



LORNAY
ENVIRONMENTAL CONSULTING

APPENDIX B3: SITE DEVELOPMENT PLAN SUMMARY

Romansbaai Abalone Expansion

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		Alternative 1	Alternative 2	Alternative 4 Final Preferred
Production area / grow out platform	Platform 1	1.5	1.5	2
	Platform 2	1.5	1.5	
Reservoir		2	2	0.8000
Solar		4	4	4
Pumphouse		0.014	0.014	0.014
Pipelines (4 new)		0.12	0.12	0.12
TOTAL		9.134	9.134	6.934

Alternative 1

This is the initial layout proposed for the expansion activities and considers specific site constraints and practical options relating to expanding an existing operation. Factors such as topography and linking into existing infrastructure formed the starting point of this layout. This alternative layout proposes a larger development footprint of ~9.6 ha with the encroachment into botanically significant areas, areas rated as high sensitivity by the Botanist. Encroachment into the mapped 2017 BSP CBA areas is also applicable to this alternative.

Alternative 1 layout involves the construction of the production area for the grow-out tanks which will be in the form of two phases. The production area will cover an area of 3 ha in total divided into 1.5 ha for each phase and proposed total output of 300 tons (wet weight).

The proposed seawater reservoir, although confined by virtue of its function, to the highest point on the site, is 2 ha in extent and encroaches significantly into a high botanical sensitivity zone.

The proposal also includes the installation of the solar array situated adjacent to phase 2 production area. However, the location proposed for the solar array at this location was found to present visual impacts and extends into the 2017 CBA area.

The expansion of the pumphouse and the addition of the pipelines are fixed actions which do not have other placement options as they need to tie into the existing infrastructure. However, the pipelines will be installed into the existing pipeline corridor which has already experienced disturbance from the existing operations and similarly, the expansion of the pumphouse will take place directly within and adjacent to the existing pumphouse and therefore also located within a transformed area. There are no location alternatives for the pipelines or pumphouse expansion over any of the alternatives assessed herein.

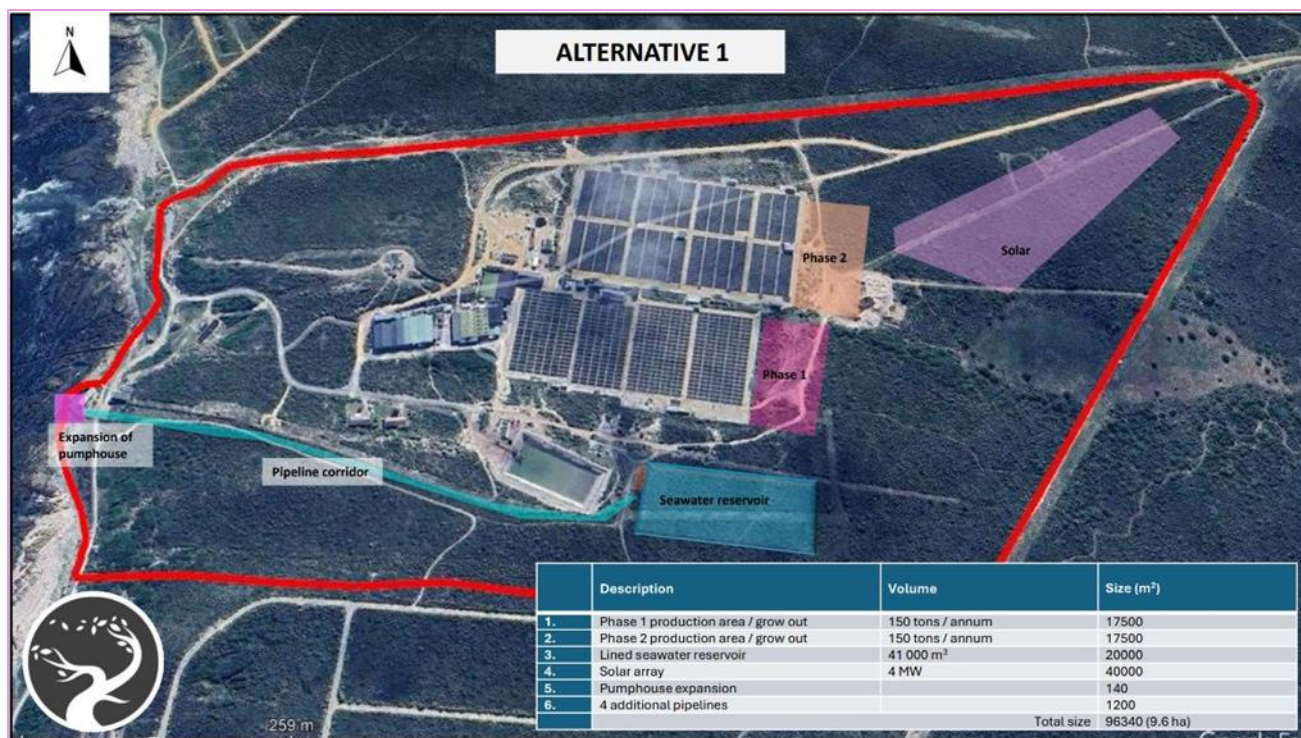
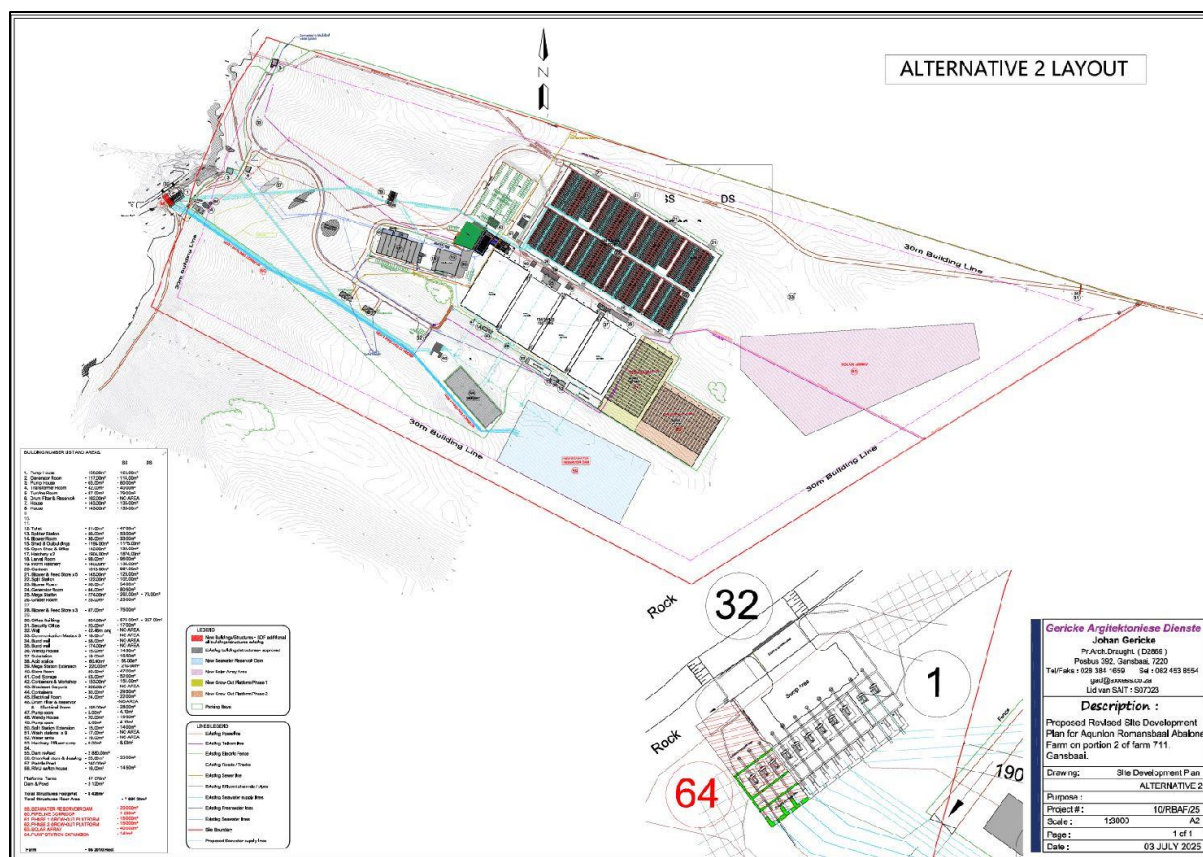


Figure 1: Illustration of Alternative 1.

Alternative 2

Alternative 2 was previously preferred and presented as such in the pre-application public participation process. This layout option involves the same components along with the exact development footprint sizes as in Alternative 1. However the grow out platforms have been moved southwards, to avoid the high botanically sensitive area identified by the botanist. This shift resulted in the slight reduction of the overall impact of the development. All other expansion activities remain as for Alternative 1. The solar PV array was adjusted in Alternative 2, to reduce encroachment into the CBA area as far as practically possible. However, further relocation of the PV array southwards, in order to avoid the CBA entirely, is not feasible, as the area to the south comprises sensitive Milkwood forest.

The proposal also involves the installation of new additional pipelines which are to be placed alongside the existing pipeline route on the property. It is important to note that this will only contribute to minimal impacts, since the area has already been impacted by existing operations on the farm and the existing pipeline corridor. This also applies to the proposed expansion of the existing pumphouse. The pumphouse will be expanded by 140 m² for the installation of pumps that will connect the new proposed pipelines running to the new sea water reservoir. These activities will take place in areas already impacted by operations on site.



ALTERNATIVE LAYOUT 4 (FINAL PREFERRED)

Alternative 4 is the final preferred development layout option, evolved through a comprehensive assessment of the site conditions, site constraints as well as the consideration of the specialist input. The key environmental considerations which influenced the layout include the presence of sensitive botanical areas, milkwood forest, and Critical Biodiversity Areas (CBAs).

Alternative 4 sees a significant reduction in expansion footprint size, from the previously proposed ~ 9.6 ha to ~ 6.9 ha. This is achieved through the reduction in size of the grow out platform (production area) and seawater reservoir. The grow out platform is reduced in size and located on the edge of the existing operations to better link into existing infrastructure and use already impacted land adjacent to the existing. In addition, the grow out platforms were reduced in size and shifted southwards, to avoid the indicated high sensitivity area mapped by the botanist as well as the 2017 BSP CBA.

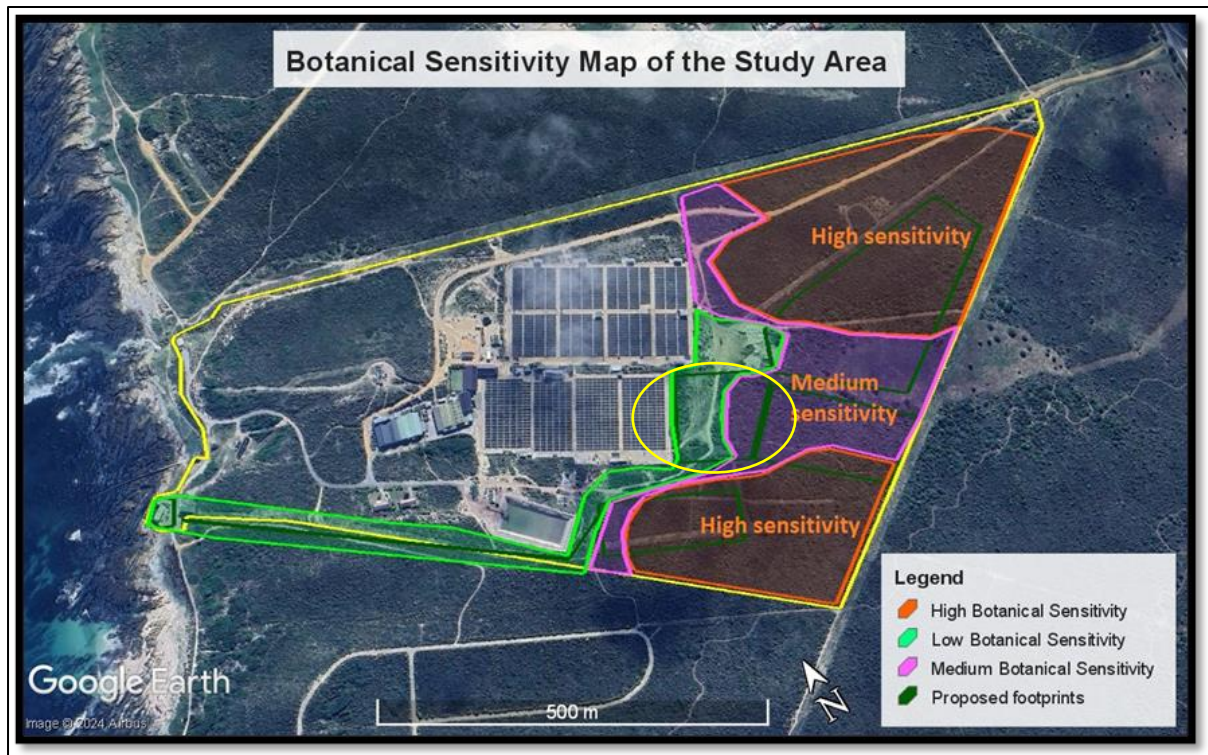


Figure 3. Botanically sensitive areas and Alternative 4 production area which has been reduced in size and shifted south wards to avoid the high sensitivity areas. These changes reduced the botanical significance to a more acceptable impact of **low-medium**.

The proposed sea water reservoir, which by virtue of its purpose, is located in the highly sensitive botanical area, is reduced in size from 2 ha surface area to 8000 m, this action significantly reduced the footprint required in the high botanical sensitivity area. The evolution of Alternative 4 results in the reduction of the overall botanical impact of the proposed development.

The solar PV array is situated in the same position as Alternative 2 , to reduce encroachment into the CBA area as far as practically possible. Further relocation of the PV array southwards, in order to avoid the CBA entirely, is not feasible, as the area to the south comprises sensitive Milkwood forest.

It is important to note that throughout the assessment, the option of installing solar panels on the rooftops of existing farm buildings was investigated. However, it was calculated that only 5 % of the required solar energy was possible with the available roof space, this option was deemed unviable. The use of a raised, solar array means that the vegetation does not need to be cleared and removed, but only brush cut to a minimum of 1 m. As per the botanists' findings, the habitat can still be maintained below the array.

The proposal also involves the installation of new additional pipelines which are to be placed alongside the existing pipeline route on the property. It is important to note that this will only contribute to minimal impacts, since the area has already been impacted by existing operations on the farm and the existing pipeline corridor. This also applies to the proposed expansion of the existing pumphouse. The pumphouse will be expanded by 140 m² for the installation of pumps that will connect the new proposed pipelines running to the new sea water reservoir. These activities will take place in areas already impacted by operations on site.

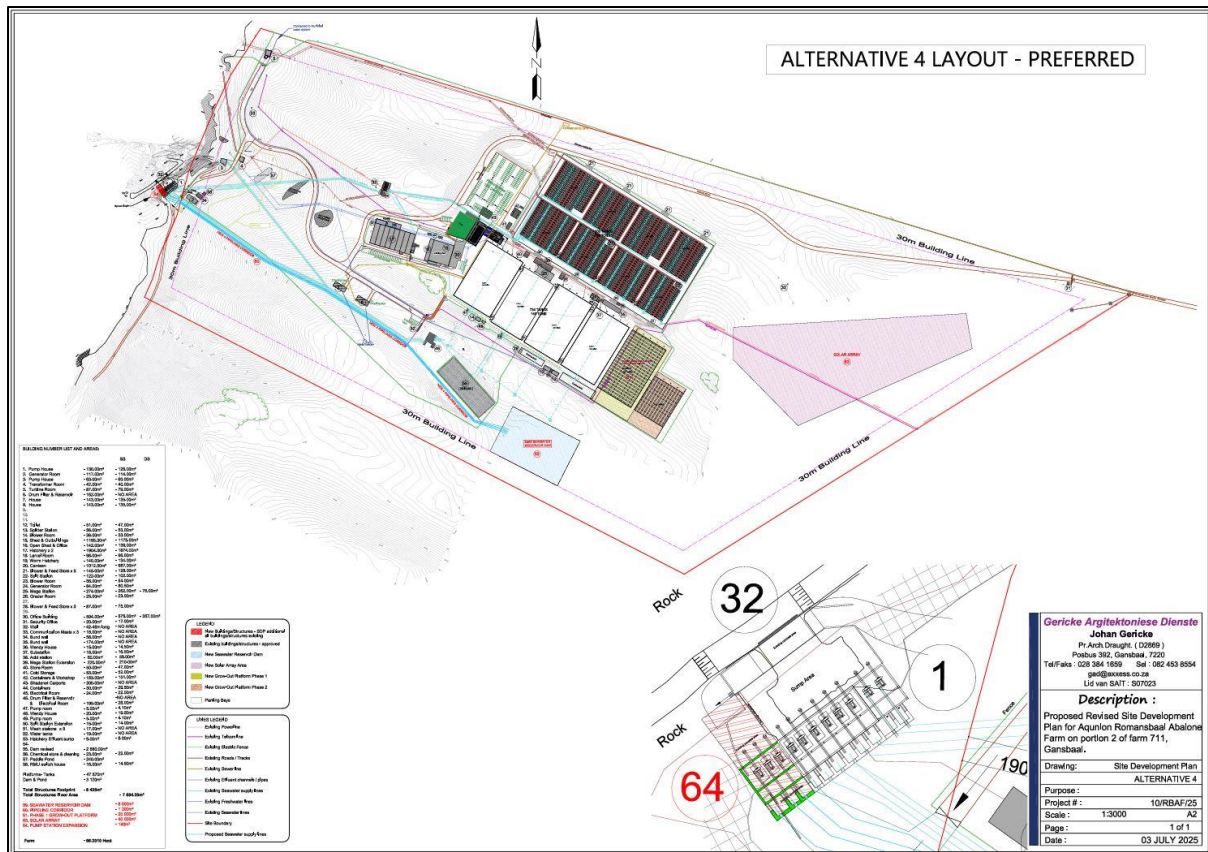


Figure 4: Illustration of Preferred Layout Alternative 4

Expansion of the pumphouse and installation of the pipelines

The pumphouse is already existing and will be expanded, by approximately **140 m²** to accommodate additional infrastructure for increased water intake:

- A total of 4 new pumps and 4 pipelines will be installed at the pumphouse
 - 1 new pump and 1 new pipeline will be fitted within the existing pumphouse
 - 3 new pumps and 3 pipelines will be installed within the proposed expanded pumphouse

Installation of Additional Pipelines

- **4 new pipelines** will be installed from the pumphouse to connect the new lined seawater reservoir and directly to the production area:
 - Each pipeline will be 600 meters long and 500 mm in diameter.
 - The combined water extraction rate will be 1600 m³ per hour.
 - Pipeline installation will not require major ground excavation, as they will be laid alongside the existing pipeline in a previously disturbed area.

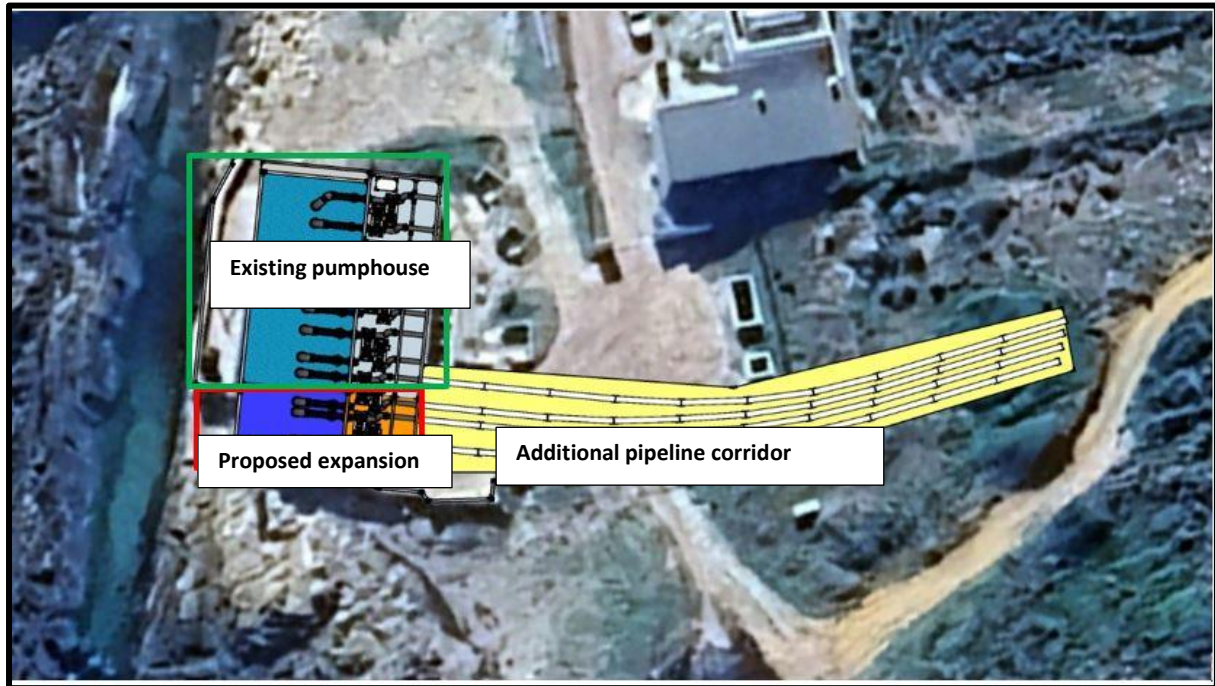


Figure 5: The existing pumphouse (green) will be extended (red) for the installation of new additional pipelines.

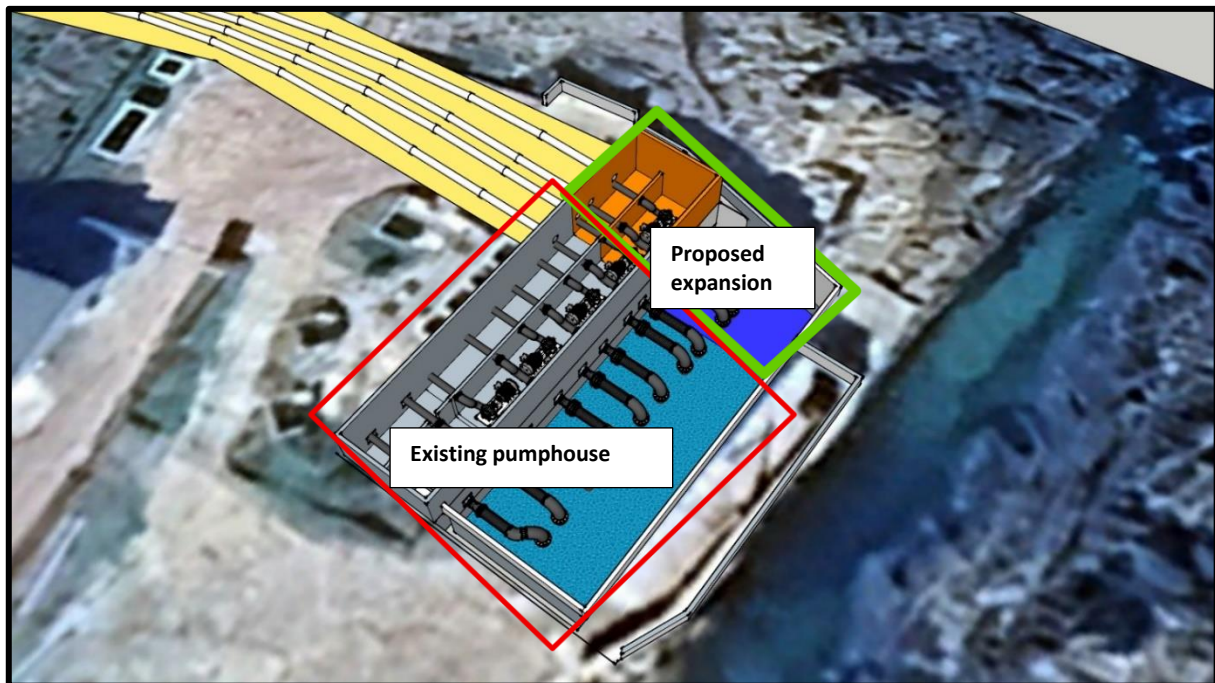


Figure 6: 3D view of the existing pumphouse and the proposed expansion area.