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Coastal and Marine Impact Report

Proposed Expansion of Romansbaai Abalone Farm on Portion 2 of the Farm 711, Gansbaai, Caledon RD

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STATEMENT OF INDEPENDENCE

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1. INTRODUCTION

Romansbaai Abalone Farm was established in 1997 and is located on the outskirts of Gansbaai on the Remainder Portion 2 of the Farm Klipfonteyn, No. 711, Caledon. The property is 57.5 ha in extent with the existing abalone operations occupying approximately 20 ha of the site. The farm can currently produce approximately 250 T of abalone (*Haliotis midae*) per annum and an additional 150 T proposed under the expansion project. The expansion applications relate to market demands and need of the operations to increase their production output.

The proposed expansion of the Romansbaai Abalone Farm involves a strategic enhancement of its operational capacity to meet increasing global demand for high-quality abalone. The primary components of the expansion project include the construction of a new production area with additional grow-out tanks, the construction of a lined seawater reservoir, the expansion of the pumphouse and the installation of new pipelines, and the addition of a ground mounted solar array. These infrastructure upgrades aim to increase the farm's annual abalone production by an additional 150 tons (wet weight).

To facilitate the proposed expansion, the farm plans to increase the development footprint by 6.9 ha, resulting in a total operational footprint of 22.9 ha on the 57.5 ha farm. This leaves 34.6 ha of the property undeveloped, ensuring sufficient space for ecological preservation and future adaptability.

Table 1. Romansbaai Abalone Farm expansion

	Description	Volume	Size (m^2)
1.	New production area/ grow out	150 tons (wet weight)	20000
2.	Line seawater reservoir	41 000 m^2	8000
3.	Solar array	4 MW	40000
4.	Pumphouse and sump	-	140
5.	4 additional pipelines	-	1200
		Total size	**69 340 (6.9 ha)**

2. OPERATIONAL ACTIVITIES

Romansbaai Abalone Farm, cultivates abalone, *Haliotis midae,* for the export market. Small scale cultivation of seaweed (*Graciliria gracillis* and *Ulva lactuca)* also take place on site from time to time and as required.

The current operational activities include the following:

- → Abstraction of seawater from the marine based sump via intake pumps and pipelines
- → Discharge of circulated seawater through the effluent channel and turbine, back to the marine environment
- → Operation of an on-site hatchery for the production of abalone larvae, after a period of a few weeks the larvae settle and are then referred to as spat. Once the spat reaches a certain size, they are transferred out of the hatchery and onto the grow-out platforms on the farm.
- → The abalone are then grown in these tanks until they reach market size
- → The abalone are graded and prepared for packing
- → Live packing takes place on site.
- → No processing of abalone and abalone products takes place on the site and all abalone are transferred to Aqunion's Processing Facility (APF) which is located in the New Harbour, Hermanus.
- → Day to day maintenance and technical works take place across the site
- → General IT and Security aspects are in place
- → Administration (Finance, Human Resources etc.)
- → Power generation through roof mounted solar panels for use on the farm

Only live packing of abalone takes place on site.

Given the nature of abalone farming and the daily requirements, a significant portion of the operational aspects occur within the sensitive coastal zone and regulated area (i.e. 100 m from the high-water mark). The expansion activities within the regulated zone include expansion of the pumphouse (140 m^2), expansion of the existing sump and installation of four additional pipelines. Pipelines will run to the new reservoir and new and existing grow-out platforms on the farm.

The abstraction and discharge of water takes place on a continual basis. The seawater is abstracted directly from the sea out of the sump and distributed across the farm. Once the seawater has circulated through the abalone tanks, the seawater is discharged via the effluent channel back to the sea. The effluent water passes through a water turbine which generates small scale and additional electrical power for use on the site. The discharge of the effluent seawater was previously permitted under the Coastal Waters Discharge Permit (CWDP) in terms of Section 69 of the Integrated Coastal Management Act (ICMA), 2008 (Act 24 of 2008). In 2023, the CWDP fell away and Romansbaai now operates under the General Discharge Authorisation (GDA) as per Section 69(2) of the National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008).

During weekdays, staff clean tanks and baskets on a rotational basis. Tanks are cleaned by draining and sweeping. Splitting and grading of abalone also takes place. The animals are fed daily by hand. Pipe cleaning for the removal of mussels and other biofouling material, also takes place as required.

Abalone larvae and spat are produced in the on-site hatchery and transferred to the grow out areas at a specific age and size.

General maintenance of infrastructure, pipelines, and the site in general, takes place daily.

Maintenance of the intake and effluent channels and associated infrastructure near the high-water mark is required on a regular basis. Dredging of the sump and direct surrounds is required from time to time to maintain the conditions for optimal seawater abstraction. These continual operational requirements are covered under the Maintenance Management Plan for the farm.

Day to day operations on the abalone farm will not change as a result of the expansion application.

2.1. Expansion activities

In order to accommodate the targeted increase in production output of abalone, the farm will need to extract more seawater and therefore discharge more effluent seawater. The increase in size of the pumphouse and sump and the addition of 4 more pipelines will achieve this. The existing sump and pumphouse will be expanded to accommodate the required changes. The expansion activities will take place is areas that are transformed, southwest of the existing structures.

Figure 1a. Aerial photo showing existing sump and pumphouse. Farm boundary indicated in red. Note that the bulk of the farm infrastructure is located on elevated contours above mean sea level.

Figure 1b. Aerial photo showing existing sump and pumphouse. Farm boundary indicated in red. The expansion area is indicated in yellow.

Figure 2. Photo of existing sump and pumphouse. Expansion area indicated in yellow

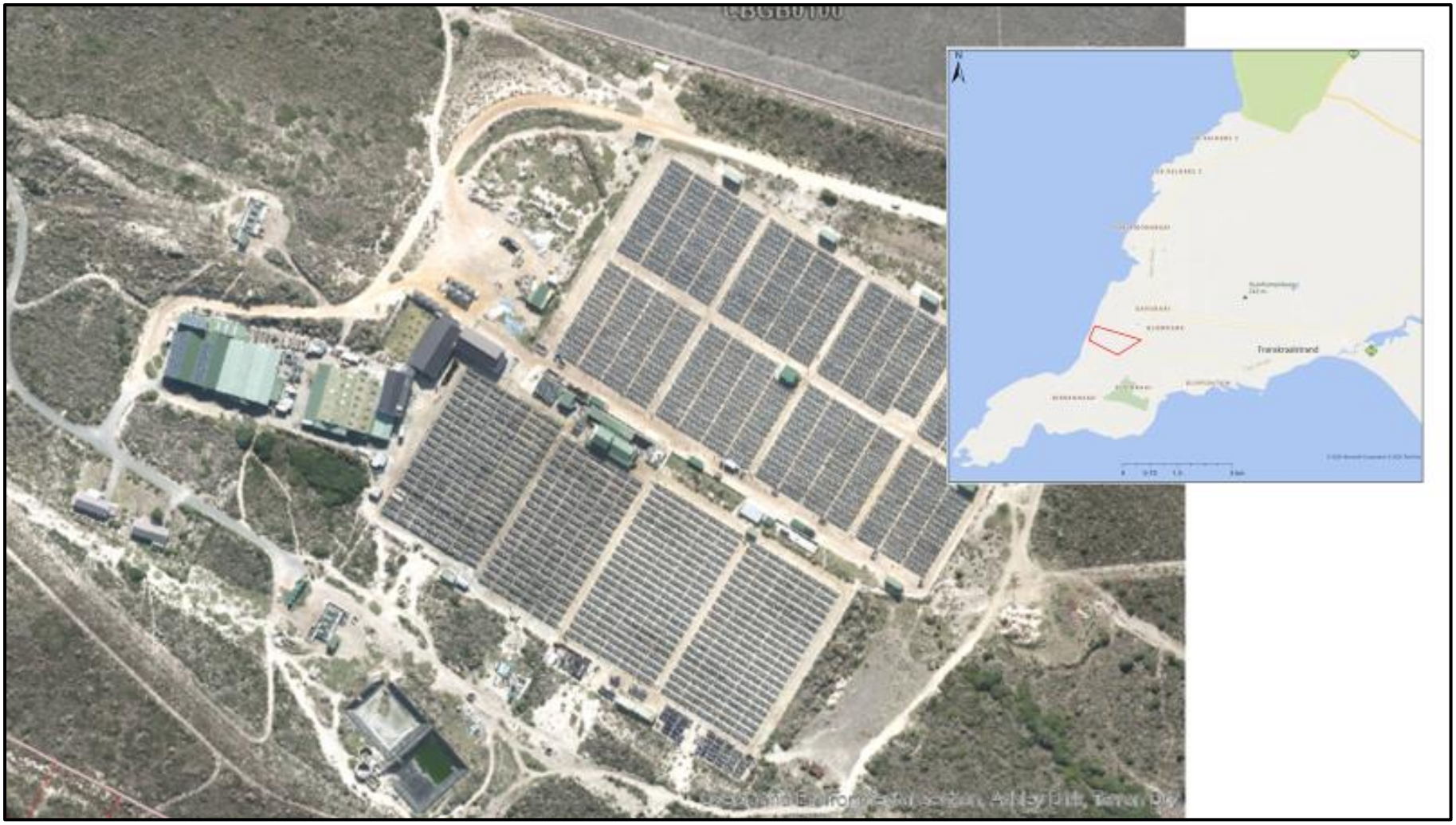

Figure 3. Romansbaai Abalone Farm and associated infrastructure. The bulk infrastructure is located above the 35 m contour.

3. OBJECTIVE OF THIS DOCUMENT

The objective of the document is to assess the impacts of the expansion application, on the marine and coastal environment, this includes the expansion of the operational aspects within 100 m of the high-water mark, as well as the additional abstraction and discharge of seawater.

4. ALTERNATIVES

The proposed expansion of the Romansbaai Abalone Farm includes several key infrastructure expansions and additions, including:

- → Construction of a new production area of 2 ha and 150 Tons
- → Addition of a lined seawater reservoir for temporary seawater storage
- → Expansion of the existing pumphouse and sump area to accommodate the additional water abstraction requirements
- → The installation of additional seawater pipelines to move seawater from the pumphouse to the farm
- → The installation a ground mounted solar power array of 4 ha, 4 MW.

The farm currently occupies an area of approximately 57.5 hectares, with existing operations covering a development footprint of approximately 16 hectares. The expansion will increase the development footprint by 6.9 hectares, bringing the total operational footprint to 22.9 hectares.

The additions to the pumphouse and sump and the pipeline route are restricted to areas where this infrastructure is already located, and it is not practical to move these structures to new areas on the farm. The additional seawater reservoir will receive fresh seawater from the pumphouse and will then gravity feed water across the farm and for this reason, the location of the reservoir is confined to the highest point on the farm. The new platform and solar array are also strategically located in terms of access to existing infrastructure and topography to assist with the gravity feed of water across the farm. Specialist input has been used to guide the evolution of layouts as far as possible.

Three layout alternatives and the No Go option were assessed in the Basic Assessment Report (BAR). Alternative 4 was considered the preferred layout and assessed herein. There is no significant difference in Coastal and Marine Aspects associated with the layout alternatives.

Alternative 4: Preferred:

	Description	Volume	Size (m^2)
1.	New production area/ grow out	150 tons (wet weight)	20000
2.	Line seawater reservoir	41 000 m^2	8000
3.	Solar array	4MW	40000
4.	Pumphouse		140
5.	4 additional pipelines		1200
		Total size	**69 340 (6.9 ha)**

5. ASSESSMENT OF IMPACTS

5.1. Construction phase

Construction related activities associated with the proposed expansion and which may impact on the coastal and marine environment include:

- → Expansion of sump and pumphouse
- → Addition of 4 pipelines

Construction Impact 1: *Disturbance to coastal and intertidal habitat to accommodate expansion of pump house, sump 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.

IMPACT & RISK	DESCRIPTION
Construction Impact 1: Disturbance to coastal and intertidal habitat to accommodate expansion of pump house and additional pipelines	
Nature of impact:	Negative
Extent and duration of impact:	Local; long-term
Consequence of impact or risk:	Low due to the already disturbed nature of the expansion zone which has already been highly disturbed and transformed by existing operations
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Low
Indirect impacts:	N/A

Cumulative impact prior to mitigation:	Loss of and disturbance to coastal and intertidal habitat to accommodate expansion of pump house and additional pipelines
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Med to low
Degree to which the impact can be avoided:	Unavoidable
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High, effective management and mitigation measures can be implemented to reduce the impacts
Proposed mitigation:	→ 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 → Temporary weather and animal proof disposal areas provided within construction area
Residual impacts:	Increased disturbance in the coastal and intertidal zone, with increased risk of construction related impacts during this phase
Cumulative impact post mitigation:	Local biodiversity disturbance, loss and increased disturbance in the coastal and intertidal zone, however due to the small-scale nature of the disturbance to expand the pumphouse, and the disturbed nature of the area around the pumphouse, the significant is reduced to low
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -ve

Construction Impact 2: *Blasting*

Blasting of the rock, may be required to increase the size of the sump and to accommodate the expansion. The applicant intends to conduct any necessary blasting with Nonex and not conventional explosives. The use of Nonex reduces the impact significance to very low. The reason for this is that Nonex is a non-explosive product which uses propellant encased in a specialised cartridge, which reacts to create a high pressure, harmless gas. The gas enters existing fractures or weak areas in the natural rock causing the rock to break apart. The cartridges do still produce a noise; however this is of low intensity and low significance.

Should conventional explosives be required, more stringent mitigation and monitoring will be required. Conventional explosives can cause more significant impacts to marine birds, mammals and fish. Compulsory mitigation for conventional explosives include:

- → Only one detonation permitted per day
- → No blasting to take place during peak whale season
- → No blasting during peak African Black Oyster Catcher breeding season (December to February)
- → Visual inspections of the immediate blast area must be conducted, no blasting can take place until all fauna have moved outside of a 1 km radius, this includes marine fauna.

IMPACT & RISK	DESCRIPTION
Construction Impact 2: Disturbance of marine fauna, including cetaceans, from marine noise and blasting	
Nature of impact:	Negative
Extent and duration of impact:	Local; Short-term
Consequence of impact or risk:	Medium to low
Probability of occurrence:	Medium – blasting may be required to increase the sump size and accommodate the pumphouse expansion
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Low
Indirect impacts:	In the event that blasting is required, the impact of the vibration and noise from the blasting could impact coastal and marine fauna and fish
Cumulative impact prior to mitigation:	Medium to high
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be avoided:	Low, unavoidable
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High, effective management and mitigation measures can be implemented to reduce the impacts associated with blasting.
Proposed mitigation:	→ 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
Residual impacts:	Local biodiversity loss and disrupt marine food chains.
Cumulative impact post mitigation:	local biodiversity loss and disrupt marine food chains.

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -ve

Construction phase impact 3: *Vehicle and pedestrian* traffic

Increased pedestrian and vehicle traffic is expected in the expansion area during the construction phase. This area is already impacted by day-to-day operations. Mitigation measures must ensure that the there are no construction related impacts such as hydrocarbon spills, trampling, litter etc.

IMPACT & RISK	DESCRIPTION
Construction Impact 3: Increased pedestrian and vehicle traffic in the coastal zone, leading to increased risk of hydrocarbon spills from vehicles and trampling from increased foot traffic	
Nature of impact:	Negative
Extent and duration of impact:	Local; short-term, duration of construction
Consequence of impact or risk:	Medium-low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Medium
Indirect impacts:	Ecological impacts and disturbance of sensitive areas during the construction phase, risk of sprawl of activities in the coastal zone, beyond the pumphouse and pipeline corridor
Cumulative impact prior to mitigation:	Degradation of coastal zone during the construction activities.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High, effective management and mitigation measures can be implemented to reduce confine the impacts to the already disturbed zones and manage the magnitude of impact
Proposed mitigation:	→ 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.
Residual impacts:	Temporary disturbance to the coastal zone and habitats during construction

Cumulative impact post mitigation:	Construction related activities temporarily disturb the coastal zone and possible habitats of fauna and flora, however the impact is short term and small scale, located within an already transformed area
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -ve

Construction Impact 4: *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 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. Given the highly dynamic nature of the coastal shore, the impacts around temporary increase in turbidity and suspended solid are not expected to be significant. Local, sedentary fauna and flora may be more susceptible to these impacts however the impact is expected to be small-scale and short term.

IMPACT & RISK	DESCRIPTION
Construction Impact 4: Erosion and increased nearshore turbidity	
Nature of impact:	Negative
Extent and duration of impact:	Local; short-term, duration of construction
Consequence of impact or risk:	Low
Probability of occurrence:	Likely
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	None identified
Cumulative impact prior to mitigation:	Low given extent and duration
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	High

Degree to which the impact can be mitigated:	High
Proposed mitigation:	→ Limit gravel pump use to calm sea conditions as far as possible to reduce the field of impact → Where possible, relocate sessile macro-fauna such as wild abalone, limpets etc → Attempt to reduce construction time, as far as possible
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -ve

5.2. Operational phase

Impacts likely to occur during the operational phase are associated with the general day to day operations within the coastal zone, abstraction of seawater (impingement and entrainment), discharge of effluent seawater and potential impacts on wild stocks from genetic pollution and diseases arising from farmed abalone. General pollution, and chemicals used in the farm facilities may find their way into the marine and coastal environments and temporary disturbance on of biota as a result of maintenance will occur.

Operational Impact 1: *Abstraction of seawater*

Abalone farms need to abstract large volumes of seawater directly from the sea on a continual basis. This seawater flows naturally into the sump area, where pumps are located to abstract the water. Low risk impacts such as entrapment, entrainment and impingement against intake lines are possible.

IMPACT & RISK	DESCRIPTION
Operational Impact 1: Abstraction of seawater	
Nature of impact:	Negative
Extent and duration of impact:	Local; long term
Consequence of impact or risk:	Low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Low

Indirect impacts:	Not known
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	→ 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.
Residual impacts:	Temporary disturbance to the coastal zone and habitats during construction
Cumulative impact post mitigation:	→ Ensure the intake area is designed to reduce the intake velocity through a flooded sump → Fit and maintain screens in intake lines
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -ve

Operational Impact 2: *Discharge of effluent seawater*

Water is abstracted from the sea on a continual basis, 24 hours per day. The water is pumped onto the farm and flows through the abalone tanks and hatchery before being discharged back into the sea through the effluent pipelines.

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 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.

Abalone are fed an artificial pelleted diet and the excess feed which may fall to the bottom of a tank plus excretion by the abalone may result in changes in the ammonia concentration. Experience from other existing abalone farms, combined with the DAFF report (Probyn *et al.* 2014), confirm that the ammonia is negligible and not considered to have any effect on the receiving environment. The abalone tanks are cleaned once per week, this results in increased suspended solids in the effluent

channel during this time. This only occurs during working hours and in some cases the suspended solid concentration of the effluent can be lower than that of the incoming water due to settlement of particles in the abalone tanks. Again, Probyn *et al.* 2014, have shown that the level of suspended solids to not be of concern for receiving environment and the overall characteristic of the effluent waters to have little to no impact on the marine environment.

The water which flows through the abalone grow-out areas is not heated and therefore there is not a significant difference in temperature between the ambient seawater and water which is discharged. Seawater never stands in tanks and is continually flowing through the system therefore the water never remains long enough for there to be any measurable differences in temperature.

IMPACT & RISK	DESCRIPTION
Operational Impact 2: Discharge of effluent seawater	
Nature of impact:	Negative
Extent and duration of impact:	Local; long term
Consequence of impact or risk:	Low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Not known
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	→ 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 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.
Residual impacts:	Low – provided that the mitigation measures are implemented
Cumulative impact post mitigation:	→ Ensure the intake area is designed to reduce the intake velocity through a flooded sump → Fit and maintain screens in intake lines
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -ve

Operational Impact 3: *Genetic impacts and disease*

Escapees from aquaculture operations have the potential to breed with the wild population. Although only one species of abalone (*Haliotis midae*) is farmed in South Africa, broodstock can originate from different geographical areas along the coastline. Two independent reproductive stocks of *H. midae* have been reported in South Africa, with the spatial divide occurring in the region of Cape Agulhas (Sweijd 1999; Evans et al. 2004). Abalone farms typically utilise different genetic broodstock, and breed specifically from a limited broodstock number which are often bred selectively to enhance beneficial traits, usually associated with growth rates. As a result the cultivated offspring have an altered genetic profile which is different from the wild stock occurring in the adjacent waters (DAFF 2012). Should farmed individuals escape into the nearshore waters they have the potential to impact on the genetic structure of the wild stock. This impact is exacerbated if broodstock originates from different genetic stock, however, a small number of escapes will have an insignificant effect on wild populations given the background genetic variability (DAFF 2012). Abalone farms need to abide by a very strict permitting processes and conditions of permits and regular audits are undertaken to monitor both genetics and escapees. In addition, strict health programmes are implemented by abalone farms to prevent disease outbreaks and impacts on the farmed stock.

In addition to the genetics, the concentration of farmed animals always presents the risk of disease. The introduction of diseases, pathogens and parasites from farmed abalone to wild stocks is a real threat.

IMPACT & RISK	DESCRIPTION
Operational Impact 2: Discharge of effluent seawater	
Nature of impact:	Negative
Extent and duration of impact:	Local; long term
Consequence of impact or risk:	Low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Not known
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	→ 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.
Residual impacts:	Low – provided that the mitigation measures are implemented
Cumulative impact post mitigation:	→ Ensure the intake area is designed to reduce the intake velocity through a flooded sump → Fit and maintain screens in intake lines
Significance rating of impact after mitigation (e.g. Low,	Low -ve

Medium, Medium-High, High, or Very-High)	

Operational Impact 4. *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 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.

IMPACT & RISK	DESCRIPTION
Operational Impact 2: Discharge of effluent seawater	
Nature of impact:	Negative
Extent and duration of impact:	Local; long term / operations
Consequence of impact or risk:	Low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Low
Indirect impacts:	None identified
Cumulative impact prior to mitigation:	Medium – operations within the sensitive coastal zone could lead to operational impacts
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed 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 have restricted access to authorised personal only → Employees should be educated on proper waste management

Residual impacts:	Low – provided that the mitigation measures are implemented
Cumulative impact post mitigation:	→ Ensure the intake area is designed to reduce the intake velocity through a flooded sump → Fit and maintain screens in intake lines
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -ve

6. Conclusion

The proposed expansion of Romansbaai Abalone Farm is expected to bring about 4 construction phase impacts and 4 operational related impacts. Due to the fact that the application is for the expansion of existing infrastructure and the effective mitigation and management actions which can be implemented, the impacts on the Coastal and Marine environment are not considered significant. The following mitigation measures associated with expansion and identified impacts are considered mandatory:

Impact	Mitigation and management actions	Significance after mitigation
Construction phase		
Disturbance to coastal and intertidal habitat to accommodate expansion of pump house, sump and additional pipelines	→ 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 → Temporary weather and animal proof disposal areas provided within construction area	Low -ve
Blasting	→ 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	Low -ve
Vehicle and pedestrian traffic	→ 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.	Low -ve
Erosion and increased nearshore turbidity	→ Limit gravel pump use to calm sea conditions as far as possible to reduce the field of impact → Where possible, relocate sessile macro-fauna such as wild abalone, limpets etc → Attempt to reduce construction time, as far as possible	Low -ve
Operational phase		
Abstraction of seawater	→ 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	Low -ve

	human access areas, stockpiles, preparation, lunch areas etc.	
Discharge of effluent seawater	→ 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 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.	Low -ve
Genetic impacts and disease	→ 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.	Low -ve
Disturbance to coastal environments during operations and maintenance	→ 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 have restricted access to authorised personal only → Employees should be educated on proper waste management	Low -ve

The activities associated with the proposed expansion application are not significant in nature and do not pose a significant threat to the coastal and marine environment in the vicinity of Romansbaai Abalone Farm. With effective implementation of the recommended mitigation measures the impacts can be successfully managed and mitigated to acceptable levels.