trained to use them if required.

No open fires may be lit anywhere on the construction site, except if approved by the ECO. The burning of refuse or vegetation material on site is not permitted.

In the case of a fire occurring on site, the ECO / EHSR are to be notified immediately. If fairly localized, an effort should be made to extinguish the fire immediately, and if required, the assistance of the local fire department should be sought by the safety steward. Emergency contact numbers should be visible or easily accessible on site.

A site-specific Emergency Action Plan is in place for Romansbaai Abalone Farm. In addition, a full Fire Assessment and Audit will be conducted by an approved person in order to improve the onsite fire safety and response protocol.

The EHSR must ensure that the sites Flammable Substance Certificate is up to date in terms of Section 38(1) of the Community Fire Safety By-Law. In addition, the firefighting equipment and extinguishers must be serviced on a regular basis and records kept of this.

9.4.5. Emergency Situations and Protocol

Responsibility - Project Manager / Contractor / EHSR

Fire: The fire officer must be notified of any fires. Employees must be aware of the procedure to be followed in the event of a fire.

Hydrocarbon (fuel and oil) leaks and spillages: Employees must be aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the project manager / contractor. All vehicles leaking fuel or other liquids should immediately be removed to the maintenance area and repaired. In the event of a hydrocarbon spillage, the soil must be excavated and treated and adequately disposed. The necessary materials and equipment for dealing with spills and leaks must be present on site at all times.

Raw Sewerage spills (from portable toilets): Employees are to be aware of the procedure to be followed for dealing with spills and leaks. All the necessary materials and equipment for dealing with spills and leaks must be present on site at all times. The clean-up of sewerage spills and any damage caused by the spill or leak shall be for the Applicant’s account or applicable contractor.

Snake bite: It is recommended that a designated person(s) should undergo training on the correct handling of snakes and snakebite treatment in case these situations present themselves during construction or operation. Most snakes can be translocated with the correct skills and equipment. Emergency contact numbers must be kept on site in case of a snakebite, which will require immediate treatment in certain cases. Emergency telephone numbers shall be displayed on a visible notice board that is accessible to all employees and workers on site.

First aid / injury on duty: The Contractor must provide and maintain a suitable first aid kit on site, with a member of staff suitably qualified in basic first aid on site permanently during working hours, in accordance with the Occupational Health and Safety Act. Emergency contact numbers to be kept on site at all times.

A site-specific Emergency Action Plan is in place for the site. The plan includes emergency reporting and evacuation procedures and types of emergencies including fire, severe weather, chemical spills, medical, snakes and robbery.

9.4.6. Public complaints

Responsibility - Project Manager / Contractor / ECO / EHSR

All public complaints received are to be registered by a designated person and addressed immediately. Public complaints and responses are to be recorded appropriately. These complaints are to be marked off when done but retained in the site diary throughout the construction period.

9.4.7. Site definition and demarcation

Responsibility – Operator / Project Manager / Contractor / ECO / EHSR

Prior to any construction commencing, the construction zones must be appropriately indicated or fenced off by the contractor in conjunction with the ECO / EHSR. Following this, all construction works, as well as the storage or preparation of any materials must be within the demarcated boundaries of the development area.

9.4.8. Contractor's camp

Responsibility – Operator / Project Manager / Contractor / ECO / EHSR

The contractor shall comply with all relevant laws and regulations concerning water provision, sanitation, wastewater discharge and liquid and solid waste handling and disposal. The contractor is referred to the requirements of the NEMA and the NEM: WA and related regulations. The contractor shall not locate the camp, or sanitation facilities, in any areas that can cause nuisance or safety hazards to the surrounding land users, inhabitants or the general public. Suitable temporary toilet facilities must be provided to the construction team. These facilities must be emptied and cleaned on a regular basis by a registered contractor, waste mut be removed by contractor to a registered facility. The contractor shall at all times carefully consider the machinery required for the desired task while minimizing the extent of environmental damage. The contractor shall keep construction areas clean and tidy at all times. The contractor shall not leave domestic waste uncontained, and temporary storage shall be enclosed to keep out people and animals. No permanent domestic waste disposal shall be permitted. All domestic refuse is to be removed to an existing licensed landfill site. The contractor shall take specific measures to prevent the spread of veld fires, which may be caused by activities at the camp. These measures may include appropriate instruction of employees about the

fire risks and the construction of firebreaks around the site perimeter, as required. The contractor shall prevent accelerated erosion from the construction campsite and shall not discharge polluted runoff into the environment. Adequate firefighting equipment shall be made available and maintained on site. Decommissioning of the construction areas must include removal of all compacted platforms, equipment machinery, tools, waste, etc.

9.4.9. Toilet facilities

Responsibility – Contractor / ECO / EHSR

Suitable sanitary facilities are to be made available on site. The responsible person must ensure that ablutions are restricted to the sanitary facilities only. Where chemical toilets are provided, they are to be kept in hygienic condition and emptied on a regular basis.

Care must be taken that no spillage occurs when chemical toilets are cleaned. The contents are to be properly stored and removed off site. Toilets should be located where their use would result in minimal impact on the environment and may not be in areas of running or standing water during winter and must be secured to prevent them from blowing over. No facilities to be located within the 100 m from the high-water mark zone.

9.4.10. Fencing of sensitive features

Responsibility – Contractor / Project manager / ECO / EHSR

Fencing applicable to the construction phase will essentially fence in construction activities and prevent sprawl beyond these areas. The fencing can be erected for each separate phase. Sensitive sites within the construction areas must also be fenced. Works in the littoral zone must be carefully marked out prior to commencement to prevent unnecessary sprawl of activities across these areas.

Fencing of the sensitive areas must consist of 1.8 m long timber stakes (25 * 25 mm) at 2 m centres, driven approximately 600 mm into the ground, supporting a wire mesh fence or as approved by the ECO. The areas where traffic, workers or machines are restricted to must be guided and / or fenced with barrier tape. Barrier tape must be checked from time to time and completely removed after use.

All fencing is to be erected prior to construction works commencing on site and are to remain in position and in good repair for the duration of the works per phase. No materials, rubble or equipment is to be stored or stockpiled within the fenced no go areas, and no-one is permitted to enter these areas. Any deviations from these specifications are subject to the approval of the ECO / EHSR

9.4.11. Fauna

Responsibility – Contractor / Project Manager / ECO / EHSR

Care must be taken to avoid any faunal deaths as a result of construction activities. Phasing / small scale construction is favourable in that it gives an opportunity for animals, rodents, snakes, retiles etc. to move away from the site at the commencement of construction. A pre-construction walk must be done to check for any animals in the vicinity of the construction area, particularly slow-moving animals

such as tortoises, chameleons, mole rats, blind snakes etc. This is to be done prior to vegetation clearance and earthworks as applicable. No killing of animals is permitted. Animals encountered must be relocated outside of the construction areas on site. The ECO / EHSR must be notified of any required relocations in the case of dangerous animals (snakes, scorpions etc.). Should any nesting birds be encountered during site preparation, the nesting site must be suitably cordoned off to avoid disturbance. If the nesting site is unavoidable, an avi-faunal specialist's assistance must be consulted to relocate the nest.

Construction vehicles are not permitted to exceed 40 km / hr on site.

9.4.12. Vegetation clearance

Responsibility – Contractor / Project Manager / ECO / EHSR

A Search and Rescue is to be carried out prior to the commencement of construction, if applicable.

Due to the potential fire risk in the area, no vegetation may be removed using fires, unless specifically arranged with the relevant parties. No vegetation outside of the operational area on site may be removed without approval of the ECO / EHSR, apart from invasive plant species which are to be removed according to a controlled program.

9.4.13. Earth shaping and movement of soil

Responsibility – Contractor / ECO / EHSR

In the event that earth works are required, appropriate shaping must be applied after the construction / disturbance is complete.

Once the vegetation has been cleared and the earthwork's complete, blowing sand may become a problem on the site. Large scale vegetation clearing must be done in phases as required and suitable stabilisation techniques should be applied to exposed areas including the use of straw mulch, planting of appropriate vegetation or cover etc.

9.4.14. Material handling and storage

Responsibility – Contractor / ECO / EHSR

All building materials are to be prepared at a batching plant identified by the Site Manager / ECO / EHSR, to enable the potential impacts of cement and other substances, and the resulting effluent and building waste to be more easily managed. The areas should not be located within 100 m of the high-water mark.

Fuels and hazardous materials

Fuels and hazardous materials are to be stored in suitably equipped storage areas, inside the Contractor's Camp. These areas shall comply with general fire safety requirements. Impervious

materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site must be appropriate to the requirement of these substances on site. EHSR to ensure Flammable Substance certificate is up to date and valid.

Bulk fuel depots are to be placed within a bunded area; bunds are to have a holding capacity equal to 110 % of the largest fuel container. The Contractor is to ensure that he is aware of the effects of all substances on staff and the environment, and the correct action to take in the case of any incident involving these materials.

Stockpiles

The Contractor / ECO / EHSR must identify sites for stockpiling building materials, and excavated material, which are to be marked on a plan. Stockpile sites must preferably be in areas with a gentle gradient. Stockpiles must be stabilized when required.

Cement mixing and cement batching

Cement batching may take place on site from time to time. Should onsite batching be required, this must be done in disturbed areas as far as possible.

- The batching of concrete must be done on a smooth impermeable surface
- The batching area must be covered with Geotextile lining (minimum A4 grade)
- A sand retaining berm is to be constructed on top of the geotextile on the downstream end to contain any run-off
- A 250µm plastic lining is to cover the geotextile and sand berm while secured to the natural ground level
- The prepared area should be of sufficient size to prevent overspill of any material or substance
- All wastewater resulting from batching of concrete must be disposed of via a contaminated water management system and must not be discharged into the environment.

9.4.15. Effluent and waste management

Responsibility – Contractor / ECO / EHSR

General Wastes

Waste management during the construction activities is the responsibility of the Contractor. The Contractor must establish a system acceptable to the ECO / EHSR for control during execution of the works. Refuse refers to all construction debris (cement bags, rubble, timber, cans, nails, wire, spilt bitumen, glass, packaging, plastic, organic matter, etc.). Refuse generated during the construction works must be stored in an appropriate area on site, protected against wind dispersion and removed on a regular basis for disposal of at a permitted disposal site. No burning or burying of refuse on site is acceptable. Refuse bins must be watertight and wind- proof.

The principles of the following legislation must also be taken into account regarding waste management on site:

- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
- List of waste management activities that have, or are likely to have, a detrimental effect on the environment, 2013 – *the thresholds outlined in this schedule are not applicable to the proposed development*
- National Waste Information Regulations, 2012 – *the thresholds outlined in Annexure 1 of the regulation are not applicable to the proposed development*
- Waste Classification and Management Regulations, 2013 – A waste manifest must be implemented detailing waste type, quantity, frequency of disposal, responsible person etc., prior to transport to the municipal waste disposal site
- National Norms and Standards for the Storage of Waste, 2013 – storage of waste generated on site will be temporary and will be transferred by the operator to the licenced municipal waste disposal site on a weekly or twice weekly, however the following principles are outlined the Norms and Standards and would be useful to apply to the temporary storage area:
    - Location of waste storage area should not have a negative impact on public health or environmental
    - Easily accessible and allow for easy handling and transportation
    - Designed under consultation by appropriate professional
    - Liquid waste storage areas must have a firm, impermeable and chemical resistant floor, and roof. Liquid waste container which are not stored under roof should be covered to prevent direct sunlight and rainwater entering the containers
    - Storage area to be suitably bunded. The bund must be capable of storing at least 110 % of the largest tank or 25% of the total storage capacity
    - Suitable access control with appropriate signage in applicable language
    - Free from odour or emissions
    - Sorted
    - Operate within design capacity
    - Prevent disposal by wind, rain, people, or animals, including during loading
    - Appropriate training and PPE must be provided to the applicable person handling the waste area.

Eating areas

Eating areas to be demarcated and adequate refuse bins provided. The Contractor shall provide adequate refuse bins at all such places and ensure that they are used. Bins are to be cleared on a daily basis.

Discharge of construction water

All cement effluent from mixer washings and run-off from batching areas and other work areas shall be contained in suitable sedimentation ponds. Sedimentation ponds which must be suitably lined to prevent contamination of the ground water and shall be allowed to dry on a regular basis to allow for solid material to be removed. The material must be disposed of in a suitable manner, depending on the nature of the material, and to the satisfaction of the ECO / EHSR.

Care must be taken to ensure that no water from the construction site enters sensitive areas.

9.4.16. Maintenance of equipment

Responsibility – Contractor / ECO / EHSR

All mechanical equipment and work vehicles which may be kept on site are to be stored, serviced, and refuelled only at designated areas. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting, are to be used to prevent contamination of the ground in any way.

The ECO / EHSR may order the removal of equipment that is causing continual environmental damage by leaking oil or diesel for example, until such equipment has been repaired.

9.4.17. Storm water management

Responsibility – Contractor / ECO / EHSR

Stormwater management actions, including drainage measures for the construction and relevant method statements, shall be presented to the ECO / EHSR for approval before the start of any works and in line with recommendations by the project team.

The Contractor must take suitable measures to prevent erosion resulting from a diversion, restriction or increase in flow of stormwater caused by the presence of his own works, operations, and activities to the satisfaction of the ECO / EHSR.

Wastewater from activities such as washing tools, batching and similar, will be collected in a drum or suitably sealed container. Uncontaminated water can be re-used for batching or for wetting and compacting sub-base material during road surfacing if required. An impermeable retention area or sump, suitably lined to prevent leaching, may be constructed by the Contractor in order to collect wastewater from batching and tool washing. The retention area must be open to allow for evaporation. Care must be taken to ensure that input does not exceed the evaporation rate and that no overflow from the sump occurs. This is of particular importance during the wet season. Once the sump is dry the remaining material at the bottom of the sump will be disposed of with the general waste and rubble.

Runoff from fuel depots / bunds / workshops / machinery washing areas and water contaminated with petro-chemicals and hydrocarbons must be disposed of at a suitably licenced waste facility which can handle hazardous waste. Disposal certificate must be kept on file.

Water from kitchens, showers, sinks and toilets etc. shall be discharged into a conservancy tank for removal from the site. No wastewater from tool washing, batching, grouting, cleaning, showers, kitchens, or similar sources should be discharged on bare soil, watercourses, coastline etc.

9.4.18. Topsoil removal and stockpiling

Responsibility - Project Manager / Contractor / ECO / EHSR

Where services are to be extended or buildings erected, topsoil is to be removed from the work areas, stockpiled separately from subsoil, and must be stabilised within a day of stockpiling. In general, stockpiles should be convex at the top to promote run-off, so that water is not able to accumulate and result in leaching of nutrients from the soil.

9.4.19. Erosion control

Responsibility - Project Manager / Contractor / ECO / EHSR

Action must be taken to prevent erosion of soils on the construction site. Should any erosion be detected, the cause of such erosion should be identified, and appropriate remedial action must be immediately implemented.

9.4.20. Dust control

Responsibility - Project Manager / Contractor / ECO / EHSR

Dust blow may be experienced during construction activities. Careful attention will be required to dust emissions from the site. Appropriate action must be taken to minimise the generation of dust on the site. This can be done by applying appropriate stabilisation materials, such as straw or mulch or watering of exposed areas. Clearing of vegetation must be applied to immediate construction areas only and phased as required. Monitoring of dust emissions from cement batching areas must be implemented and mitigation applied as required.

9.4.21. Architecture / design

Responsibility - Project Manager / Contractor / ECO / EHSR

An attempt must be made to design and finish off any new buildings in line with the architecture of the area. Cape vernacular styles, avoidance of unsuitable colours for roofs and other finishes. Greys, whites, and beige colour palettes preferable.

9.4.22. Sustainable building guidelines and materials

Responsibility - Project Manager / Contractor / ECO / EHSR

Ensure materials and orientation allow for an environmentally friendly design with lower operating costs, i.e natural ventilation, correct orientation, correct colours, and roofing etc. Use recycled materials as far as possible.

Energy efficiency is also an important consideration, and the following actions should be considered:

- North orientation to ensure that as many well-used spaces face north as possible. Sun control is more difficult on East and West facing windows
- Use of good insulation in the roof and walls to keep the inside temperature warm in winter or cool in summer
- Suitable roof overhangs to let in the lower winter sun but provide shade from the summer sun

- Sensible fenestration – let in the light and catch the winter sun, but not too much window area so that warmth or cool cannot be retained inside when needed. They can be combined with shading and reflecting devices - such as overhangs, screens, shutters, awnings, trees, planting, and different glass types which will aid to control the amount, quality and time of daylight entering the building
- Suitable ventilation for fresh air and cool breezes
- Natural lighting through windows and light wells

Water conservation must be a priority in design. Rainwater tanks are strongly encouraged. Optimally designed systems for grey water reuse should also be explored during the design phase in order to prevent the expense of retrofitting a system. Water wise and indigenous landscaping is also encouraged, as well as permeable paving in areas where paving is required. Low flow shower and heads and dual flushing systems should be fitted. Aerators on taps should also be fitted to reduce overall water demand.

Construction activities such as watering, mixing, and cleaning should avoid water wastage. Dry brushing and trigger spray nozzles should be used.

9.4.23. Site clean up

Responsibility - Project Manager / Contractor / ECO / EHSR

The following actions must be implemented once any construction has been concluded:

- The construction footprint(s) must be restored to the natural contours of the ground and shall allow normal surface drainage, as far as possible
- No foreign matter such as rubble, waste or hazardous materials must be mixed with the topsoil or used to backfill excavation
- All temporary works within the construction footprint, including fences, access, roads etc. disturbed by construction, must be restored to their original condition, as far as practical.
- Compacted soils within the construction footprint must be loosened by means of a plough or scarified to aid revegetation where required
- Runoff and erosion, as a result of construction activities, must be suitably managed to prevent long term impacts
- All structures, equipment, materials, and facilities used or created on site for or during construction activities are removed once the project has been completed
- Vegetation cover (using species appropriate to the local area) in all areas disturbed by the works must be reintroduced, as required
- All materials, vehicles, containers etc. used for construction must be removed from the site as applicable
- Vegetation clearance, earthworks and rehabilitation must carefully consider timing and seasonality as a means to address potential for high wind speeds, rainfall etc.

10. ENVIRONMENTAL MANAGEMENT ON SITE RELATING TO OPERATION

10.1. Activity specific impacts and mitigations

The following activity specific impacts have been identified for the operational phase of Romansbaai Abalone Farm. Mitigation measures are provided, and these are compulsory and must be implemented for all operational phases on the subject property:

10.1.1. Abstraction of seawater

Seawater will be abstracted from the marine environment on a continual basis and circulated through the farm. Intake of water presents a risk for the impingement and entrainment of marine organisms. The following mitigations are recommended:

- Fitting of screens and grids at intake areas
- Regular maintenance and cleaning of screens to prevent build-up of debris and ineffective pumping ratios

10.1.2. Discharge of seawater

a. Effluent water Quality

Seawater is circulated through the farm continuously. Once circulated, the effluent seawater is discharged back to the marine environment via the effluent / discharge channel. It has been found that the water quality of the effluent waters leaving a typical abalone farm operation is not significantly different to the intake water quality (Probyn *et al*., 2014). Regardless, the quality of the effluent water must be monitored on a regular basis to prevent poor quality effluent being discharged back into the marine environment. The following mitigations are proposed:

- Effluent waters must comply with the requirements of the Coastal Waters Discharge Permit (CWDP) and / or General Discharge Authorisation (GDA), including water quality and quantity as specified on the permit. Flow meters or pump capacity must be used to monitor water quantity. Parameters to be monitored and frequency of monitoring, must comply with the CWDP / GDA specifications.
- Effluent waters should be comparable to the intake water in terms of water quality and quantity
- No unauthorised disposal of substances into the effluent seawater is permitted other than what is outlined in the CWDP

- Ensure appropriate management of feeding regime to prevent wasteful and excessive accumulation of feed in tanks which will increase dissolved nutrient levels in effluent water
- Farm management practices must ensure regular cleaning of tanks to prevent excess build-up of particulates in grow-out facilities which could lead to high levels and peaks of particulate outputs during sporadic flushing
- Maintain effluent sump and discharge pipeline and screens in good working order

b. Risk of Poor water quality

Plugs of water of poor quality may be released from day-to-day operations such as tank cleaning, pipe cleaning and basket cleaning. The following mitigations are recommended:

- No foreign solutions to be discarded into the effluent channel except as permitted in the CWDP
- Turbid water from cleaning or discharge of other substances, should be discarded at regulated intervals / slow trickle, to increase the dilution factor and prevent a high dose release or large plug of water
- All solids from cleaning procedures must be removed from the effluent stream and disposed of at a licensed facility as per the agreement with the facility i.e., plastics, biofouling materials etc.
- Slow trickle discharge to be applied for draining of acid bath.

c. Disinfectants

A sodium hypochlorite solution (or similar) will be used in footbaths for biosecurity purposes as well as in the hatchery for tank cleaning and disinfection. The solution is disposed at times, via the effluent channel and this disposal may result in a plume of the solution being discharged to the marine environment. The following actions are recommended:

- Standard Operating Procedures (SOPs)
- Employees should refer to the SOP for the instructions of when and how to drain these areas
- Implement check sheets and supervisor checks
- Provide for stores of disinfectants in the general farm management plan
- Develop contingency plans for accidental spills and have spill kits available on site.

d. Chemicals and hazardous substances

The use of chemicals and hazardous substances such as oils, fuels, grease, hydrochloric acid etc. is required.

- Appropriate chemical stores with Material Safety Data Sheets (MSDS) are required
- Protocols should be in place in the event of leaks and spills and remedial actions outlined for such circumstances

- Where applicable, Standard Operating Procedures (SOPs) must be implemented for use and disposal of these substances
- Refer to specific recommendations in the Waste Pollution, Recycling and Re-Use Management Plan for handling and disposal of chemicals and hazardous substances

The following chemicals are listed for the site:

Table 3: Chemical list for Romansbaai Abalone Farm as of 2024 Environmental Audit

ROMANSBAAI ABALONE FARM CHEMICAL LIST (AUGUST 2022)			
1	Acetic Acid	37	Sodium Hypochlorite 12-15%
2	Acetone	38	Spirits of Salt
3	Battery Water	39	Sunlight Liquid
4	Bleach	40	Thinners
5	Calcium Hydroxide	41	Topax 66
6	Carbon Dioxide	42	Turpentine
7	Diesel	43	Nutrifeed
8	Domestos	44	Thinners
9	Engine Oil	45	Washing Power
10	Ethanol	46	Britesept
11	Ethylene Glycol	47	Briteglo
12	Formaldehyde	48	Britedish
13	Gearbox Oil	49	Anti-Freeze
14	Habot (Multi-Purpose) Grease	50	Habot Oil
15	Hand Sanitizer (Alcogel)	51	Verskillende Verf
16	Handy Andy	52	Fendona
17	Hydrochloric Acid	53	Banweed
18	Hydrofluoric acid	54	Q20
19	Hydrogen Peroxide	55	Rust Converter
20	Magnesium Sulfate	56	Arcal 14
21	Magnesium Sulfate Hydrated	57	Magmix 3
22	Metasillicate	58	Crystal Argon
23	Methylated Spirits	59	Corrosion Block
24	Mono Ammonium Phosphate (Map 39 Fertilizer)	60	Contact Cleaner
25	Monopotassium phosphate (MKP Fertilizer)	61	300 Stahl Chemical Mortar
26	Mr min	62	Briterinal Blocks
27	Oxygen	63	25L 10% Safari White Spirit Vinegar
28	PerleBac Blue hand Soap	64	Calcium Hypochlorite
29	Petrol	65	Weicon Ceramic BL Epoxy Resin 0.5Kg

30	PH buffer - 4	66	Universal Spray-on Grease with MOS2 400ml
31	PH buffer - 7	67	Corro-Protection 400ml
32	Pine Gel	68	Zinc Spray Bright Grade 400ml
33	Power steering Fluid	69	Electro Contact Cleaner 400ml
34	PVC Glue	70	Anti-Seize High-Tech Assembly Paste 120g
35	Sodium Hydroxide	71	Cleaner Spray S 500ml
36	Sodium Hydroxide Solution	72	Rust Shock 400ml
		73	W44T Multi-Spray 500ml

e. Foreign items in effluent water

The constant discharge of effluent water may result in foreign items and solids being discharged back to the sea such as litter, chemicals etc. The following mitigations are recommended:

- Screens must be placed on effluent channels at varied intervals, to catch escaped abalone and foreign items such as litter, tags etc.
- Effluent channels on the farm should be covered, where possible, to prevent windblown litter being swept into the channels, but still accessible to service as required
- In the absence of solid covers for the effluent channels, the use of a suitable mesh or netting should be attached to semi solid walkways to catch debris
- Educate employees as to best practice for waste management
- Place rubbish bins at key areas on the farm
- Periodic beach clean-ups adjacent to the farm
- Implement catch pits for basket cleaning areas to catch pieces of plastics from baskets and cable ties and other solids before the seawater enters the effluent stream

f. Location of effluent channel

The existing effluent channel leaves the abalone farm and crosses coastal public property, this may result in nuisances for the general public such as aesthetics, smell, congregation of seabirds and public liability. The following management and mitigation measures are recommended:

- Implement regular checks on the effluent channel sections which are not located on the farm itself
- Clean the channel and immediate surrounds as required
- Maintain channel for aesthetic purposes (as applicable)

10.1.3. Disease

Effluent waters present the risk of transferring disease from the cultured abalone stock to the marine environment and wild stocks. The following management and mitigation measures are proposed:

- Develop a Biosecurity and Disease / Health Management Plan
- Develop a monitoring programme to monitor abalone health, water quality, disease, and pathogens within facilities
- Report any disease outbreaks to the relevant bodies / authorities

- Stringent monitoring of effluent waters must be undertaken in accordance with permit requirements and a SOP if applicable
- The grow-out platforms must have effective barriers to prevent potential disease transfer vectors from accessing holding tanks and wastewater sources (e.g., birds)

10.1.4. Genetic impacts and escapees

Aquaculture species are selected for favourable production characteristics and as limited broodstock numbers are used; the genetic profile of farmed species may differ from that of wild populations. The following management and mitigation measures are proposed:

- Develop and implement a Biosecurity and Disease / Health Management Plan
- In order to minimise negative genetic impacts, broodstock and grow-out organisms should originate from the same genetic stock as the wild populations adjacent to the facility
- Effluent streams post hatchery spawning should be sterilised prior to release, as applicable
- Where selected breeding and genetic enhancement is practised, it should be undertaken as part of a well-managed and organised Genetic Programme to ensure sufficient diversity is maintained within the broodstock pool
- All broodstock and spawning to be undertaken in line with DFFE Hatchery Permit requirements
- Records to be maintained on broodstock origin and spawning
- Regular inspection of effluent channels to remove escapees
- Implement means to reduce / eliminate escaped abalone

10.1.5. Feeding and feed source

The majority of feed used, should be derived from sustainable raw material sources where available and economically feasible, specifically relating to the fishmeal content. Where possible, the operator should use a feed with a low Forage Fish Efficiency Ratio (FFER). The use of drugs / therapeutants in feed must be avoided.

10.1.6. Waste

Waste will be generated during operations. It is recommended that a site-specific Waste Pollution, Recycling and Re-Use Management Plan is developed once the farm is operational to cover day to day operations. This report outlines the company's actions required and operating procedures relating to waste management and should be referred to for all waste management aspects during operations.

Waste generation on site can be split into the following categories:

1. General waste
2. Biological / Organic waste
3. Hazardous waste

Given the proximity of the operation to the sea as well as the continuous discharge of effluent seawater back to the marine environment, the risk of waste entering the marine environment is high. The following recommendations are made, and should be elaborated on in a site-specific Waste Management Plan:

- Reduction, reuse, and recycling is encouraged. Waste sorting at the source is recommended to achieve this
- Recyclable and reusable materials generated on site include HDPE, PVC, cable ties, old baskets etc. Operators to accept this waste should be determined
- General waste is collected on a weekly basis as part of the municipal waste collection. General waste should be free of reusable and recyclable materials as far as possible
- Mass mortalities must immediately be frozen and disposed at the Municipal Landfill Site in line with the agreement with the operator
- Other mortalities occurring within the limits of daily operational practice, must be frozen, transferred to onsite mortality pit and lime treated.
- No dead abalone should be disposed of into the effluent channel or marine environment
- Waste storage areas on site must be designated and water and weatherproof, with separate disposal bins for different types of waste (recyclable (paper, glass, tin, metal etc.).
- Staff to be briefed on the waste disposal actions required on site and importance of not allowing any solid waste to enter the effluent channels.

The following principles are outlined in the National Norms and Standards for Storage of Waste (National Environmental Management: Waste Act (Act 59 of 2008) (GN 926 of 29 November 2019)) and should be applied to the temporary storage areas located on-site:

- Location of waste storage area should not have a negative impact on public health or environment
- Easily accessible and allow for easy handling and transportation
- Designed under consultation by appropriate professional (i.e., the Waste, Pollution, Recycling and Re-Use Management Plan)
- Liquid waste storage areas must have a firm, impermeable and chemical resistant floor, and roof. Liquid waste containers which are not stored under roof should be covered to prevent direct sunlight and rainwater entering the containers
- Storage area to be suitably bunded. The bund must be capable of storing at least 110 % of the largest tank or 25 % of the total storage capacity
- Suitable access control with appropriate signage in applicable language
- Free from odour or emissions
- Sorted at the source
- Operate within design capacity
- Prevent disposal by wind, rain, people, or animals, including during loading

- Appropriate training and PPE must be provided to the applicable person handling the waste area.

10.1.7. Maintenance management

a. Servicing of machinery and equipment

Servicing and maintenance of equipment, machinery, pumps, and other infrastructure in the pumphouse, below the high-water mark or in close proximity thereof, is required on a regular basis. These actions may result in contamination of the marine environment with hydrocarbons or other substances required in this area. The following mitigations and management actions are proposed:

- Limit personnel permitted in sensitive zones and demarcate no go areas as required
- Utilise drip trays / impermeable sheeting for service areas
- No contaminated water or soils should be discarded to the marine environment
- Water soluble / food grade oils and hydrocarbons should be used where possible
- Ensure work conducted in these sensitive areas is checked by the ECO / EHSR on a regular basis and remedial actions and contingency plans are implemented as required

b. Cleaning of baskets and pipelines

Pipelines require regular cleaning to ensure optimal abstraction rates and pumping through the farm. This results in the generation of organic waste such as mussels and limpets. This waste must not be flushed out with the effluent waters but rather collected, bagged, and transferred to the appropriate landfill site in line with the operator's specifications and as per SOP / Waste Management Plan.

Abalone grow out baskets require regular cleaning which results in the risk of discharging pieces of plastic, basket tags and cable ties with the effluent water. In addition, an acid solution is used to clean the baskets and remove the *Spirorbis* accumulation. Designated wash bay areas should be implemented with catch pit traps to prevent accidental discharge of solid waste. In addition, it is recommended that a slow trickle discharge is implemented for the disposal of the acid solution, in order to prevent a plug of solution being discharged to the marine environment.

10.1.8. Operations within 100 m of the High-Water Mark

Some infrastructure associated with the operation of the abalone farm is located within 100 m of the high-water mark (HWM). The following management actions should be applied:

- Limited access to sensitive zones in close proximity to the high-water mark must be implemented
- Drip trays, impermeable sheeting and bunding utilised
- No contaminated water shall be discarded to the marine environment
- Limit or remove refuse areas in high-risk zones close to the HWM and ensure that refuse areas are secure, weather and waterproof
- Water soluble / food grade oils and hydrocarbons should be used where possible
- The ECO / EHSR should conduct regular checks of sensitive and high-risk areas particularly after significant maintenance operations, high winds, storm surges etc.
- The ECO / EHSR should brief maintenance and operation teams that work in sensitive areas, on a regular basis to ensure staff are aware of the environmental requirements of operations in sensitive areas close to and below the HWM

10.1.9. Climate change

The activity needs to operate within the high-risk zone and is therefore at risk of impacts relating to climate change such as storm surges and sea level rise. Risks to infrastructure and investment are therefore present.

- No additional infrastructure permitted within 100 m from the high-water mark
- Storage of fuels and chemicals should be limited and as far from the high-water mark as possible

10.1.10. Noise

Typical noise impacts as a result of day-to-day operations are experienced. This may result in disturbances to surrounding landowners, companies, and employees. The following should be applied:

- Ensure noisy activities take place in line with municipal bylaw
- Ensure silencers are fitted to noisy machinery
- Machinery to be kept in good working order
- Generators to be placed in generator rooms to dampen the sound
- Appropriate ear protection to be used by staff when entering high noise environments

10.1.11. Visual

Typical visual impacts associated with the operation of the abalone farm, are present. Mitigation measures must be applied as far as possible”

- Use infrared technology or movement sensors for perimeter security, to minimize the effect of ambient lighting at night on the rural surroundings
- Keep general outdoor lighting as unobtrusive as possible through use of low-level bollard type lights, where needed, such as parking areas and footpaths
- Use discrete external signage and avoid commercial advertising or billboard-type signs
- Fix signs to buildings or walls, if possible, to avoid the visual clutter of signposts

- Ensure infrastructure and buildings are maintained on a regular basis (i.e., gardens are tidy, lawns are cut, Buildings are painted, refuse areas are secured and tidy etc.
- Ensure any on site storage is kept tidy and secured to prevent spread by wind or rain
- Keep artificial lighting to a minimum
- Encourage good housekeeping to ensure daily operations result in a well-kept site
- Restrict operational activities to development area only
- Indigenous trees can be planted to screen the activities

10.1.12. Job creation and skills transfer

Permanent and temporary jobs are created as a result of the operation. Opportunity for adult education and skills transfer is present. Educational opportunities for all levels of staff should be encouraged. In addition, employees should be sourced locally as far as possible, in order to benefit the local economy. The use of local service providers and professionals should also be implemented where possible.

10.1.13. Botanical and Ecological

***2009 EA**:*

- The high sensitivity limestone outcrop should not be impacted upon by any new infrastructure and a minimum of 10 m buffer of natural vegetation around it must be drawn into all plans and taken into account on the ground.
- All Milkwood's to be avoided as far as possible, or necessary permitting applied for removal or trimming
- Search and rescue required in the grow out area before construction, with suitable horticulturist
- An adequate ecological corridor of natural vegetation must be maintained between the eastern and western parts of the site along the northern boundary. The corridor should be at least 40 m wide at the narrowest part
- Invasive alien vegetation must be cleared from the property and alien vegetation management must be ongoing
- Pipelines to be excavated with minimum disturbance to surrounding area

Risks include the loss of ecological connectivity and species movement across and off the site, loss of ability for natural fires, risk of alien vegetation due to landscaping and poor management. The following mitigations are required:

- Operational activities must not impact ecological corridors, or the remainder of the site and these areas must be declared No Go areas
- No stockpiling or storage (temporary or long term) is permitted in these areas
- Landscaping around infrastructure and buildings should comprise of indigenous vegetation only

- Targets for alien vegetation clearing must be met. Ecological corridors and the remainder should be inspected on a regular basis for any disturbances relating to the operation of the abalone farm.

2025 EA:

- Any approved development footprints should be clearly demarcated on site prior to any development. No disturbance of natural vegetation outside of these demarcated areas should be allowed, either during construction or thereafter.
- All listed invasive alien plant species should be removed from the site within one year of any project authorisation, using approved methodology (see Martens et al 2021). The main invasive species are rooikrans (Acacia cyclops) and manitoka (Myoporum serratum and M tenuifolium).
- Search and Rescue of all translocatable bulbs (geophytes) should be undertaken from the approved development footprints for Phases 1 & 2 and the new dam prior to construction. This should be done at the end of the flowering season for the relevant species (ranges from April to October). Material should be translocated to other parts of the property where it will not be disturbed in future, and which is ecologically similar.
- No large-scale soil disturbance or site clearing should happen in the proposed PV area, and instead vegetation can be trimmed to a maximum height of 1m, maintaining the bulk of the plant cover, whilst allowing for the solar panels to be positioned at a minimum of 1m above ground level. If the vegetation grows above the panels it may be trimmed on a regular basis, as needed, but should never be cut below 300mm above the ground. Cut material can be used as mulch to stabilise and cover any loose sand nearby
- As outlined under Appendix L – the proposed Alien vegetation plan for Brown Dog Plan must be included as a condition of Environmental Authorisation. Area to be cleared – 8 hectares Agulhas Sand Fynbos (critically endangered) on Brown Dog Farm. This is a strategic priority in terms of alien invasive species control in the Walker Bay Fynbos Conservancy. The conservation servitude on the property provides a crucial corridor for ecological functioning in the Walker Bay Protected Environment. The property owner together with the Walker Bay Fynbos Conservancy and Grootbos Foundation has invested significant resources in the restoration of this site.
    - The eight hectares earmarked for this offset funding is protected through a conservation servitude in favour of Fauna and Flora (www.fauna-flora.org) and managed by Grootbos Foundation - ensuring its long-term protection and sound management. The site was burnt in a management burn 18 months ago and it is vital that the post-fire regrowth be removed before seeding.
    - Costs: R32 000 per hectare including initial clean and two follow up sweeps through the site. Total cost of project: R256 000. The project will be implemented by one of the local qualified Green Stewards teams and will be administered and managed by the Grootbos Foundation.
    - The trigger for the above action is one month prior to construction of the 0.8 ha seawater reservoir on Romansbaai Abalone Farm.

10.1.14. Archaeological

2009 EA:

- Realignment of access road to avoid Midden 1
- Water storage tank located to be discussed with archaeologist
- Mariculture location to be discussed with archaeologist
- Excavated rock and shingle from installation of pipeline must be undertaken in consultation with archaeologists to avoid disturbance of Midden 3
- When excavating, works must be stopped in the event that dense shell middens are exposed

2026 EA:

- No archaeological mitigation is required prior to construction phase excavations commencing.
- Vegetation clearing and Construction Phase excavations must be monitored by a professional archaeologist.
- If any human remains are uncovered or exposed during excavations, work must stop, and the finds reported to the Environmental Control Officer and the contracted archaeologist (Jonathan Kaplan 082 321 0172). Human remains must not be removed or disturbed until inspected by the archaeologist.
- A protocol for finds of buried fossil bones, the Fossil Finds Procedure (FFP), must be included in the Environmental Management Plan (EMP) for the proposed development. The Fossil Finds Procedure provides guidelines to be followed in the event of fossil bone finds in the excavations.
- Regarding the Cultural and Heritage Landscape, `no mitigation measures are deemed necessary' (Lategan 2024).

Daily operations pose a risk to the identified archaeological sites. The archaeological sites identified during the EIA and cordoned off, must be inspected on a regular basis to ensure that they are not disturbed. Staff should be made aware of these areas. Archaeological areas on the property and in close proximity to the operational area have been flagged for conservation. These are demarcated and no-go areas. Care must be taken to ensure that these sites do not get disturbed and that the fencing is visible and intact at all times. As per the original Construction Management Plan dated December 2008, the shell midden at risk of operations is located at 34°36'3.95"S; 19°20'6.13"E.

10.1.15. Marine Impact

The following impacts associated with the operation of an aquaculture facility and subsequent mitigation measures, must be implemented during the operational phase:

a. Discharge of effluent water causing eutrophication and elevated total suspended solids

- Adhere to requirements of Coastal Waters Discharge Permit (CWDP) / General Discharge Authorisation (GDA)
- Monitor effluent water quality leaving the facility and ensure it complies with relevant aquaculture guidelines (AAD 2010)

- Parameters to be monitored and frequency of monitoring to comply with the CWDP specifications.
- Ensure appropriate management of feeding regime to prevent wasteful and excessive accumulation of feed in tanks which will increase dissolved nutrient levels in effluent water.
- Farm management practices must ensure regular cleaning of tanks to prevent excess build-up of particulates in grow-out facilities which would lead to high levels or peaks of particulate outputs during sporadic flushing
- Maintain effluent sump and discharge pipeline and screens in good working order.

b. Water abstraction causing impingement and entrainment.

- Design features to reduce the intake velocity and sucking force
- Regular cleaning of the screens will prevent build-up of debris and possible negative effects on the intake of water

c. Genetic impacts on wild stock from escapes

- In order to minimise negative genetic impacts, broodstock and grow-out organisms should originate from the same genetic stock as the wild populations adjacent to the facility
- Permit conditions issued by DFFE must be implemented relating to operation of the Hatchery, keeping of Broodstock and genetic requirements.

d. Disease transfer to wild stocks

- Effluent streams post hatchery spawning should be sterilised with bleach prior to release or as recommended in the applicable DFFE permit
- Inbreeding should be minimized and managed through the application of a Selective Breeding Program
- All broodstock and spawning to be undertaken in line with DFFE Hatchery Permit requirements
- Records to be maintained on broodstock origin and spawning
- Regular inspection of effluent channels to remove escapees – implement Escapee Register
- Develop a Biosecurity and Disease / Health Management Plan
- Develop a monitoring programme to monitor abalone health, water quality, disease, and pathogens within facilities
- Report any disease outbreaks to the relevant bodies / authorities as indicated in the relevant DFFE permit
- Stringent monitoring of effluent waters must be undertaken
- The grow-out platforms must have effective barriers to prevent potential disease transfer vectors from accessing holding tanks and wastewater sources (e.g., birds)

e. Disturbance to marine habitats during operational maintenance

- Undertake regular tank cleaning to prevent large scale build-up of organic material
- Undertake regular maintenance on pipelines

- Periodic draining of effluent sump and removal of sludge

f. General pollution entering the marine environment

- Fit rubbish collection screens on open effluent canals
- Regular rubbish collections for screens and boundary fences
- Educate employees as to best practice for waste management
- Placement of rubbish bins at key areas on the farm
- Periodic beach clean-ups adjacent to the farm.

g. Impact of harmful chemicals on marine biota

- Develop Biosecurity and Health Management Plan which outlines protocols for storage and use of antibiotics, disinfectants, and other treatments
- Provide for the storage and use of hydrocarbon fuels and oils in the general farm management plan
- Develop contingency plans for accidental spills and have spill kits available on site

Further mitigations must also be applied to the operational phase:

- Grids are placed on suction / intake lines, generally it has been found that animals avoid the intake area as they detect the suction of water
- Grids and screens to be inspected on a regular basis to check integrity of the screens
- Screens to be placed on effluent channel to prevent this
- Screens to be regularly emptied and inspected
- Ensure maintenance activities are sensitive and remain in impacted areas
- Screens on effluent channels located on the farm itself, must prevent escape of larger animals
- Implement appropriate hatchery protocol and SOPs to ensure effluent lines around the hatchery is cleaned on a regular basis to remove any possible escaped spat
- Water quality monitoring for suspended solids, temperature, dissolved oxygen, nutrients, and pH in must be implemented on a regular basis as indicated in the applicable DFFE permit requirements
- Monitor and audit conditions as outlined in the Coastal Waters Discharge Permit (CWDP) / GDA, EA, EMP's and all other applicable permits

10.1.16. Lease agreements

A lease agreement is required for the infrastructure located within coastal public property in terms of The Sea Shore Act, 1935 (Act 21 of 1935). This is facilitated through Cape Nature. There is an existing lease agreement with Cape Nature which Romansbaai pays on a monthly basis.

Table 4. Activity specific impacts and mitigations summary (2009)

IMPACT	DESCRIPTION	MITIGATION	MONITORING	RESPONSIBILITY
Intake and discharge of seawater	- Water is abstracted from the sea, circulated on the farm, and discharged back to the sea - Infrastructure will require maintenance from time to time which may result in impacts in the coastal zone **Intake:** - Risk associated with intake of water include impingement of marine organisms **Discharge:** - Effluent water to adhere to requirements indicated in the Coastal Waters Discharge Permit (CWDP) - Risk of foreign objects being discharged (i.e., small pieces of litter), risk of disease, risk of escape of farmed abalone, particularly spat, risk of poor water quality of discharged water - Servicing of pumps in the pumphouse will be required from time to time – risk of oils and fuel spills - Water channels will need to be cleaned to remove biofouling materials - Genetic impacts – Aquaculture species are selected for favourable	- Inspection of intake and discharge areas - Screens must be placed on intake and effluent channels at varied intervals, to catch animals and litter - Open channels on the farm should be covered well, to prevent windblown litter being swept into the channels, but still accessible to service as required - Ensure appropriate management of feeding regime to prevent wasteful and excessive accumulation of feed in tanks which will increase dissolved nutrient levels in effluent water - Farm management practices must ensure regular cleaning of tanks to prevent excess build-up of particulates in grow-out facilities which could lead to high levels and peaks of particulate outputs during sporadic flushing - Large volumes of water are pumped on a continuous basis meaning that the difference between the incoming and effluent water is negligible - When servicing pumps – ensure drip trays are used as required, ensure no contaminated water is discharged - Effluent water quality to comply with conditions of the Coastal Waters Discharge Permit (CWDP) / GDA Conditions	- Conduct water quality analysis by an independent service provider (Al Abbott / Amanzi Biosecurity). Analysis must include ammonia, suspended solids, nitrite, and nitrate – applied to incoming and effluent water or as indicated in the CWDP - Conduct water quality tests for *E.coli* and coliforms (Meriuex NutriSciences) – applied to incoming and effluent water as required - In house monitoring on a daily basis of temperature, pH, dissolved oxygen - Comply with conditions of Coastal Water Discharge Permit / GDA (including measurement of amount of water discharged (m^3 / hr) to ensure compliance with quantities permitted - Implement SOPs for the various actions required	Management / EHSR / ECO

	production characteristics and as limited broodstock numbers are used, the genetic profile of farmed species may differ from that of wild populations	- Develop SOPS for draining cleaning areas and acid baths - Develop and implement Hygiene Manuals - Develop Contingency plans for accidental spills and abnormal occurrences - Develop a Biosecurity and Health Management Plan	- Implement Biosecurity and Health Management Plan	
Ecological / Botanical	Loss of ecological connectivity and species movement across and off the site, loss of ability for natural fires, risk of alien vegetation due to landscaping and poor management	- Operational activities should not impact the coastal zone, ecological corridors or the remainder of the site and these areas should be declared No Go areas. - No stockpiling or storage (temporary or long term) is permitted in these areas - Landscaping around infrastructure and buildings should comprise of indigenous vegetation only - Conservation of remainder to be implemented	- Targets for alien vegetation clearing must be met - Ecological corridors and the remainder must be inspected on a regular basis for any disturbances relating to the operation of the abalone farm	Management / EHSR / ECO
Climate change – infrastructure and operations in High-risk zone	Risk to infrastructure and investment due to storm surges, sea level rise, coastal erosion etc.	- No additional infrastructure is permitted within 100 m from the high-water mark - Storage of fuels and chemicals in the southern node must be limited and as far from the high-water mark as possible	- Monitor operations in close proximity to the high-water mark - Monitor sea and storm patterns	Management / EHSR / ECO
Noise	Typical Noise impacts associated with the operation of ab abalone farm Risk – disturbance to surrounding landowners and employees	- Ensure noisy activities take place in line with municipal bylaw - Ensure silencers are fitted to noisy machinery - Machinery to be kept in good working order - Generators to be located in generator rooms to dampen the sound	- Monitor operations	Management / EHSR / ECO
Visual	Typical Visual impacts associated with the operational phase	- Use infrared technology or movement sensors for perimeter security, to minimize the effect of ambient lighting at night on the rural surroundings	- Monitor operations - Ensure that visual mitigation measures are monitored by management on an on-going	Management / EHSR / ECO

	Risk – visual impact of operation on the rural landscape	- Keep general outdoor lighting as unobtrusive as possible through use of low-level bollard type lights, where needed, such as parking areas and footpaths. - Use discrete external signage and avoid commercial advertising or billboard-type signs - Fix signs to buildings or walls, if possible, to avoid the visual clutter of signposts - Ensure infrastructure and buildings are maintained on a regular basis (i.e., gardens are tidy, lawns are cut, buildings are painted, refuse areas are secured and tidy etc). - Ensure any on site storage is kept tidy and secured to prevent spread by wind or rain - Keep artificial lighting to a minimum - Encourage good housekeeping to ensure daily operations result in a well-kept site - Restrict operational activities to development area only - Indigenous trees can be planted to screen the activities	basis, including the control of signage, lighting, and wastes on the site, with interim inspections by a delegated ECO	
Job creation	Job creation and skills transfer during operation Risk – labour not sourced locally, therefore local benefit and skills transfer is limited	- Ensure labour and contractors are sourced locally as far as possible - Encourage educational opportunities to employees	- Ensure employees are sourced locally as far as possible by checking staff appointments - Encourage the use of local service providers as far as possible	Management
Archaeological	Risk to identified sites during operations, impact to new sites will be limited as the operational area will be established	- Buffer zones to flagged archaeological sites are to be maintained throughout operations - Only existing roads should be used	- Monitor buffer zones - Report any new archaeological material uncovered	Management / EHSR / ECO

Marine and Coastal Impact	Discharge of effluent water causing eutrophication and elevated total suspended solids.	- The project must comply with the requirements of the General Discharge Authorisation (GDA). - Effluent water quality leaving the facility must be monitored regularly to ensure compliance with relevant aquaculture guidelines and GDA requirements - Specific parameters for water quality monitoring and the frequency of monitoring must adhere to GDA specifications. - Farm management practices should be designed to avoid excessive accumulation of feed in tanks, thereby preventing high levels of dissolved nutrients in the effluent water. - Regular cleaning of tanks must be carried out to prevent the accumulation of particulates in the grow-out facilities, thus avoiding spikes in particulate outputs during sporadic flushing events. - The effluent sump, discharge pipeline, and screens must be maintained in good working order to ensure effective effluent management.	- Monitor water quality as required in applicable DFFE Permit	Management / EHSR / ECO
	abstraction causing impingement and entrainment.	- Regular cleaning of the screens will prevent build-up of debris which will reduce the surface area for water to pass through thereby increasing suction force.	- Draft SOP for use and maintenance of screens, strainers etc	Management / appointed ECO / EHSR
	Genetic impacts on wild stock from escapes	- Develop a Biosecurity Management Plan for the abalone facility - In order to minimise negative genetic impacts, broodstock and grow-out organisms should originate from the same genetic stock as the wild populations adjacent to the facility	- Implement Biosecurity and Health Management Plan - Implement / join Genetics Program	Management / EHSR / ECO

Disease transfer to wild stocks	- Effluent streams post hatchery spawning should be sterilised with bleach prior to release / as required in applicable DFFE permit - Inbreeding should be minimized and managed through the application of a Selective Breeding Program. - All broodstock and spawning to be undertaken in line with DFFE Hatchery Permit requirements - Records to be maintained on broodstock origin and spawning - Regular inspection of effluent channels to remove escapees - Develop a Biosecurity and Disease/Health Management Plan - Develop a monitoring programme to monitor abalone health, water quality, disease, and pathogens within facilities - Report any disease outbreaks to the relevant bodies / authorities - Stringent monitoring of effluent waters must be undertaken - The grow-out platforms must have effective barriers to prevent potential disease transfer vectors from accessing holding tanks and wastewater sources (e.g., birds)	- Implement Biosecurity and Health Management Plan - Implement / join Genetics Program - Adhere to conditions outlined in the applicable DFFE operational permit - Implement SOP for inspection of channels as well as Escapee register - Implement conditions of the Abalone Health Management Procedures document	Management / appointed ECO / EHSR
Disturbance to marine habitats during operational maintenance	- Undertake regular tank cleaning to prevent large scale build-up of organic material - Undertake regular maintenance on pipelines - Periodic draining of effluent sump and removal of sludge	- Implement SOP for procedures	Management / appointed ECO / EHSR

	Operational Impact 6: pollution entering the marine environment	- Fit rubbish collection screens on open effluent canals. - Regular rubbish collections for screens and boundary fences. - Educate employees as to best practice for waste management - Placement of rubbish bins at key areas on the farm - Periodic beach clean-ups adjacent to the farm	Implement site specific Waste Management Plan and applicable SOP's	Management / appointed ECO / EHSR
	Impact of harmful chemicals on marine biota	- Develop Biosecurity and Health Management Plan which outlines protocols for storage and use of antibiotics, disinfectants, and other treatments. - Provide for the storage and use of hydrocarbon fuels and oils in the general farm management plan - Develop contingency plans for accidental spills and have spill kits available on site.	- SOPs required for use and application of chemicals - Waste Management Plan to include actions required for disposal of chemicals - Contingency plans to be implemented for accidental spills	Management / appointed ECO / EHSR
Marine Impact	Fish and marine fauna may become trapped against the intake lines (impingement and entrainment)	- Grids and screens to be inspected on a regular basis to check integrity of the screens	- Add to Maintenance schedule	Management / appointed ECO / EHSR
	Risk of foreign objects and litter from the farm entering the marine environment through the effluent channel	- Screens to be placed on effluent channel - Screens to be regularly emptied and inspected	- Add to Maintenance schedule	Management / appointed ECO / EHSR
	Maintenance requirements may result in additional disturbance to the intake and discharge zones	- Ensure maintenance activities are sensitive and remain within the immediate channel zone - Mitigation measures recommended here and, in the Construction, and Operational Management Plans must also apply to maintenance works	- Add to Maintenance schedule	Management / appointed ECO / EHSR
	Risk of escape of abalone spat and larger animals from the farm	- Screens on effluent channels prevent escape of larger animals	- Add to Maintenance schedule - Implement Escapee Manual	Management / appointed ECO / EHSR

		- Hatchery protocol to ensure effluent line around hatchery is cleaned on a regular basis to remove any possible escaped spat		
	Risk to farm infrastructure due to sea level rise and storm events	- Only activities essential to the use of seawater and management thereof should be located below the setback line	- Implement no go areas	Management / appointed ECO / EHSR
	Water quality of effluent water	- Water quality monitoring for suspended solids, temperature, dissolved oxygen, nutrients, and pH in should be implemented on a regular basis - Monitor and audit conditions as outlined in the Coastal Waters Discharge Permit (CWDP) / General Discharge Authorisation (GDA)	- Water quality analysis required as per DEFF operational permits	Management / appointed ECO / EHSR

Table 5. Activity specific impacts and mitigations summary for the proposed expansion (2025)

IMPACT	DESCRIPTION	MITIGATION	MONITORING	RESPONSIBILITY
Increased Intake and discharge of seawater	- Water is abstracted from the sea, circulated on the farm, and discharged back to the sea - Infrastructure will require maintenance from time to time which may result in impacts in the coastal zone **Intake:** - Risk associated with intake of water include impingement of marine organisms **Discharge:**	- Inspection of intake and discharge areas - Screens must be placed on intake and effluent channels at varied intervals, to catch animals and litter - Open channels on the farm should be covered well, to prevent windblown litter being swept into the channels, but still accessible to service as required - Ensure appropriate management of feeding	- Conduct water quality analysis by an independent service provider (Al Abbott / Amanzi Biosecurity). Analysis must include ammonia, suspended solids, nitrite, and nitrate – applied to incoming and effluent water or as indicated in the CWDP - Conduct water quality tests for *E.coli* and coliforms (Meriuex NutriSciences) –	Management/ECO/EHSR/

	- Effluent water to adhere to requirements indicated in the Coastal Waters Discharge Permit (CWDP) - Risk of foreign objects being discharged (i.e., small pieces of litter), risk of disease, risk of escape of farmed abalone, particularly spat, risk of poor water quality of discharged water - Servicing of pumps in the pumphouse will be required from time to time – risk of oils and fuel spills - Water channels will need to be cleaned to remove biofouling materials - Genetic impacts – Aquaculture species are selected for favourable production characteristics and as limited broodstock numbers are used, the genetic profile of farmed species may differ from that of wild populations	regime to prevent wasteful and excessive accumulation of feed in tanks which will increase dissolved nutrient levels in effluent water - Farm management practices must ensure regular cleaning of tanks to prevent excess build-up of particulates in grow-out facilities which could lead to high levels and peaks of particulate outputs during sporadic flushing - Large volumes of water are pumped on a continuous basis meaning that the difference between the incoming and effluent water is negligible - When servicing pumps – ensure drip trays are used as required, ensure no contaminated water is discharged - Effluent water quality to comply with conditions of the Coastal Waters Discharge Permit (CWDP) / GDA Conditions - Cultivate marine algae in paddle ponds downstream	applied to incoming and effluent water as required - In house monitoring on a daily basis of temperature, pH, dissolved oxygen - Comply with conditions of Coastal Water Discharge Permit / GDA (including measurement of amount of water discharged (m^3 / hr) to ensure compliance with quantities permitted - Implement SOPs for the various actions required - Implement Biosecurity and Health Management Plan	

		of grow-out facilities to contribute to bioremediation of the effluent stream prior to release. - Maintain effluent sump and discharge pipeline and screens in good working order - Develop SOPS for draining cleaning areas and acid baths - Develop and implement Hygiene Manuals - Develop Contingency plans for accidental spills and abnormal occurrences - Develop a Biosecurity and Health Management Plan		
Vegetation Removal/Ecological/Botanical	- Removal of the Overberg Dune Strandveld (En) on the Northwest of the site, which includes the CBA area of terrestrial during the construction phase for the installation of the solar arrays, construction of the production area (phase 1 and phase 2), seawater reservoir. - Loss of endangered species of vegetation including the section of the CBA.	- Any approved development footprints should be clearly demarcated on site prior to any development. No disturbance of natural vegetation outside of these demarcated areas should be allowed, either during construction or thereafter. - All listed invasive alien plant species should be removed from the site within one year of any project authorisation, using approved methodology (see	- ECO must ensure demarcation of the proposed development areas prior construction	ECO/EHSR

		Martens *et al* 2021). The main invasive species are rooikrans (*Acacia cyclops)* and manitoka (*Myoporum serratum* and *M tenuifolium*). - Search and Rescue of all translocatable bulbs (geophytes) should be undertaken from the approved development footprints for production area of grow-out tanks and the new dam prior to construction. This should be done at the end of the flowering season for the relevant species (ranges from April to October). Material should be translocated to other parts of the property where it will not be disturbed in future, and which is ecologically similar. - No large-scale soil disturbance or site clearing should happen in the proposed PV area, and instead vegetation can be trimmed to a maximum height of 1m, maintaining the bulk of the plant cover, whilst allowing for the solar panels to be positioned at a minimum of 1m above		

		ground level. If the vegetation grows above the panels it may be trimmed on a regular basis, as needed, but should never be cut below 300mm above the ground. Cut material can be used as mulch to stabilise and cover any loose sand nearby. - As outlined under Appendix L – the proposed Alien vegetation plan for Brown Dog Plan must be included as a condition of Environmental Authorisation. Area to be cleared – 8 hectares Agulhas Sand Fynbos (critically endangered) on Brown Dog Farm. This is a strategic priority in terms of alien invasive species control in the Walker Bay Fynbos Conservancy. The conservation servitude on the property provides a crucial corridor for ecological functioning in the Walker Bay Protected Environment. The property owner together with the Walker Bay Fynbos Conservancy and Grootbos Foundation has invested significant resources in the		

		restoration of this site. The eight hectares earmarked for this offset funding is protected through a conservation servitude in favour of Fauna and Flora (www.fauna-flora.org) and managed by Grootbos Foundation - ensuring its long-term protection and sound management. The site was burnt in a management burn 18 months ago and it is vital that the post-fire regrowth be removed before seeding. Costs: R32 000 per hectare including initial clean and two follow up sweeps through the site. Total cost of project: R256 000. The project will be implemented by one of the local qualified Green Stewards teams and will be administered and managed by the Grootbos Foundation. - The trigger for the above action is one month prior to construction of the 0.8 ha seawater reservoir on Romansbaai Abalone Farm.		
Visual Impact	- Visual impact of the construction activities	- Locate large structures in low-lying positions of the site, where possible, and minimize earthworks and	- Monitor operations	Management/ECO/EHSR

		disturbance to the site by taking the topography into account - Locate the solar PV arrays in a low-lying area, off any dune ridges, and in sympathy with the topography. - Locate the construction camp and related storage/stockpile areas in visually unobtrusive positions on the site, where these are not visible from the beach -		
Blasting of a bedrock	- Blasting of bedrock is required along the high-water mark for the expansion of the pumphouse.	- A survey should be done of the proposed line prior to blasting (and construction) and any sedentary animals should be removed from the site. To be repeated as required - Nonexplosive rock breaking explosive (Nonex) to be used to avoid impacting any potential nearby marine mammals, sharks and fish - Undertake visual observation / pre-blast survey prior to blasting to ensure there are no marine	- Monitor operations - Demarcate the area before blasting to minimise impact.	Management/ECO/EHSR

		mammals and flocks of diving seabirds present in the immediate vicinity (500 m radius) of the construction area		
Archaeological impacts	- Potentially important shell midden deposited (in the proposed intake pipeline), and Later Stone Age campsite may be uncovered during vegetation clearing operations, and construction phase excavations, including cut and fill, landscaping, and shaping of the dune profile.	- Vegetation clearing and Construction Phase excavations must be monitored. - Vegetation clearance in foredunes to be monitored by archaeologist – shovel testing may be required if sites are found - If any human remains are uncovered or exposed during excavations, work must stop, and the finds reported to the Environmental Control Officer and the contracted archaeologist (Jonathan Kaplan 082 321 0172). Human remains must not be removed or disturbed until inspected by the archaeologist. - A protocol for finds of buried fossil bones, the Fossil Finds Procedure (FFP), must be included in the Environmental Management Plan (EMP) for the proposed development.	- Professional archaeologist must be in place during excavation to monitor operations	Management/ECO/EHSR

		The Fossil Finds Procedure provides guidelines to be followed in the event of fossil bone finds in the excavations		
Palaeontological impacts	- The excavation of a trench for placement of the pipelines may intersect the underlying Waenhuiskrans Formation that potentially have fossil bones. - The excavation depths of earthworks entailed in creating level areas for the aquaculture tanks and dam would be about the same, i.e. up to 2-3 m and that the earthworks will mainly affect the Qg coversands, but may intersect the underlying, older Waenhuiskrans Fm. aeolianites where the coversands are thin.	- Vegetation clearing and Construction Phase excavations must be monitored by a professional archaeologist. - Vegetation clearance in foredunes to be monitored by archaeologist – shovel testing may be required if sites are found - If any human remains are uncovered or exposed during excavations, work must stop, and the finds reported to the Environmental Control Officer and the contracted archaeologist (Jonathan Kaplan 082 321 0172). Human remains must not be removed or disturbed until inspected by the archaeologist. - A protocol for finds of buried fossil bones, the Fossil Finds Procedure (FFP), must be included in the	- This should be monitored by a professional archaeologist.	Management/ECO/EHSR

		Environmental Management Plan (EMP) for the proposed development. The Fossil Finds Procedure provides guidelines to be followed in the event of fossil bone finds in the excavations.		
Disturbance to coastal and intertidal habitat to accommodate expansion of pump house and additional pipelines	- Temporary disturbance of the coastal zone is expected for the expansion of the existing sump and pumphouse and addition of the 4 pipelines. The area proposed for the expansion is disturbed and largely transformed and already experiences anthropogenic and operational impacts on a daily basis	- Clearly demarcate the construction area and mark all areas outside of this as No Go areas - Clearly demarcate the pipeline corridor and mark all areas outside of this zone a No Go area - Search and Rescue to be conducted on the pipeline route prior to disturbance for rehabilitation post construction - No batching of materials or concrete mixing to take place in areas outside the construction zone or areas which may be at risk of being inundated by seawater - Spills kits should be readily available in the event of spills	- Monitor operations	Management/ECO/EHSR

		- Temporary weather and animal proof disposal areas provided within construction area.		
Disturbance of marine fauna, including cetaceans, from marine noise and blasting	- Blasting of the rock, may be required to increase the size of the sump and to accommodate the expansion.	- Use Nonex over conventional explosives (reduced possible impact to low) - Conduct faunal survey before use and ensure no fauna are visible within a 1km radius - Limit detonations over a 24-hr period, preferably 1 per day	- Monitor operations.	Management/ECO/EHSR
Vehicle and pedestrian traffic	- Increased pedestrian and vehicle traffic is expected in the expansion area during the construction phase.	- Clearly demarcate the construction zone, with temporary and durable barriers, all areas outside these zones marked as No-Go areas, this must include vehicle and human access areas, stockpiles, preparation, lunch areas etc.	- Monitor operations.	Management/ECO/EHSR
Erosion and increased nearshore turbidity	- Construction activities for the expansion of the pump house will require the excavation of sediment and rock from the intertidal zone. Gravel pumps will be used to move sediment, and	- Limit gravel pump use to calm sea conditions as far as possible to reduce the field of impact	- Monitor operations	Management/ECO/EHSR

	these actions will result in an increased risk of erosion as well as an increase in turbidity and suspended solids within the near shore environment. Sand stockpiles are susceptible to wind and rain erosion and may further increase risk of increased turbidity in the near shore environment.	- Where possible, relocate sessile macro-fauna such as wild abalone, limpets etc - Attempt to reduce construction time, as far as possible		
Abstraction of seawater	- Abstraction of large volumes of seawater directly from the sea on a continual basis may result to impacts such as entrapment, entrainment and impingement against intake lines are possible	- Ensure the intake area is designed to reduce the intake velocity through a flooded sump - Fit and maintain screens in intake lines	- Monitor operations	Management/ECO/EHSR
Discharge of effluent seawater	- Abalone require good water quality in order to grow and therefore the water that is discharged from the farm after flowing through the tanks, is very similar in nature to the fresh seawater pumped onto the farm. The differences between the incoming and effluent seawater would be a small decrease in pH from approx. 7.9 to 8 to approx. 7.6 to 7.7. This is caused by the respiration of abalone as they take up oxygen and expire Co^2. The abalone	- Adhere to requirements of General Discharge Authorisation (GDA) - Monitor effluent water quality leaving the facility and ensure it complies with relevant aquaculture guidelines (AAD 2010). - Parameters to be monitored and frequency of monitoring to comply with the GDA specifications. - Ensure appropriate management of feeding regime to prevent wasteful	- Monitor operations	Management/ECO/EHSR

	remove oxygen from the incoming water, however the water is re-oxygenated due to the turbulence of the water movement through the tanks and on its path back to the sea.	and excessive accumulation of feed in tanks which will increase dissolved nutrient levels in effluent water. - Farm management practices must ensure regular cleaning of tanks to prevent excess build-up of particulates in grow-out facilities which would lead high levels peaks of particulate outputs during sporadic flushing. - Cultivate marine algae in paddle ponds downstream of grow-out facilities to contribute to bioremediation of the effluent stream prior to release. - Maintain effluent sump and discharge pipeline and screens in good working order.		
Genetic impacts and disease	- Escapees from aquaculture operations have the potential to breed with the wild population. In addition to the genetics, the concentration of farmed animals always presents the risk of disease. The introduction of diseases,	- Develop a Biosecurity Management Plan for the facility - In order to minimise negative genetic impacts, broodstock and grow-out organisms should originate from the same genetic stock	- Monitor operations	Management/ECO/EHSR

	pathogens and parasites from farmed abalone to wild stocks is a real threat.	as the wild populations adjacent to the facility i.e. only west coast brood stock should be kept in the hatchery. - Effluent streams post hatchery spawning should be sterilised with bleach prior to release. - The facility must be affiliated to a Genetic Programme or run such internally - All broodstock and spawning to be undertaken in line with DFFE Hatchery Permit requirements. - Records to be maintained on broodstock origin and spawning. - Regular inspection of effluent canals to remove escapees.		
15. Disturbance to coastal environments during operations and maintenance	- Daily operations and maintenance within the coastal zone will be required. These activities are already experienced on the site and the proposed expansion is not expected to increase the significance of this impact, provided management and mitigation	- Fit refuse collection screens on open effluent canals across the farm - Refuse areas must be wind and animal proof - High sensitivity areas such as the coastal zone and No Go conservation areas must	- Monitor operations	Management/ECO/EHSR

	measures are implemented and enforced. Vehicle and pedestrian traffic, tank and pipe cleaning and associated short term fluctuations in turbidity and use of pumps and machinery within the intertidal zone will be required.	have restricted access to authorised personal only - Employees should be educated on proper waste management		

10.2. General operational impacts and requirements

10.2.1. Health and Safety
Responsibility – Management / EHSR / ECO

Correct Personal Protective Equipment (PPE) must be worn at all times by the personnel on site. Personnel must be trained on the use of PPE. Each contractor should employ their own Safety Officer to monitor the safety conditions during the operations. Suitable warning and information signage should be erected. The handling of hazardous materials should only be done by trained personnel. Safety Data Sheets (SDSs) must be readily available for all hazardous substances on site and employees should be aware of the risks associated with any hazardous materials used. All provisions of the Occupational Health and Safety Act (Act No. 85 of 1993) must be complied with. In the event of an emergency relating to a hazardous substance, procedure details in the SDSs must be immediately implemented.

10.2.2. Fire risk management
Responsibility – Management / EHSR / ECO

A Fire Officer should be identified, who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Fire Officer shall ensure that there is basic fire-fighting equipment available on site at all times. Any fires should be reported to the fire officer immediately. Smoking is only permitted in designated smoking areas

10.2.3. Fuels and hazardous materials
Responsibility – Management / EHSR / ECO

Fuels and flammable materials are to be suitably stored. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site. To be kept outside of the 100 m zone as far as possible.

Bulk fuel depots, if required, should be placed within bunded areas to prevent soil contamination in the event of leaks of spills. Bunded area are to have a holding capacity equal to 110% of the largest fuel container. The relevant Health and Safety requirements for the hazardous materials and fuels should be kept on site in the event of an emergency.

10.2.4. Emergencies protocol
Responsibility – Management / EHSR / ECO

Fire: The fire officer should be notified of any fires. Employees must be aware of the procedure to be followed in the event of a fire.

Hydrocarbon (fuel & oil) leaks and spills: Employees should be aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the project manager / contractor. All vehicles leaking fuel or other liquids should immediately be removed to the maintenance area and

repaired. In the event of a hydrocarbon spillage, the soil must be excavated and treated and adequately disposed. The necessary materials and equipment for dealing with spills and leaks are present on site at all times. The clean-up of sewerage spills and any damage caused by the spill or leak shall be for the applicant's account. The applicant shall ensure that the Health and Safety officer is available for the duration of the construction period.

Raw Sewerage spills (from emptying of sewage tank): Employees are to be aware of the procedure to be followed for dealing with spills and leaks. All the necessary materials and equipment for dealing with spills and leaks are present on site at all times. The clean-up of sewerage spills and any damage caused by the spill or leak shall be for the Applicant's account or contractor collecting the raw sewage.

10.2.5. Equipment maintenance
Responsibility - Management / EHSR / ECO

All mechanical equipment and work vehicles which are present on site, are to be stored, serviced, and refuelled only at designated areas. Within these areas, drip trays and other impervious materials, for example plastic or metal sheeting, must be used to prevent contamination of the ground in any way.

10.2.6. Erosion Control, Soil Management and Stabilisation
Responsibility – Management / EHSR / ECO

Action should be taken to prevent erosion of soils on site. Should any erosion be detected on site, the cause of such erosion should be identified, and appropriate remedial action must be immediately implemented.

Where vegetation is removed, this should be done in a phased manner to prevent unnecessary destabilisation and erosion. When undertaking any earthworks, the topsoil must be stripped separately and retained for later re-use. Topsoil stockpiles must be stable, less than 2 meters high and free of invasive alien vegetation. Following the exposure of any soils for construction, shaping or other activities, a suitable vegetation cover must be established immediately thereafter. Any erosion must be treated without delay. Where applicable, anti-erosion compounds may be used to prevent erosion, but the application methods must conform to the manufacture's recommendations. Paths and roads must be formalised and stabilised against erosion by means of suitable materials, compaction, and functional design. Stormwater cut off trenches can be used to prevent erosion.

10.2.7. Freshwater Use
Responsibility – Management / EHSR / ECO

The following water saving principles are recommended and can be implemented over time or as and when current infrastructure requires replacing:

- Rainwater storage tanks can be installed to collect runoff rainwater. Rainwater tanks should be installed in such a way as to prevent visual or landscape intrusion
- Shower and wash basin taps should be fitted with flow reduction devices, aerators, and motion sensors to maximise water conservation and reduce wastage

- All internal and external taps on site should be regularly inspected and maintained to prevent water wastage through drips and leaks
- All toilets should be fitted with a dual flush system, reduced flow should be implemented on existing infrastructure if dual flush is not possible
- Grey water from showers, baths, basins and washing machines, should be collected, or redirected for reuse (gardening, outside washing etc.)
- Endemic and indigenous plants should be used for gardens and landscaping to minimize water demand i.e., water wise landscaping
- Should irrigation be required, these should be on timed systems and active at low evaporation hours (early morning, late evening)
- Drains should be fitted with grease traps which remove oils and solids from wastewater, to improve the quality of the effluent wastewater for reuse
- Dry brushing and / or sweeping should be used in preference to water cleaning, where possible (cleaning pathways, machinery etc.)
- Efficient water use habits should be encouraged
- Sewerage systems should be regularly monitored and maintained to prevent leaks and pollution of groundwater

10.2.8. Electricity

The following electrical saving principles are recommended:

- Regular light bulbs to be replaced with energy saving bulbs in all structures
- The use of solar power should be maximised as far as possible
- Energy saving geysers should be installed
- Solar water heaters should be installed
- Proper insulation should be used on all new structures and renovations, in order to reduce the need for heating and cooling of dwellings
- Programmed lighting should be implemented to prevent lights being left on unnecessarily
- In terms of pumping water, options such as Variable Speed Drive (VSD) should be fitted to the pumps to regulate the pump speed relative to the tidal height.
- Ensure that new technologies are implemented for the most energy efficient outcome

10.2.9. Sewage and sewerage infrastructure

Closed conservancy tank used on site and serviced by the municipality on a regular basis. The area should be monitored for leaks through visual inspections.

10.2.10. General waste and refuse

General waste is transferred to the municipal waste site by the municipality as scheduled. Waste minimisation strategies should be implemented through avoidance, reduction, reuse, recycling, recovery, treatment, or responsible disposal. On site bins should be animal and weatherproof. Refuse areas should be secure and screened to avoid visual impacts. Refuse areas should provide for waste sorting (tins, glass, paper etc.). No waste should be stored or disposed of on site.

The principles of the following legislation must also be considered regarding waste management on site:

- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
- Waste Classification and Management Regulations, 2013 – A waste manifest should be implemented detailing waste type, quantity, frequency of disposal, responsible person etc., prior to transport to the municipal waste disposal site
- National Norms and Standard for the Storage of Waste, 2013 – storage of waste generated on site will be temporary and will be transferred by the operator to the licenced municipal waste disposal site on a weekly or twice weekly, however the following principles are outlined the Norms and Standards and would be useful to apply to the temporary storage area:
    - Location of waste storage area should not have a negative impact on public health or environmental
    - Easily accessible and allow for easy handling and transportation
    - Designed under consultation by appropriate professional
    - Liquid waste storage areas must have a firm, impermeable and chemical resistant floor, and roof. Liquid waste container which are not stored under roof should be covered to prevent direct sunlight and rainwater entering the containers
    - Storage area to be suitably bunded. The bund must be capable of storing at least 110 % of the largest tank or 25% of the total storage capacity
    - Suitable access control with appropriate signage in applicable language
    - Free from odour or emissions
    - Sorted
    - Operate within design capacity
    - Prevent disposal by wind, rain, people, or animals, including during loading
    - Appropriate training and PPE must be provided to the applicable person handling the waste area.

10.2.11. Site maintenance and repairs

Renovations and maintenance must be conducted in line with a maintenance schedule to ensure that renovations are done effectively with reduced wastage. When using paints, cleaners and other solvents for maintenance, preference should be made for environmentally friendly products, water-based paints, and avoidance of harsh chemicals. No building materials or products used during renovations should be disposed of on site.

10.2.12. Alien vegetation management

Romansbaai Abalone Farm implements regular alien vegetation management on the property.

a) Where practical, the vegetation and subsequent landscaping around the site must be indigenous, while plant species regarded as invasive are prohibited and must be removed.
b) An active alien vegetation eradication programme must be implemented
c) Wherever practically possible, the planting of indigenous plants and trees should be encouraged

d) Where virgin or sensitive vegetation occurs, general access should be limited, and well-maintained footpaths used in places where these areas need to be traversed
e) Cut, trimmed, mowed, and felled vegetation must either be removed to a suitable disposal site or composted on site for further application. Cut vegetation can also be used as brush pack in the control of erosion, but care must be taken to prevent the spread of seed of alien species in this manner. The burning of vegetation is discouraged, unless done under favourable climatic conditions and with the permission of the relevant fire management services.
f) Where any vegetation clearance is required, this is to be kept to a minimum and in compliance with any legislation that may apply. It should be noted that clearance in excess of 300 m, may require Environmental Authorisation and should be clarified prior to activities. Where appropriate, clearing should be done in a phased manner and cleared areas rehabilitated as soon as is practically possible.
g) Care should be taken during the translocation of aquaculture organisms from other locations, or when using equipment from other farms, so as to prevent the spread of disease – Refer to relevant permit requirements.

10.2.13. Internal roads and footpaths

Access will be via existing internal roads. The use of the road should not lead to excessive dust. Maximum speed should be set at 40 km / hr. Vehicles should not deviate from any access routes and internal access roads should remain as narrow as possible.

10.2.14. Fauna

All wild fauna on site should be protected. No feeding of wild animals should be allowed, and edible refuse should be appropriately disposed of. No poisons or traps should be used as far as possible. Professional help, such as Cape Nature, should be sought for 'problem' animals. Non-dangerous fauna encountered should be relocated to the Conservation area on site, specialist input should be sought as required. Fences should allow for movement of fauna, as far as possible. Aquaculture feeds and other production resources that may attract animals should be stored in such a manner so as to prevent access to these animals and to prevent animals from becoming trapped, killed or harmed. Feed stores must be suitably secured to prevent influx of rodents and pests. A responsible control program for
such vermin must be implemented.

Measures must be put into place regarding the impact between the Hartlaubs Gull and the operation of the abalone farm. It has been found that the gulls feed on the abalone food. The following deterrents should be put in place:

- Installation of long, free swinging ropes / lines above the abalone grow-out tanks. The lines confuse the birds and they do not enter the tank area
- Installation of flashers (moving, reflective materials such as used CD'S) are also used to discourage the birds

10.3. Operational permits

10.3.1. Right to Engage in Marine Aquaculture

Required in Terms of Section 18 of the Marine Living Resources Act, 1998 (Act No. 18 Of 1998). Valid for 15 years.

10.3.2. Coastal Waters Discharge Permit (CWDP)

Required in Terms of Section 69 of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008). Relates to effluent waters quality and quantity.

10.3.3. Permit to Engage in Marine Aquaculture Activities

Required in terms of Section 13 of the Marine Living Resources Act, 1998 (Act No. 18 of 1998)

10.3.4. Permit to Possess Broodstock and Operate Hatchery

Required in Terms of Section 13 of the Marine Living Resource Act, 1998 (Act No. 18 Of 1998)

10.3.5. Permit To Transport Cultured Marine Fish Species or any product thereof

Required in Terms of Section 13 of the Marine Living Resources Act, 1998 (Act No. 18 Of 1998)

10.3.6. Permit to Dive in Banned Areas

Required in terms of Government Gazette No. 30716, Section 13 of the Marine Living Resources Act 1998 (Act No. 18 Of 1998)

Table 6. Operational permits

RIGHT TO ENGAGE IN MARINE AQUACULTURE - REQUIRED IN TERMS OF SECTION 18 OF THE MARINE LIVING RESOURCES ACT, 1998 (ACT NO. 18 OF 1998)	
Nursery, hatchery and the further on-growing of Abalone (*Haliotis midae*) and the growing of seaweed (*Ulva spp*. and *Gracilaria spp*.)	Farm manager
Valid for 15 years from 30 June 2017 to 30 June 2032	Farm manager
COASTAL WATERS DISCHARGE PERMIT (CWDP) - REQUIRED IN TERMS OF SECTION 69 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: INTEGRATED COASTAL MANAGEMENT ACT, 2008 (ACT NO. 24 OF 2008)	
• If GDA not applicable • Original approval dated 01/04/2016 was for 96 600 m^3 per day. • Amendment application submitted for 180 000 m^3 • Further amendment for 180 000 m^3 / day to 230 880 m^3 per day	Farm manager
• Volumes of effluent to be metered / pump capacity used to determine discharge volume so as not to exceed permitted volume	Farm manager
• Only effluent and its constituents permitted	Farm manager
No toxic substances, floating solids, visible foam, dead abalone	Farm manager
Oxygen demanding materials which may result in anaerobic water conditions must be minimised	Farm manager
Limits of effluent quality to be discharged into the coastal environment at outfall: Note: these are not static limits and must be measured against the incoming. Therefore TSS and / or TAN of the effluent may not be more than 5mg / l / or 0.6 mg / l more than incoming water. TSS – 5 mg / l TAN – 0.6 mg / l	Farm manager
QUANTITY MONITORING • Volumes of effluent must be metered, or pump capacity used to determine maximum volume discharged daily • Flow meter and recording device which will be maintained and calibrated once a year for monitoring effluent quantity	Farm manager
QUALITY MONITORING • Quality of effluent must be monitored on a monthly basis by taking 2 water samples at the collection channel prior to discharge • Water samples to be collected in and out of working hours • The date, time and location for each sample must be recorded and submitted to the Department as requested	Farm manager

• The permit holder must appoint an independent external auditor annually to determine compliance with effluent quantity and quality requirements, two samples must be obtained from the open channel and the concrete pipeline, and analysed by 2 separate accredited laboratories, the report must be submitted to the Department annually	
STORMWATER • Stormwater management plan must be designed to include features that prevent pollution in the stormwater drainage, furrow, and canal • No sewage / runoff may be discharged into the coastal waters	Farm manager
PIPELINE INTEGRITY AND CONDITION • Pipeline and open channel to be inspected monthly • Records of inspection and maintenance of pipeline and open channel must be kept and available to department of request	Farm manager
MALFUNCTIONS / ABNORMAL CONDITIONS • Records of system malfunctions resulting in disposal of effluent not in accordance with the requirements of the CWDP must be kept	Farm manager
CONTINGENCY PLANS • Holder to provide procedures for the detection of problems in the operation of the plant, prior to the discharge of effluent	Farm manager
REPORTING REQUIREMENTS • The following must be submitted to the Department **quarterly:** 1. Exact volume discharged showing daily and monthly discharge volumes 2. The findings of the monitoring required in terms of CWDP 3. The monthly pipeline inspection and integrity reports • The report detailing the results of the independent audit monitoring must be submitted to the Department **annually** • Any defects in coastal outfall pipeline must be reported to the Department immediately	Farm manager
VALIDITY • Ten years	Farm manager
GENERAL DISCHARGE AUTHORISATION IN TERMS OF SECTION 69(2) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: INTEGRATED COASTAL MANAGEMENT ACT, 2008 (ACT NO. 24 OF 2008)	
A General Discharge Authorisation is granted to any person discharging effluent into coastal waters from a land-based source where the effluent meets all the requirements.	Farm manager
• 2000m^3 per day in the case of discharges into coastal waters • A person intending to discharge effluent in terms of this General Discharge Authorisation must notify the Department in writing of the intended discharge	Farm manager
Monitoring • Effluent must be screened for constituents which are anticipated by the process or sector producing the effluent and be measured against the constituents and their limits listed	Farm manager

• The analysis of all effluent samples must be undertaken at a SANAS accredited laboratory. 6.3. In respect of a once-off discharge, the person responsible for the discharge must, within 15 calendar days after the date of the discharge, submit a once-off analysis report to the Department of samples taken of the effluent discharged. • For discharges other than a once-off discharge, the quality of the effluent discharged into coastal waters must be monitored and sent to a SANAS-accredited laboratory on a quarterly basis by taking effluent samples of the effluent at a location-point prior to its discharge into coastal waters, for the first year only. Those analysis reports must be sent to the Department every quarter. After the first year, the person responsible for the discharge must continue to take effluent samples at a location-point • prior its discharge into coastal waters and have those samples analysed at the laboratory once every six months. These analysis reports must be sent to the Department bi-annually. • In addition, the person in charge of a discharge must submit a report setting out the quantity of effluent discharged into coastal waters together with each effluent analysis report submitted in accordance with the requirements set out above.	

Organic and inorganic constituents	Unit	General limit	Special limit
Ammonia (ionised and un-ionised) as N	mg/l	10	2
Arsenic	mg/l	0.8	0.04
Cadmium	mg/l	0.02	0.001
Total Chlorine Residual	mg/l	0.2	0.01
Chromium (VI)	mg/l	0.2	0.01
Copper	mg/l	0.3	0.015
Cyanide	mg/l	0.1	0.005
Fluoride	mg/l	150	7.5
Lead	mg/l	0.2	0.01
Mercury	µg/l	1.6	0.08
Nickel	mg/l	0.5	0.025
Nitrate as Nitrogen	mg/l	20	3.5
Nitrogen (Total Kjeldahl Nitrogen)	mg/l	100	10
Polychlorenated Biphenyls (PCBs)	µg/l	0	0
Chlorophenols	mg/l	0	0
Ortho-Phosphate as Phosphorus	mg/l	20	1
Radioactivity	µC/ml	0	0
Pesticides (Dieldrin, Endrin, DDT)	µg/l	0	0
Soap, oil or grease	mg/l	20	10
Hydrogen sulphide	mg/l	0.2	0.01
Total Suspended Solids (TSS)	mg/l	50	10
Tributyltin	µg/l	0	0
Zinc	mg/l	2	0.1

Physico-chemical properties	Unit	General limit	Special limit
Biological Oxygen Demand (BOD)	mg/l	50	10
Chemical Oxygen Demand (COD)	mg/l	250	75
Dissolved oxygen	mg/l	50% saturation	75% saturation
pH	pH	7.1 - 8.3	7.3 - 8.2
Temperature	°C	±3 of ambient	±2 of ambient
Salinity	psu	37	36

PERMIT TO ENGAGE IN MARINE AQUACULTURE ACTIVITIES IN TERMS OF SECTION 13 OF THE MARINE LIVING RESOURCES ACT, 1998 (ACT NO. 18 OF 1998)	
1. South African Abalone (*Haliotis midae*) 2. Seaweed (*Gracilaria gracilis*) 3. Seaweed *(Ulva lactuca*	Farm manager
1. CEM 10410 – Ford Ranger pick up 2. CEM 18778 – Mercedes Benz Sprinter NCV3 3. CEM 45091 – Toyota Hi Lux pick up 4. CEM 44232 – Toyota Corolla Sedan 5. CEM 41139 – Moolman Trailer	Farm manager
Aqunion (Pty) Ltd – Romansbaai Farm Factory Farmed abalone live packing	Farm manager
Not to exceed 200 wild caught abalone broodstock Walker Bay, Danger Point	Farm manager
Permit holder to allow authorised officials unrestricted access to monitor aquaculture activities and compliance with permit	Farm manager
• Permit holder to comply with approved EMP according to requirements of Right or Environmental Authorisation • Proof of compliance with the ICMA (Act 24 of 2008) for the discharge of effluent into the marine environment	Farm manager
• Permit holder to comply with an approved Animal Health Surveillance or Disease Management Program (Approved Animal Health Surveillance Programs are in place for abalone and compliance with this is compulsory) • Permit holder to implement a biosecurity program to mitigate disease risk • Permit holder shall allow any disease or pathogen related investigation of the site if required • Permit holder shall cooperate with any stock inspections that may be conducted by the Department • Permit holder to notify the Department of any unexplained mortalities, disease (as listed by the World Organisation for Animal Health (OIE) is suspected / confirmed, or signs of significant disease	Farm manager
• Permit holder to ensure that non-biodegradable chemicals used are disposed of responsibly and not into the environment • Records to be kept of all chemicals used on the premises and method of disposal • Records to be kept of all therapeutants as outlined in the South African Molluscan Shellfish and Marine Fish Monitoring and Control Programme(s)	Farm manager
• Permit holder to keep record of movement of animals onto and off the farm including - Date on which animals were received / dispatched	Farm manager

- Purpose of translocation - Number of animals moved - Batch identified of animals - Origin of received animals - Destination of dispatched animals - Mode of transport • Record to be kept for five years	
• Permit holder to comply with Movement Protocols / directives • Approved Movement Protocols are in place and compliance with these is compulsory / Alternatively the Department should be notified five days prior	Farm manager
• High disease risk animals shall be subjected to an isolation period determined by a registered veterinarian and checked for signs of disease, unusual / excessive mortalities, or behavioural issues	Farm manager
• Permit holder to notify any changes of contact details within 30 days of such change • Permit holder to submit to the Department, the transformation profile by 30th November annually • Permit holder to notify the Department of proposed future expansion plans on an annual basis • Permit holder to submit to the Department, a monthly production report by the 15th of every month • Permit holder to submit an annual economic report by the 31st May annually • Permit holder to submit animal health reports to the Department in compliance with any Veterinary Procedural Notices issued by the Department. In the absence of a specific Veterinary Procedural notice, the permit holder shall submit an annual Animal Health Report • Permit holder (subject to an EMP) must submit environmental monitoring data annually to the Department • Permit holder to provide any information relating to the Right or Permit including, but not limited to, economic, socio-economic, financial, transformation or statistical which may be requested by the Department – to be submitted within 21 days of the date of request • Permit holder to submit, when requested, information of clients to whom sales are being made	Farm manager
• Permit holder to comply with the traceability protocols implemented by the Department for food safety and compliance purposed, where applicable • Permit holder to adhere to the relevant Food Safety Programme(s) implemented by the Department • Permit holder to fully comply with a movement document obtained from the Department when transporting live animals from the authorised site to authorised Fish Processing Establishment (FPE) • Permit holder to complete the relevant sections of the movement document obtained from the Department when transporting live shellfish in accordance with the South African Molluscan Shellfish Monitoring and Control Programme	Farm manager
• Any on site processing is subject to specific conditions set out in Section B of the Marine Aquaculture Fish Processing Establishment (FPE) Permit conditions • Off-site processing should only take place at establishment which has a valid Fish Processing Establishment (FPE) permit	Farm manager
• Permit holder to keep a copy of all original invoices issued for any sale of cultured product from the establishment for no less than 60 months and the invoices should contain the following o Names and addressed of the parties o Name of product o Date of delivery / receipt o Quantity of product sold (number and / or mass)	Farm manager
• Permit holder is not permitted to engage in any fishing or other regulated activity not indicated in the permit • Permit holder shall not engage in marine aquaculture in a location not indicated in the permit • Permit holder may not cultivate or harvest commercially at the authorised marine aquaculture site any species other than those listed in the permit	Farm manager

• Permit holder may on request by the Department, ensure that an operational plan is in place for the authorised activity • Any diving to be undertaken in areas where diving is prohibited, must be authorised through the relevant Permit in terms of the Regulations for the Protection of Wild Abalone	
• Permit holder to put systems in place to minimise the escape of animals. Notice to be given to the Department of escaped animals • No deliberate release of animals into the marine environment is permitted • Permit holder to notify local Fishery Control officer of theft of animals from the authorised site	Farm manager
• Broodstock to only be kept at a fully operational hatchery established on the premises indicated in the permit • Movement of broodstock to be done with prior written authorisation from the Department	-

• The permit holder shall only collect the maximum number of wild broodstock as per permit (200 wild caught abalone broodstock)
• Permit holder to notify local Fishery Officer within 24 hrs prior to the collection of wild broodstock
• Collection to only take place from 08h00 to 15h00 on the same day, excl. weekends and public holidays
• Detailed inventory to be kept including:
  o Number of broodstock collected
  o Mortalities
  o Site of collection
  o Dates
• No broodstock collection to take place in any marine reserve or Marine Protected Act (MPA)
• Any diving activities required in areas where diving is prohibited, shall be authorised via a Permit in terms of the regulations for the Protection of Wild Abalone as published in the Government Notice R 62 of 1 February 2008
	-

• Permit holder to comply with the Active and Passive Components of the Approved Official Surveillance Program (Appendix A of the Health Management Procedures for South African Abalone produced for export)
• Disease management zone apply:
  o East coast: border with Mozambique southwards to Cape Agulhas
  o South coast: between Cape Agulhas and Cape Point
  o West Coast: between Cape Point northwards to the Namibia border
• Permit holder to notify the Department and / or attending veterinarian of signs of disease
• Permit holder to notify the Department of significant mortalities due to any suspected / confirmed cased of a World International Organisation for Animal Health (OIE) listed disease or any other disease of importance, emergent disease, or ongoing / unusually high mortalities
	-

Movement of animals for the purpose of stocking is not permitted between genetic zones: • Zone 1: East of Cape Agulhas • Zone 2: West of Cape Agulhas	-
• Abalone should be transported in disposable packaging and such packaging should be disposed to a registered landfill or recycling facility • Permit holder to house broodstock collected from the wild in isolation in a dedicated broodstock facility and separated from other life stages and sections of the farm • Permit holder to observe new broodstock at least once per day for a period of 42 days after introduction, attending veterinarian should be contacted at any sign of disease • All broodstock must be individually identifiable and their traceability maintained to their origin and date of collection by means of a tag • Permit holder to obtain approval from the local authority prior to the disposal of any dead animal at the local municipal landfill site	-
• Cultivation of species to take place as outlined in the permit	Farm manager

• The permit holder should hold no more than 200 wild broodstock at any given time • The permit holder may be allowed to hold an unlimited number of F1 and F2 broodstock to be used in the hatchery • The permit holder should ensure that the broodstock facility is separated from the grow out facility and that biosecurity measures are in place to prevent the spread of disease • Broodstock no longer required for the hatchery should be humanely destroyed or processed and sold in accordance with the other applicable permit conditions • The permit holder shall notify the Department of the number of broodstock which has been identified for removal from the hatchery for processing Broodstock to be tagged with a unique number which must be recorded in a broodstock register including the following details: - Tank number - Tag number - Species - Sex - Capture date - Location of capture (if applicable) • Additional remarks	
• Wild broodstock to be sourced from the local genetic zone • F1 broodstock must originate from wild broodstock sourced from the local genetic zones • The following mitigation measures are proposed by the Department to mitigate negative genetic impacts and enhance benefits: o Establish a base population that resembles the genetic profile of the surrounding wild population o The base population should be made of sufficient numbers of broodstock (nmales = nfemales = 50-75) that are sourced from the surrounding wild populations randomly o Mating programme to then be established to maintain an effective population size (Ne > 100) to limit the loss of genetic variation o Implement physical barriers and standard operating procedures to limit the number of escapees from the hatchery, weaning and grow-out sections of the farm o Implement a broodstock management programme to reduce risk of inbreeding and impacts on wild stocks - to be monitored and submitted to the Department every 3 years	Farm manager
• Permit holder to enter into an agreement with local kelp concession permit holder for supply of kelp (if required)	Farm manager
• Supply of animals for further grow-out should only be to a valid marine aquaculture permit holder with a marine aquaculture grow out permit	Farm manager
• Cultivation and harvesting of species and seaweed undertaken as per permit	Farm manager
• The permit holder can only procure abalone for further grow out from a valid permit holder within the specified genetic management zone	Farm manager
PERMIT TO POSSESS BROODSTOCK AND OPERATE HATCHERY IN TERMS OF SECTION 13 OF THE MARINE LIVING RESOURCE ACT, 1998 (ACT NO. 18 OF 1998)	
Validity - 1 year	Farm manager
1. *Haliotis midae* 2. *Gracilaria gracillis* 3. *Ulva lactuca*	Farm manager

Walker Bay, Danger Point	Farm manager
Not to exceed 200 wild caught abalone broodstock	Farm manager
1. CEM 10410 – Ford Ranger pick up 2. CEM 18778 – Mercedes Benz Sprinter NCV3 3. CEM 45091 – Toyota Hi Lux pick up 4. CEM 44232 – Toyota Corolla Sedan 5. CEM 41139 – Moolman Trailer	Farm manager
• Transport of specified species in the following nominated vehicles only: - CEM 39661 – Hyundai Bakkie - CEM 18778 – Mercedes Benz Sprinter NCV3	Farm manager
Permit holder to allow authorised officials unrestricted access to monitor aquaculture activities and compliance with permit	Farm manager
• Permit holder to comply with approved EMP according to requirements of Right or Environmental Authorisation • Proof of compliance with the ICMA (Act 24 of 2008) for the discharge of effluent into the marine environment	Farm manager
• Permit holder to comply with an approved Animal Health Surveillance or Disease Management Program (Approved Animal Health Surveillance Programs are in place for abalone and compliance with this is compulsory) • Permit holder to implement a biosecurity program to mitigate disease risk • Permit holder shall allow any disease or pathogen related investigation of the site if required • Permit holder shall cooperate with any stock inspections that may be conducted by the Department • Permit holder to notify the Department of any unexplained mortalities, disease (as listed by the World organisation for Animal Health (OIE) is suspected / confirmed, or signs of significant disease	Farm manager
• Permit holder to ensure that non-biodegradable chemicals used are disposed of responsibly and not into the environment • Records to be kept of all chemicals used on the premises and method of disposal • Records to be kept of all therapeutants as outlined in the South African Molluscan Shellfish and Marine Fish Monitoring and Control Programme(s)	Farm manager
• Permit holder to keep record of movement of animals onto and off the farm including o Date on which animals were received / dispatched o Purpose of translocation o Number of animals moved o Batch identified of animals o Origin of received animals o Destination of dispatched animals o Mode of transport o Record to be kept for five years • Permit holder to comply with Movement Protocols / directives • Approved Movement Protocols are in place and compliance with these is compulsory / Alternatively the Department should be notified five days prior	Farm manager

• High disease risk animals shall be subjected to an isolation period determined by a registered veterinarian and checked for signs of disease, unusual / excessive mortalities, or behavioural issues	
• Permit holder to notify any changes of contact details within 30 days of such change • Permit holder to submit to the Department, the transformation profile by 30th November annually • Permit holder to notify the Department of proposed future expansion plans on an annual basis • Permit holder to submit to the Department, a monthly production report by the 15th of every month • Permit holder to submit an annual economic report by the 31st May annually • Permit holder to submit animal health reports to the Department in compliance with any Veterinary Procedural Notices issued by the Department. In the absence of a specific Veterinary Procedural notice, the permit holder shall submit an annual animal health report • Permit holder (subject to an EMP) must submit environmental monitoring data annually to the Department • Permit holder to provide any information relating to the Right or Permit including, but not limited to, economic, socio-economic, financial, transformation or statistical which may be requested by the Department – to be submitted within 21 days of the date of request • Permit holder to submit, when requested, information of clients to whom sales are being made	Farm manager
• Permit holder to comply with the traceability protocols implemented by the Department for food safety and compliance purposed, where applicable • Permit holder to adhere to the relevant Food Safety Programme(s) implemented by the Department • Permit holder to fully comply with a movement document obtained from the Department when transporting live animals from the authorised site to authorised Fish Processing Establishment (FPE) • Permit holder to complete the relevant sections of the movement document obtained from the Department when transporting live shellfish in accordance with the South African Molluscan Shellfish Monitoring and Control Programme	Farm manager
• Any on site processing is subject to specific conditions set out in Section B of the Marine Aquaculture Fish Processing Establishment (FPE) Permit conditions • Off-site processing should only take place at establishment which has a valid Fish Processing Establishment (FPE) permit	Farm manager
• Permit holder to keep a copy of all original invoices issued for any sale of cultured product from the establishment for no less than 60 months and the invoices should contain the following o Names and addressed of the parties o Name of product o Date of delivery / receipt o Quantity of product sold (number and / or mass)	Farm manager
• Permit holder is not permitted to engage in any fishing or other regulated activity not indicated in the permit • Permit holder shall not engage in marine aquaculture in a location not indicated in the permit • Permit holder may not cultivate or harvest commercially at the authorised marine aquaculture site any species other than those listed in the permit • Permit holder may on request by the Department, ensure that an operational plan is in place for the authorised activity • Any diving to be undertaken in areas where diving is prohibited, must be authorised through the relevant Permit in terms of the Regulations for the Protection of Wild Abalone	Farm manager
• Permit holder to put systems in place to minimise the escape of animals. Notice to be given to the Department of escaped animals • No deliberate release of animals into the marine environment is permitted • Permit holder to notify local Fishery Control officer of theft of animals from the authorised site	Farm manager
• Broodstock to only be kept at a fully operational hatchery established on the premises indicated in the permit • Movement of broodstock to be done with prior written authorisation from the Department	Farm manager

• The permit holder shall only collect the maximum number of wild broodstock as per permit (200 wild caught abalone broodstock)
• Permit holder to notify local Fishery Officer within 24 hrs prior to the collection of wild broodstock
• Collection to only take place from 08h00 to 15h00 on the same day, excl. weekends and public holidays
• Detailed inventory to be kept including:
  o Number of broodstock collected
  o Mortalities
  o Site of collection
  o Dates
• No broodstock collection to take place in any marine reserve or Marine Protected Act (MPA)
Any diving activities required in areas where diving is prohibited, shall be authorised via a Permit in terms of the regulations for the Protection of Wild Abalone as published in the Government Notice R 62 of 1 February 2008
	-

• Permit holder to comply with the Active and Passive Components of the Approved Official Surveillance Program (Appendix A of the Health Management Procedures for South African Abalone produced for export)
• Disease management zone apply:
  o East coast: border with Mozambique southwards to Cape Agulhas
  o South coast: between Cape Agulhas and Cape Point
  o West Coast: between Cape Point northwards to the Namibia border
• Permit holder to notify the Department and / or attending veterinarian of signs of disease
Permit holder to notify the Department of significant mortalities due to any suspected / confirmed cased of a World International Organisation for Animal Health (OIE) listed disease or any other disease of importance, emergent disease, or ongoing / unusually high mortalities
	-

Movement of animals for the purpose of stocking is not permitted between genetic zones: • Zone 1: East of Cape Agulhas • Zone 2: West of Cape Agulhas	-
• Abalone should be transported in disposable packaging and such packaging should be disposed to a registered landfill or recycling facility • Permit holder to house broodstock collected from the wild in isolation in a dedicated broodstock facility and separated from other life stages and sections of the farm • Permit holder to observe new broodstock at least once per day for a period of 42 days after introduction, attending veterinarian should be contacted at any sign of disease • All broodstock must be individually identifiable and their traceability maintained to their origin and date of collection by means of a tag Permit holder to obtain approval from the local authority prior to the disposal of any dead animal at the local municipal landfill site	-
• Cultivation of species to take place as outlined in the permit • The permit holder should hold no more than 200 wild broodstock at any given time • The permit holder may be allowed to hold an unlimited number of F1 and F2 broodstock to be used in the hatchery • The permit holder should ensure that the broodstock facility is separated from the grow out facility and that biosecurity measures are in place to prevent the spread of disease • Broodstock no longer required for the hatchery should be humanely destroyed or processed and sold in accordance with the other applicable permit conditions • The permit holder shall notify the Department of the number of broodstock which has been identified for removal from the hatchery for processing	Farm manager

Broodstock to be tagged with a unique number which must be recorded in a broodstock register including the following details: - Tank number - Tag number - Species - Sex - Capture date - Location of capture (if applicable) - Additional remarks	
• Wild broodstock to be sourced from the local genetic zone • F1 broodstock must originate from wild broodstock sourced from the local genetic zones • The following mitigation measures are proposed by the Department to mitigate -ve genetic impacts and enhance benefits: o Establish a base population that resembles the genetic profile of the surrounding wild population o The base population should be made of sufficient numbers of broodstock (nmales = nfemales = 50-75) that are sourced from the surrounding wild populations randomly o Mating programme to then be established to maintain an effective population size (Ne > 100) to limit the loss of genetic variation o Implement physical barriers and standard operating procedures to limit the number of escapees from the hatchery, weaning and grow-out sections of the farm Implement a broodstock management programme to reduce risk of inbreeding and impacts on wild stocks - to be monitored and submitted to the Department every 3 years	Farm manager
Permit holder to enter into an agreement with local kelp concession permit holder for supply of kelp (if required)	Farm manager
Supply of animals for further grow-out should only be to a valid marine aquaculture permit holder with a marine aquaculture grow out permit	Farm manager
• Cultivation and harvesting of species and seaweed undertaken as per permit	Farm manager
• The permit holder can only procure abalone for further grow out from a valid permit holder within the specified genetic management zone	Farm manager
PERMIT TO TRANSPORT CULTURED MARINE FISH SPECIES OR ANY PRODUCT THEREOF IN TERMS OF SECTION 13 OF THE MARINE LIVING RESOURCES ACT, 1998 (ACT NO. 18 OF 1998)	
Validity - 1 year	Farm manager
Aqunion – New Harbour, PO BOX 265, Hermanus, 7200	Farm manager
1908817 & 1904537	Farm manager
1. Aqunion (Pty) Ltd – Romansbaai Farm 2. Aqunion (Pty) Ltd – Whale Rock Farm 3. Aqunion (Pty) Ltd – Processing Facility	Farm manager
Hermanus, Jacobsbaai, St Helena Bay and Cape Town	Farm manager

Aqunion (Pty) Ltd – Romansbaai Farm, Portion 2 of Klipfontein Farm No. 71, Roman Bay, Gansbaai, 7220	Farm manager
Live, canned, frozen, and vacuum sealed farmed abalone (Haliotis midae)	Farm manager
Hermanus, Gansbaai, Jacobsbaai, St Helena Bay and Cape Town	Farm manager
Aqunion (Pty) Ltd – Processing Facility	Farm manager
1. CEM 10410 – Ford Ranger pick up 2. CEM 18778 – Mercedes Benz Sprinter NCV3 3. CEM 45091 – Toyota Hi Lux pick up 4. CEM 44232 – Toyota corolla Sedan 5. CEM 41139 – Moolman Trailer	Farm manager
Transport of specified species in the following nominated vehicles only: CEM 2647 – Toyota Hilux Pick Up CEM 40074 – Toyota Corolla CEM 18778 – Mercedes Benz Sprinter NCV3 CEM 39661 – Hyundai H-100	Farm manager
Permit holder to allow authorised officials unrestricted access to monitor aquaculture activities and compliance with permit	Farm manager
Permit holder to comply with approved EMP according to requirements of Right or Environmental Authorisation.	Farm manager
Proof of compliance with the ICMA (Act 24 of 2008) for the discharge of effluent into the marine environment	Farm manager
• Permit holder to comply with an approved Animal Health Surveillance or Disease Management Program (Approved Animal Health Surveillance Programs are in place for abalone and compliance with this is compulsory) • Permit holder to implement a biosecurity program to mitigate disease risk • Permit holder shall allow any disease or pathogen related investigation of the site if required • Permit holder shall cooperate with any stock inspections that may be conducted by the Department • Permit holder to notify the Department of any unexplained mortalities, disease (as listed by the World organisation for Animal Health (OIE) is suspected / confirmed, or signs of significant disease	Farm manager
• Permit holder to ensure that non-biodegradable chemicals used are disposed of responsibly and not into the environment • Records to be kept of all chemicals used on the premises and method of disposal • Records to be kept of all therapeutants as outlined in the South African Molluscan Shellfish and Marine Fish Monitoring and Control Programme(s)	Farm manager

• Permit holder to keep record of movement of animals onto and off the farm including
  o Date on which animals were received / dispatched
  o Purpose of translocation
  o Number of animals moved
  o Batch identified of animals
  o Origin of received animals
  o Destination of dispatched animals
  o Mode of transport
  o Record to be kept for five years
• Permit holder to comply with Movement Protocols / directives
• Approved Movement Protocols are in place and compliance with these is compulsory / Alternatively the Department should be notified five days prior
• High disease risk animals shall be subjected to an isolation period determined by a registered veterinarian and checked for signs of disease, unusual / excessive mortalities, or behavioural issues
	Farm manager

• Permit holder to notify any changes of contact details within 30 days of such change • Permit holder to submit to the Department, the transformation profile by 30th November annually • Permit holder to notify the Department of proposed future expansion plans on an annual basis • Permit holder to submit to the Department, a monthly production report by the 15th of every month • Permit holder to submit an annual economic report by the 31st May annually • Permit holder to submit animal health reports to the Department in compliance with any Veterinary Procedural Notices issued by the Department. In the absence of a specific Veterinary Procedural notice, the permit holder shall submit an annual animal health report • Permit holder (subject to an EMP) must submit environmental monitoring data annually to the Department • Permit holder to provide any information relating to the Right or Permit including, but not limited to, economic, socio-economic, financial, transformation or statistical which may be requested by the Department – to be submitted within 21 days of the date of request • Permit holder to submit, when requested, information of clients to whom sales are being made	Farm manager
• Permit holder to comply with the traceability protocols implemented by the Department for food safety and compliance purposed, where applicable • Permit holder to adhere to the relevant Food Safety Programme(s) implemented by the Department • Permit holder to fully comply with a movement document obtained from the Department when transporting live animals from the authorised site to authorised Fish Processing Establishment (FPE) • Permit holder to complete the relevant sections of the movement document obtained from the Department when transporting live shellfish in accordance with the South African Molluscan Shellfish Monitoring and Control Programme	Farm manager
• Any on site processing is subject to specific conditions set out in Section B of the Marine Aquaculture Fish Processing Establishment (FPE) Permit conditions • Off-site processing should only take place at establishment which has a valid Fish Processing Establishment (FPE) permit	Farm manager

• Permit holder to keep a copy of all original invoices issued for any sale of cultured product from the establishment for no less than 60 months and the invoices should contain the following
  o Names and addressed of the parties
  o Name of product
  o Date of delivery / receipt
  o Quantity of product sold (number and / or mass)
	-

• Permit holder is not permitted to engage in any fishing or other regulated activity not indicated in the permit	Farm manager

• Permit holder shall not engage in marine aquaculture in a location not indicated in the permit • Permit holder may not cultivate or harvest commercially at the authorised marine aquaculture site any species other than those listed in the permit • Permit holder may on request by the Department, ensure that an operational plan is in place for the authorised activity • Any diving to be undertaken in areas where diving is prohibited, must be authorised through the relevant permit in terms of the Regulations for the Protection of Wild Abalone	
• Permit holder to put systems in place to minimise the escape of animals. Notice to be given to the Department of escaped animals • No deliberate release of animals into the marine environment is permitted • Permit holder to notify local Fishery Control officer of theft of animals from the authorised site	Farm manager
PERMIT TO DIVE IN BANNED AREAS ACCORDING TO GOVERNMENT GAZETTE NO. 30716 IN TERMS OF SECTION 13 OF THE MARINE LIVING RESOURCES ACT 1998 (ACT NO. 18 OF 1998)	
Aqunion (Pty) Ltd	Farm manager
Romansbaai, Gansbaai Harbour & Danger Point Light House	Farm manager
1. A. Du Toit 2. J. Janse van Rensberg 3. M. Frank 4. J. Walfaardt 5. B. Tanneberger 6. G. Scheun 7. C. Lourens 8. G. van Niekerk 9. R. Kruger 10. G. Martinengo 11. G. Burger	Farm manager
1. CEM 41139 – Moolman Trailer 2. CEM 41140 – Ramkat 3.2 Trailer 3. CEM 45091 – Toyota Hi Lux pick up 4. CEM 10410 – Ford Ranger pick up 5. CEM 44232 – Toyota corolla Sedan 6. CEM 18778 – Mercedes Benz Sprinter NCV3	Farm manager
• The Permit Holder shall utilize this Permit to dive in the location for the activities stipulated in the permit • Diving activities shall only take place during working hours between 08h00 and 15h00 (excluding weekends and public holidays)	Farm manager

• Persons undertaking emergency salvage, maintenance, and vessel safety diving operations outside of working hours between 08h00 and 15h00 (excluding weekends and public holidays) shall inform the local Fishery Control Officer(s) of the nature of the emergency and obtain consent to dive outside of these hours • The Permit Holder shall only launch from authorised launching sites and shall inform the local Fishery Control Officer(s) on a daily basis of all planned trips. (This may be changed to a weekly basis with the written approval of the local Fishery Control Officer(s) of each area). The Permit Holder may dive from the shore without a vessel provided. The local Fishery Control Officer(s) is informed of the daily programme and location from where the Permit Holder will be entering and exiting the sea • The Permit Holder shall ensure that adequate notice is given to the local Fishery Control Officer(s) at least 48 hours prior to any diving activities being undertaken.	
• The Permit Holder shall not collect any wild species or engage in any fishing or other regulated activity not stipulated in the permit • The Minister or Delegated Authority may refuse to issue a subsequent Permit should the conditions stipulated in this Permit not be adhered to	Farm manager

11. MAINTENANCE MANAGEMENT PLAN

This Maintenance Management Plan (MMP) section has been compiled to provide procedures and requirements for maintenance and / or repair of existing structures, infrastructure and associated earthworks within the regulated area of the high-water mark, essential to the operation of the Romansbaai Abalone Farm. The plan is developed based on the environmental sensitivities identified in the specialist reports for Portion 2 of the Farm 711, Gansbaai, and aligns with the Site Development Plans (SDP) approved to date. The target of the MMP broadly includes maintenance and / or repair activities for the sump, pumphouse, fence line, internal roads, and associated infrastructure which are located within the regulated area of 100 m of the High-Water Mark (HWM). The MMP only speaks to existing structures and infrastructure on existing footprints and does not cover new developments.

The plan ensures compliance with the National Environmental Management Act (NEMA, Act 107 of 1998), the Integrated Coastal Management Act (ICMA, Act 24 of 2008), and conditions stipulated in the Environmental Management Programme (EMP).

The following listed activities are applicable:

Listing Notice One		
19A	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from - (i) the seashore; (ii) the littoral active zone, an estuary or a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever distance is the greater; or (iii) the sea; - but excluding where such infilling, depositing, dredging, excavation, removal or moving – (f) will occur behind a development setback; (g) is for maintenance purposes undertaken in accordance with a maintenance management plan; (h) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (i) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	- Removal of silt, sand, debris, washed up kept, rocks and stone in response to high seas, flooding, extreme weather, erosion etc - Cleaning of pipeline grids - Removal of silt, sand, kelp in the sump - Will affect the sump, pipelines, pumphouse and roads - Will include the physical removal of the above manually by hand or in cases of significant storm events, may require the use of machinery - Will not result in the increase in footprint of existing structures and infrastructure - Required to ensure undisrupted operations on site
27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation except where such clearance of indigenous vegetation is required for – (ii) maintenance purposes undertaken in accordance with a maintenance management plan	- Will be required to maintain fence lines and access routes for security purposes - To maintain access to pipelines for inspection and maintenance purposes - May be required in extreme events of underground pipeline failures and repair
Listing Notice 3		
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan	- Will be required to maintain fence lines and access routes for security purposes - To maintain access to pipelines for inspection and maintenance purposes - May be required in extreme events of underground pipeline failures and repair

The following specified maintenance, replacement and / or repair activities are included in the MMP:

1. Cleaning and maintenance of sump

The sump area is a large pond of water open to the sea where the suction and intake lines are located for the intake of the seawater. The sump becomes filled with rock, sand, sediment and kelp, particularly after extreme high tides and high seas, and needs to be 'cleaned' out from time to time.

This activity includes:

- Removal of sand, rock, sediment, biofouling build up
- Cleaning of pipeline covers and grids by removing built of sediment, rock, bio foul and kelp

How:

- Manual removal by divers and maintenance team
- Extreme events may require the use of specialist machinery

2. Pumphouse

General repairs to the pumphouse structure may be required from time to time, particularly after major storm events where built infrastructure may been damaged or broken

The activity includes:

- Built repair to damaged infrastructure / foundations on same footprint
- General maintenance
- Clearing of sediment, rocks, sand, kelp and other debris which can wash up against the pumphouse and affect functionality

How:

- Manual removal by divers and maintenance team
- Extreme events may require the use of specialist machinery

3. Pipelines

The pipelines which transfer water abstracted from the sea are partially located within the regulated zone of 100 m from the high-water mark and also may contain some indigenous vegetation along its length. The pipeline networks are cleaned internally on a regular basis using a specific tool known as a "pig", where the pig is inserted at one end and pulled through the pipeline. However, in the event of a major, unexpected event, the excavation of a pipeline or section thereof may be required for maintenance, repair or replacement works. This may result in temporary excavation within 100 m of the high-water mark or in areas where vegetation may need to be disturbed or removed.

How:

- Manually or machinery excavation to expose water lines

4. Fence Line:

General maintenance will be required of the fence line. This may include vegetation clearance, repair of posts, and removal of windblown sand to maintain security and access. Such works may require from time to time, removal of vegetation or excavation within the regulated zone from the high-water mark.

How:

- Manual or machine excavation when required

5. Access and internal roads

Removal of accumulated sand, debris and rocks will be required for portions of the existing internal access roads within the regulated zone of the high-water mark. Repair post storm of possible erosion and obstructions may be required from time to time.

How:

- Repair of erosion caused by high seas, storm events etc
- Removal of rocks, sand, kelp, debris which may have been washed onto existing internal roads.
- No change in width or length

6. Effluent / Discharge infrastructure

Specific infrastructure for the discharge of the seawater from the farm is in place. As with the intake lines, due to their location within the regulated zone of the high-water mark, are subject from occasional impacts relating to storm surges, unusually high tides, high waves and wind. Removal of debris, rocks, sand, shells, sand and kelp will be required from time to time. In extreme events, the lines could become damaged and may require repair or replacement.

How:

- Manual removal of debris
- In cases where the debris is significant, the use of machinery may be required
- Repair and or replacement of sections of the infrastructure may be required in extreme events

Figure 3: Regulated area within the 100m of the High-Water Mark.

12. COMPLIANCE AND MONITORING

The monitoring of works on site is necessary to demonstrate compliance with the specifications of the Environmental Management Plan to allow for problems or issues of non-conformance to be identified and appropriate corrective measures implemented in order to minimize environmental costs.

Monitoring must include regular site inspections by the ECO / EHSR as well as visual checks by the Site Manager on a daily basis. Review of site documentation is also required from time to time. It is expected that onsite monitoring by the ECO / EHSR or specialist will be required more frequently at the onset of any new works or changes which may take place in terms of existing operations.

Monitoring is done through the use of Environmental Control Sheets, ECO site inspections, monthly ECO reports and environmental audits at a frequency outlined in the conditions of EA or deemed necessary.

12.1. Environmental Control Sheets

Environmental Control Sheets or similar, can be used by the EHSR / ECO as required, to monitor activities and ensure compliance with conditions and mitigations measures.

The EHSR / ECO should familiarise themselves with the full set of recommendations for the site and reasons for these recommendations, as well as understand the site and constraints analysis and be able to identify the constraints / No Go areas.

The conditions of the various applicable DFFE permits must be added to the Environmental Control Sheets as they are issued, in order to monitor compliance with those specific requirements.

Table 7. Environmental Control Sheets for operation. **Note:** The Environmental Control Sheets must be updated as the activity evolves, additional conditions are applicable (permits) or changes to the EMP are implemented

					RECORD OF PERFORMANCE		
TASK	**ACTION REQUIRED / MITIGATION & METHOD FOR IMPLEMENTATION**	**FREQUENCY**	**TARGET / OUTCOME**	**RESPONSIBILITY**	**COMPLETED YES/ NO**	**DATE**	**COMMENT**
OPERATION							
Intake and discharge of seawater	-Maintenance of water channels should avoid disturbance of sensitive areas. Should any construction activities be required as part of maintenance, then conditions of the CEMP are applicable -Screens must be placed on intake and effluent channels at varied intervals, to catch animals and litter -Open channels on the farm should be covered well, to prevent windblown litter being swept into the channels, but still accessible to service as required -When servicing pumps – ensure drip trays are used as required, ensure no contaminated water is discharged -Cleaning of channels to be done mechanically and not chemically -Conduct water quality analysis on a monthly basis by an independent service provider (Al Abbott / Amanzi Biosecurity). Analysis must include ammonia, suspended solids, nitrite, and nitrate – applied to incoming and effluent water	As required	A good quality marine environment which is not affected by the operations and intake and discharge of the seawater	Management / EHSR / ECO			

	-Conduct monthly water quality tests for *E.coli* and coliforms (Meriuex NutriSciences) – applied to incoming and effluent water -In house monitoring on a daily basis of temperature, pH, dissolved oxygen -Comply with conditions of Coastal Water Discharge Permit (including measurement of amount of water discharged (m^3 / hr).						
Ecological / Botanical	- Operational activities should not impact the remainder of the site and these areas should be declared No Go areas. No stockpiling or storage (temporary or long term) is permitted in these area - Landscaping around infrastructure and buildings should comprise of indigenous vegetation only - Targets for alien vegetation clearing should be met - Ecological corridors and the remainder should be inspected on a regular basis for any disturbances relating to the operation of the abalone farm - Limestone outcrops are no go / no development areas - No milkwood's to be removed without permits - Search and rescue to be applied to new development areas - A natural corridor must be maintained between the eastern and western parts of the site along the northern boundary - Search and Rescue of all translocatable bulbs (geophytes) and succulents (including Lampranthus fergusonaiae) should be undertaken from the approved development	As required	A good quality and functional remaining environment, successful management of the remainder	Management / EHSR / ECO			

	footprints for Phases 1 & 2 and the new dam prior to construction. This should be done at the end of the flowering season for the relevant species (ranges from April to October). Material should be translocated to other parts of the property where it will not be disturbed in future, and which is ecologically similar. - No large scale soil disturbance or site clearing should happen in the proposed PV area, and instead vegetation can be trimmed to a maximum height of 1m, maintaining the bulk of the plant cover, whilst allowing for the solar panels to be positioned at a minimum of 1m above ground level. If the vegetation grows above the panels it may be trimmed on a regular basis, as needed, but should never be cut below 300mm above the ground. Cut material can be used as mulch to stabilise and cover any loose sand nearby. - As outlined under Appendix L – the proposed Alien vegetation plan for Brown Dog Plan must be included as a condition of Environmental Authorisation. Area to be cleared – 8 hectares Agulhas Sand Fynbos (critically endangered) on Brown Dog Farm. This is a strategic priority in terms of alien invasive species control in the Walker Bay Fynbos Conservancy. The conservation servitude on the property provides a crucial corridor for ecological functioning in the Walker Bay Protected Environment. The property owner together with the Walker Bay Fynbos Conservancy and Grootbos Foundation has invested significant resources						

	in the restoration of this site. The eight hectares earmarked for this offset funding is protected through a conservation servitude in favour of Fauna and Flora (www.fauna-flora.org) and managed by Grootbos Foundation - ensuring its long-term protection and sound management. The site was burnt in a management burn 18 months ago and it is vital that the post-fire regrowth be removed before seeding. Costs: R32 000 per hectare including initial clean and two follow up sweeps through the site. Total cost of project: R256 000. The project will be implemented by one of the local qualified Green Stewards teams and will be administered and managed by the Grootbos Foundation. The trigger for the above action is one month prior to construction of the 0.8 ha seawater reservoir on Romansbaai Abalone Farm.						
Climate change – infrastructure and operations in High-risk zone	-No additional infrastructure should be permitted within 100 m from the high-water mark -Storage of fuels and chemicals should be limited and as far from the high-water mark as possible -Monitor operations in close proximity to the high-water mark	As required	Avoidance of impacts associated with climate change	Management / EHSR / ECO			
Noise	-Ensure noisy activities take place in line with municipal bylaw -Ensure silencers are fitted to noisy machinery -Machinery to be kept in good working order -Generators to be located in generator rooms to dampen the sound	As required	No impacts to adjacent landowners	Management / EHSR / ECO			
Visual	-Use infrared technology or movement sensors for perimeter security, to minimize the effect of ambient lighting at night on the rural surroundings.	As required	No impacts to adjacent landowners and landscape	Management / EHSR / ECO			

	-Keep general outdoor lighting as unobtrusive as possible through use of low-level bollard type lights, where needed, such as parking areas and footpaths. -Use discrete external signage and avoid commercial advertising or billboard-type signs. Fix signs to buildings or walls, if possible, to avoid the visual clutter of signposts. -Ensure infrastructure and buildings are maintained on a regular basis (i.e., gardens are tidy, lawns are cut, Buildings are painted, refuse areas are secured and tidy etc. -Ensure any on site storage is kept tidy and secured to prevent spread by wind or rain -Keep artificial lighting to a minimum -Encourage good housekeeping to ensure daily operations result in a well-kept site -Restrict operational activities to development area only -Indigenous trees can be planted to screen the activities						
Job creation	-Ensure labour and contractors are sourced locally as far as possible -Encourage educational opportunities to employees METHOD: Include in contract documents and business model	As required	Maximise jobs for local communities	Management / EHSR / ECO			
Archaeological	-Protected zones around archaeological sites are to be maintained -Only existing roads should be used -New excavations must be ceased should any new dense shell middens which may be uncovered METHOD: Check the implementation of mitigation measures	As required	Avoid / prevent disturbance or loss of significant archaeological sites	Management / EHSR / ECO			

Health & Safety	-Appoint officer as required METHOD: Appoint H&S steward	As required	Avoid / prevent H&S incidents	Management / EHSR / ECO			
Fire	-Implement fire management plan / Emergency Action Plan METHOD: Appoint Fire Officer	As required	Avoid / prevent fire incidents	Management / EHSR / ECO			
Fuels and hazardous material	-To be suitably stored -Bulk deposits to be bunded METHOD: Inspect on a regular basis	As required	Avoid / prevent spills and leaks	Management / EHSR / ECO			
Erosion	-Monitor construction and rehabilitated areas	As required	Prevent erosion	Management / EHSR / ECO			
Fresh Water	-Monitor for water wastage (dripping taps, leaking pipes etc) METHOD: Implement water saving measures	As required	Reduce water usage and introduce water saving principles	Management / EHSR / ECO			
Electricity	-Monitor electricity usage METHOD: Implement electrical saving measures	As required	Reduce electrical consumption	Management / EHSR / ECO			
Sewage and sewerage infrastructure	-Visual inspection of conservancy tanks -Ensure tanks are emptied timeously METHOD: Monitor for spills and leaks from conservancy tank, test effluent water	As required	Avoid sewerage spills and contamination	Management / EHSR / ECO			
General waste and refuse	-Implement recycling and reuse as far as possible -Ensure waste storage areas are in line with requirements to prevent adverse impacts on people, the environment, and animals METHOD: -Monitor waste disposal areas	As required	A clean site, with reuse and recycling encouraged	Management / EHSR / ECO			
Site management and renovations	- Renovations and maintenance should be conducted in line with a maintenance schedule to ensure that renovations are done effectively with reduced wastage. When using paints, cleaners and other solvents for maintenance, preference should be made for environmentally friendly products, water-based paints, and avoidance of harsh chemicals. No building materials or products used during renovations should be disposed of on site	As required	An aesthetically pleasing site with schedule maintenance as required	Management / EHSR / ECO			
Alien vegetation management	-Remove alien vegetation from the property to allow for the regeneration of indigenous species	As required	A quality site and remainder, reduce alien vegetation seedbank	Management / EHSR / ECO			

	METHOD: Implement Alien Management SOP						
Fauna	-No feeding of wild animals -No killing of wild animals -Manage impact of gulls METHOD: Seek professional assistance for 'problem' animals, implement recommendations for managing the impact of sea gulls on operations	As required	Functional ecological corridors and remainder which does not harm fauna	Management / EHSR / ECO			
Coastal and marine impact	- Adhere to requirements of Coastal Waters Discharge Permit (CWDP) / GDA -Monitor effluent water quality leaving the facility and ensure it complies with relevant aquaculture guidelines (AAD 2010). -Parameters to be monitored and frequency of monitoring to comply with the CWDP specifications. -Ensure appropriate management of feeding regime to prevent wasteful and excessive accumulation of feed in tanks which will increase dissolved nutrient levels in effluent water. -Farm management practices must ensure regular cleaning of tanks to prevent excess build-up of particulates in grow-out facilities which would lead high levels peaks of particulate outputs during sporadic flushing. -Maintain effluent sump and discharge pipeline and screens in good working order. -Design features including a flooded intake system and screen filters at sufficient distance from the pipe inlet to reduce the intake velocity and sucking force are the main forms of mitigation. -Regular cleaning of the screens will prevent build-up of debris which will reduce the surface area for water to pass through thereby increasing suction force. -Develop a Biosecurity Management Plan for the abalone facility. -In order to minimise negative genetic impacts, broodstock and grow-out organisms should	As required	Management and reduction of operational impacts on the marine and coastal environment	Management / EHSR / ECO			

	originate from the same genetic stock as the wild populations adjacent to the facility i.e., only west coast brood stock should be kept in the hatchery. -Effluent streams post hatchery spawning should be sterilised with bleach prior to release as required -Parent-offspring breeding should be minimised as far as possible -All broodstock and spawning to be undertaken in line with DFFE Hatchery Permit requirements. -Records to be maintained on broodstock origin and spawning. -Regular inspection of effluent canals to remove escapees. -Develop a Biosecurity and Disease/Health Management Plan. -Develop a monitoring programme to monitor abalone health, water quality, disease, and pathogens within facilities. -Report any disease outbreaks to the relevant bodies/authorities. -Stringent monitoring of effluent waters must be undertaken. -The grow-out areas must have effective barriers to prevent potential disease transfer vectors from accessing holding tanks and wastewater sources (e.g., birds). -Undertake regular tank cleaning to prevent large scale build-up of organic material. -Undertake regular maintenance on pipelines. -Periodic draining of effluent sump and removal of sludge -Fit rubbish collection screens on open effluent canals. -Regular rubbish collections for screens and boundary fences. -Educate employees as to best practice for waste management. -Placement of rubbish bins at key areas on the farm.						

	-Periodic beach clean-ups adjacent to the farm. -Develop Biosecurity and Health Management Plan which outlines protocols for storage and use of antibiotics, disinfectants, and other treatments. -Provide for the storage and use of hydrocarbon fuels and oils in the general farm management plan. -Develop contingency plans for accidental spills and have spill kits available on site -Grids are placed on suction / intake lines -Grids and screens to be inspected on a regular basis to check integrity of the screens -Screens to be placed on effluent channel to prevent (cover screens) litter and debris entering the effluent channel on land and being discharged at sea -Screens to be regularly emptied and inspected - Screens on effluent channels prevent escape of larger animals -Hatchery protocol to ensure effluent line around hatchery is cleaned on a regular basis to remove any possible escaped spat - Water quality monitoring for suspended solids, temperature, dissolved oxygen, nutrients, and pH in should be implemented on a regular basis -Monitor and audit conditions as outlined in the Coastal Waters Discharge Permit (CWDP) METHOD: Conduct visual checks, analyse water quality samples, check integrity of screens on a regular basis. - Develop a Biosecurity Management Plan for the facility - In order to minimise negative genetic impacts, broodstock and grow-out organisms should originate from the same genetic stock as the wild populations adjacent to the facility i.e. only west coast brood stock should be kept in the hatchery. - Effluent streams post hatchery spawning should be sterilised with bleach prior to release.						

	- The facility must be affiliated to a Genetic Programme or run such internally - All broodstock and spawning to be undertaken in line with DFFE Hatchery Permit requirements. - Records to be maintained on broodstock origin and spawning. - Regular inspection of effluent canals to remove escapees. - Use Nonex over conventional explosives (reduced possible impact to low) - Conduct faunal survey before use and ensure no fauna are visible within a 1km radius - Limit detonations over a 24-hr period, preferably 1 per day						
Conservation Management	-The remainder of the site which does not form part of the abalone farm should be appropriate maintained, clear of alien vegetation and managed for fire risk	As required	A good quality remainder	Management / EHSR / ECO			
Maintenance management	- Access to rehabilitation sites, sensitive areas, archaeological areas, the beach zone, and the remainder of the site is not permitted to all staff - Demarcated access areas should be provided to access the sump, pumphouse etc - Fencing off of no-go areas and appropriate signage is recommended to ensure minimal activity in the 100 m from the high water mark zone - Periodic cleaning of pipe end strainers / grid will be required - General maintenance on the farm should be undertaken in accordance with a maintenance register and in line with conditions of the EMP - Vehicles, machinery, and pumps should not be serviced in the 100 m from the high-water mark zone without suitable bunding and ground protection and should preferably be avoided - No stockpiling of any materials should take place within the 100 m from the high-water mark zone	As required	Operational maintenance activities to be managed and to have minimal impact on the environment	Management / EHSR / ECO			

	METHOD: Implement recommendations in the Management plans						

13. ENVIRONMENTAL AUDITS

The purpose of auditing is to determine and monitor compliance with the EMP, EA and various other bodies or permits as required for operation and measure its effectiveness in mitigating environmental impacts. In terms of Regulation 34 of the NEMA EIA Regulations, 2014, the holder of the EA must conduct environmental audits in order to determine compliance with the conditions of the EA and EMP.

Operational Environmental Audits are required to determine the operator's environmental due diligence which may affect other required accreditations (i.e., Global Gap). The audit reports should be prepared by an independent person. The audit report should also provide recommendations regarding the need to amend the EMP.

The objective of the environmental audit report is to:

- Report on the level of compliance with the conditions of the EA and the EMP
- Report on the extent to which the avoidance, management and mitigation measures outlined in the EMP, achieve the objectives and outcomes of the EMP
- Identify and assess any new impacts and risks as a result of the activity
- Evaluate the effectiveness of the EMP
- Identify shortcomings in the EMP
- Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMP

An environmental audit report should contain the following:

- Details and expertise of the independent person who prepared the environmental audit report
- A declaration that the auditor is independent
- An indication of the scope of, and the purpose for which, the environmental audit report was prepared
- A description of the methodology adopted in preparing the environmental audit report
- An indication of the ability of the EMP to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity as well as to ensure compliance with the provisions of environmental authorisation and EMP.
- A description of any assumptions made, and any uncertainties or gaps in knowledge
- A description of any consultation process that was undertaken during the course of carrying out the environmental audit report, if required
- A summary and copies of any comments that were received during any consultation process
- Any other information requested by the competent authority.

14. NON-COMPLIANCE

The Environmental Authorisation (EA) stipulates that, *"Non-compliance with a condition of this Environmental Authorisation and the EMP may render the holder liable to criminal prosecution."* It is therefore important that the conditions are adhered to as outlined in the EA and EMP and other applicable permits. A Penalties scheme can be used during construction for transgressions.

The Operator (or contractor) must comply with the environmental specifications and requirements on an on-going basis. In the event of non-compliance, the following recommended process is to be followed:

- The ECO / EHSR / project manager must issue a notice of non-compliance to the Contractor, project manager / department head, stating the nature and magnitude of the contravention.
- The transgression within 24 hours of receipt of the notice, or within a period that may be specified within the notice
- A written statement describing the actions taken, the actions taken to mitigate its effects and the expected results of the actions should be submitted to the ECO / EHSR
- Where the non-compliance situation is not rectified within the predetermined time frame, a penalty can be applied
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMP, disagreement regarding the implementation or method of implementation of conditions of the EMP, etc. any party shall be entitled to refer the matter to the specialists and / or the competent authority for determination

15. CONCLUSION

The original EMP for the operation of Romansbaai Abalone Farm was developed during the environmental impact assessment process which was undertaken for the expansion of the farm. During environmental audits it was found that the EMP was outdated and required revision. The EMP should guide future operation of the farm in order to minimize possible negative impacts and assign responsibility for environmental controls. The EMP provides a tool to recognise the needs of the environment and is intended to be utilised in conjunction with the conditions of the Environmental Authorisation as well as other permitting conditions applicable to the operation of the abalone farm.

16. DECLARATION OF ACCEPTANCE

I, _____ (name), representing _____ (company name), have read and understood the above Environmental Management Plan and hereby acknowledge its contents and requirements as a framework for my company's environmental performance during the applicable development.

Signed: _____ Date: _____