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SOUTHERN SEA FARMS PTY LTD AQUACULTURE PROPOSAL

SANDALWOOD BAY

NOT FOR LOAN

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 304 November 1987

SOUTHERN SEA FARMS LTD
MAHIMAHI PILOT PLANT
SANDALWOOD BAY

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SUMMARY AND RECOMMENDATIONS

Southern Sea Farms Ltd propose to establish a pilot plant to produce Mahimahi (commonly referred to as Dolphin Fish) at a site near Sandalwood Bay, north of Hutt Lagoon on the west coast of Western Australia.

A Notice of Intent (NOI) describing the proposal was submitted by the proponent in August 1987. The Environmental Protection Authority (EPA) has assessed the environmental impact of the proposal from information provided in the NOI and supplementary material provided by the Company, and from advice received from other Government agencies.

The EPA points out that any intention to proceed with further stages of the proposal beyond the pilot stage will require environmental impact assessment, and the environmental acceptability of subsequent stages is not assured. The Authority will use as one of the criteria for evaluating environmental acceptability, the environmental management performance of the proponent during the pilot stage.

RECOMMENDATIONS

1. The EPA has concluded that the pilot stage of the proposal is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this Report.

2. The EPA recommends that the proponent should, prior to construction of the 25 ha pilot plant, prepare and implement a management plan of the lease area in consultation with the Coastal Planning Section of the State Planning Commission and to the satisfaction of the Department of Land Administration and the Commissioner for Soil Conservation. The management plan should address fencing, management of the existing vegetation, fire control, disposal of spoil from pond construction, and disposal of solid wastes.

3. The EPA recommends that any construction of access roads through the proposed lease area and surrounding Crown land, should utilise existing tracks as far as possible, and any new roads be aligned and constructed to the satisfaction of the Department of Land Administration.

4. The EPA recommends that, if the pilot stage should not proceed for any reason or activities at the site cease, the proponent should fill the pond excavations with soil, and rehabilitate the lease area in consultation with the Coastal Management Section of the State Planning Commission and to the satisfaction of the Department of Land Administration. All structures should be removed from the site.

5. The EPA recommends that seawater intake and effluent discharge pipes be constructed in accordance with the requirements of the Department of Marine and Harbours and the Department of Lands Administration.

6. The EPA recommends that a septic tank system be constructed before commencement of the project and this system be used to treat all fresh water wastes.

7. The EPA recommends that the proponent should refer any expansion of the plant beyond the pilot stage, or any further works, to the EPA for assessment, prior to construction.

1. DESCRIPTION OF THE PROPOSAL

Southern Sea Farms Ltd currently operates a development laboratory and hatchery at Two Rocks, where they have been successful in maintaining broodstock of Mahimahi and achieving continuous spawning and breeding of juvenile Mahimahi. The Company now wishes to cultivate the juvenile fish through to harvest size at a commercial scale pilot plant, producing 50-100 tonnes of Mahimahi a year.

The site selected for the plant is adjacent to Sandalwood Bay, North of Hutt Lagoon, on the West coast of Western Australia (see Figure 1). An area of about 25 hectares of vacant Crown land would be required for the pilot plant and associated facilities.

Water for the grow-out ponds would be supplied from an unlined excavation in the inter-dunal depression behind the first vegetated dune. The trench would be dug to a depth of 1.5 metres below the water table which lies at about 0.8-0.9 metres AHD. The excavation would fill with sea water and this would provide essentially filtered water for the fish grow-out ponds. Water would be pumped directly to the fish ponds, and to fibreglass holding reservoirs on the leeward side of the second coastal dune to prevent backup in the event of a pump failure (see Figure 2). In addition, a supplementary pipeline from the beach would be established to provide make-up water, should the water from the excavated ponds be insufficient. The intake pipe would be buried to a depth of approximately 1.5 metres through the beachline, and anchored in shallow water behind the reef at Sandalwood Bay.

It is proposed to test four types of fish holding facilities: conventional 10 metre diameter fibreglass tanks which would be set on sandpads in the area; shallow unlined ponds, of various shapes and sizes, excavated into the water table in the same manner as the make-up water trench; vinyl lined ponds; and concrete tanks (see Figures 2 and 3).

All overflow water from both the tanks and ponds would be piped back to the coast and discharged into the turbulent surf zone. It is envisaged that the quality of the effluent would be close to that of seawater.

To maintain the high water quality required for these fish, there would be about three exchanges of water a day in the pilot plant, and this would require some 15 000-20 000 cubic metres of water a day.

Infrastructure to be established on site would include residential facilities and a laboratory. Fresh water for domestic and laboratory purposes would initially be trucked to the site from a bore on an adjacent pastoral property. As the requirements for fresh water increase, it is anticipated that a freshwater pipeline would be run from a bore located about 2 km to the East.

There is an existing access track to the site of the proposed pilot plant. Initially, this track would be upgraded using local materials. It is envisaged that no major roadworks would be required for the pilot stage of the proposal.

2. ENVIRONMENTAL IMPACTS

A number of potential environmental impacts associated with the proposal have been identified. These impacts are discussed below. Comments and advice were provided to the Authority by a number of specialist Government agencies.

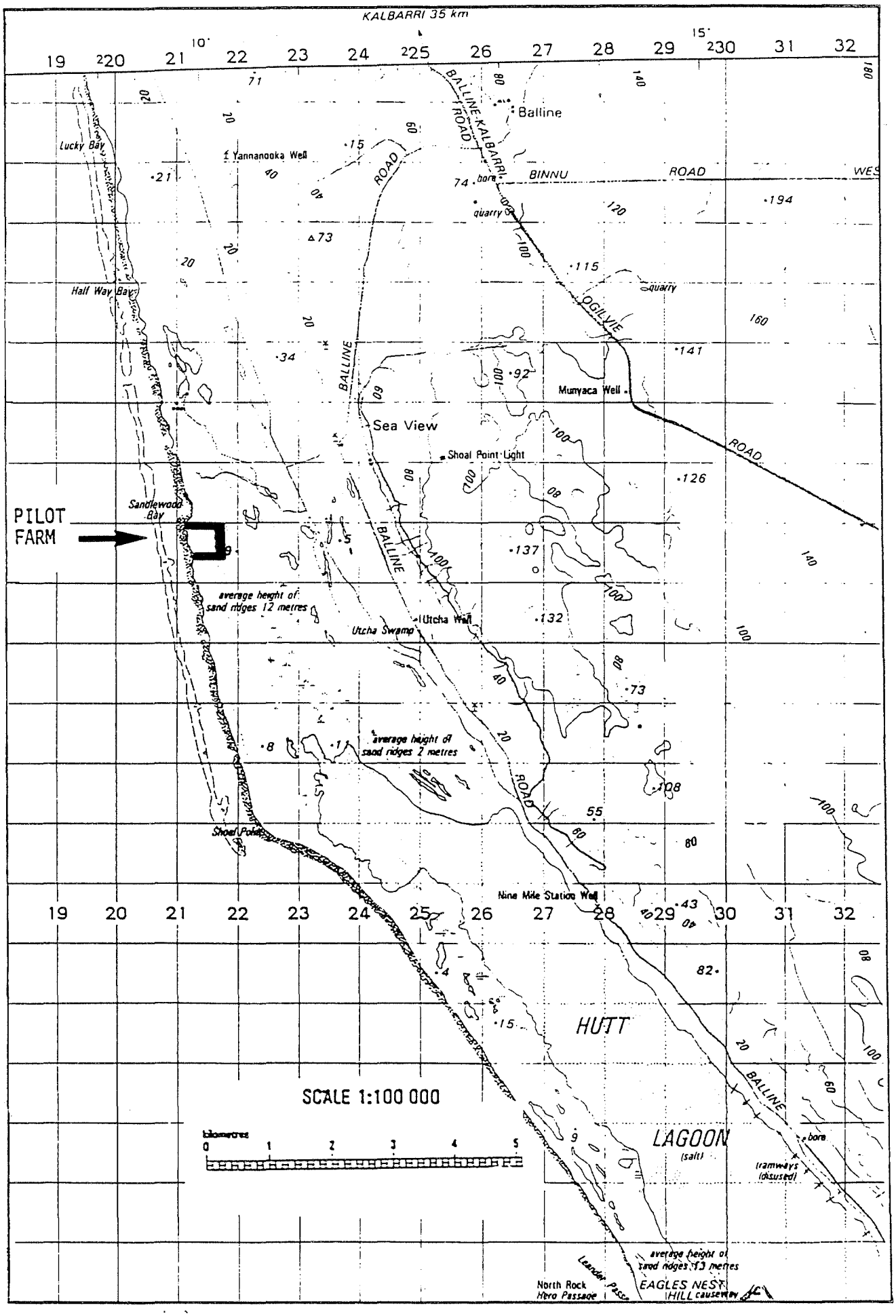

Figure 1. Location of Proposed Pilot Plant

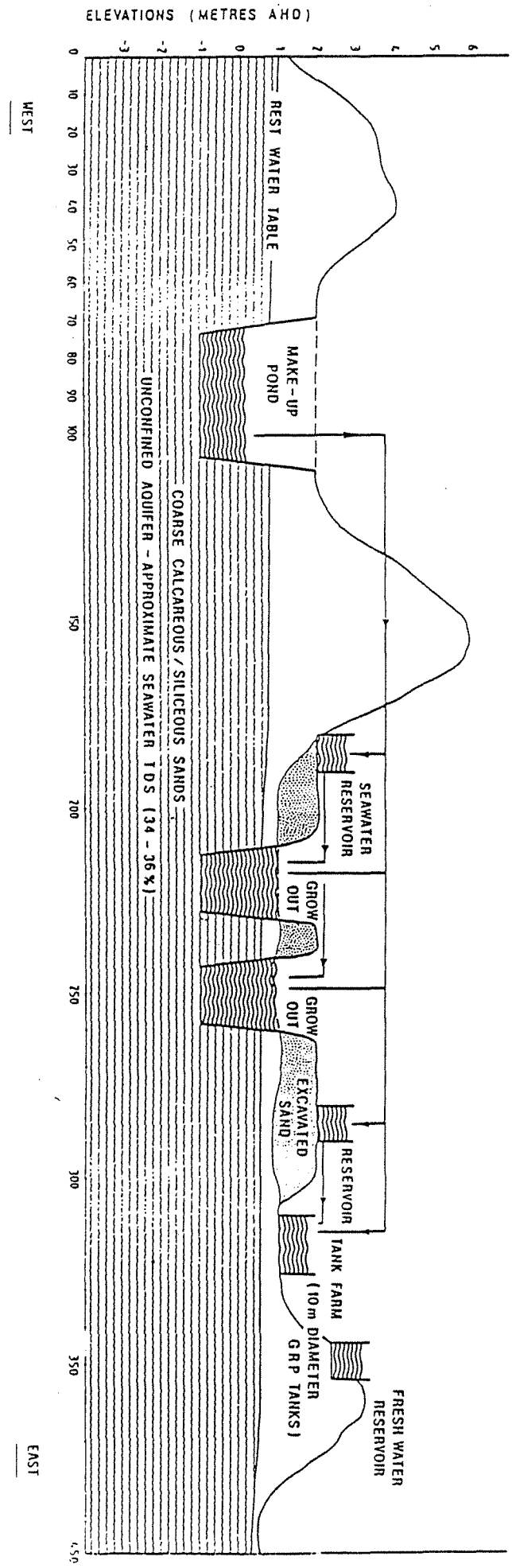

Figure 2. Cross Section of Proposed Pilot Plant
(from Southern Seas Farms Ltd)

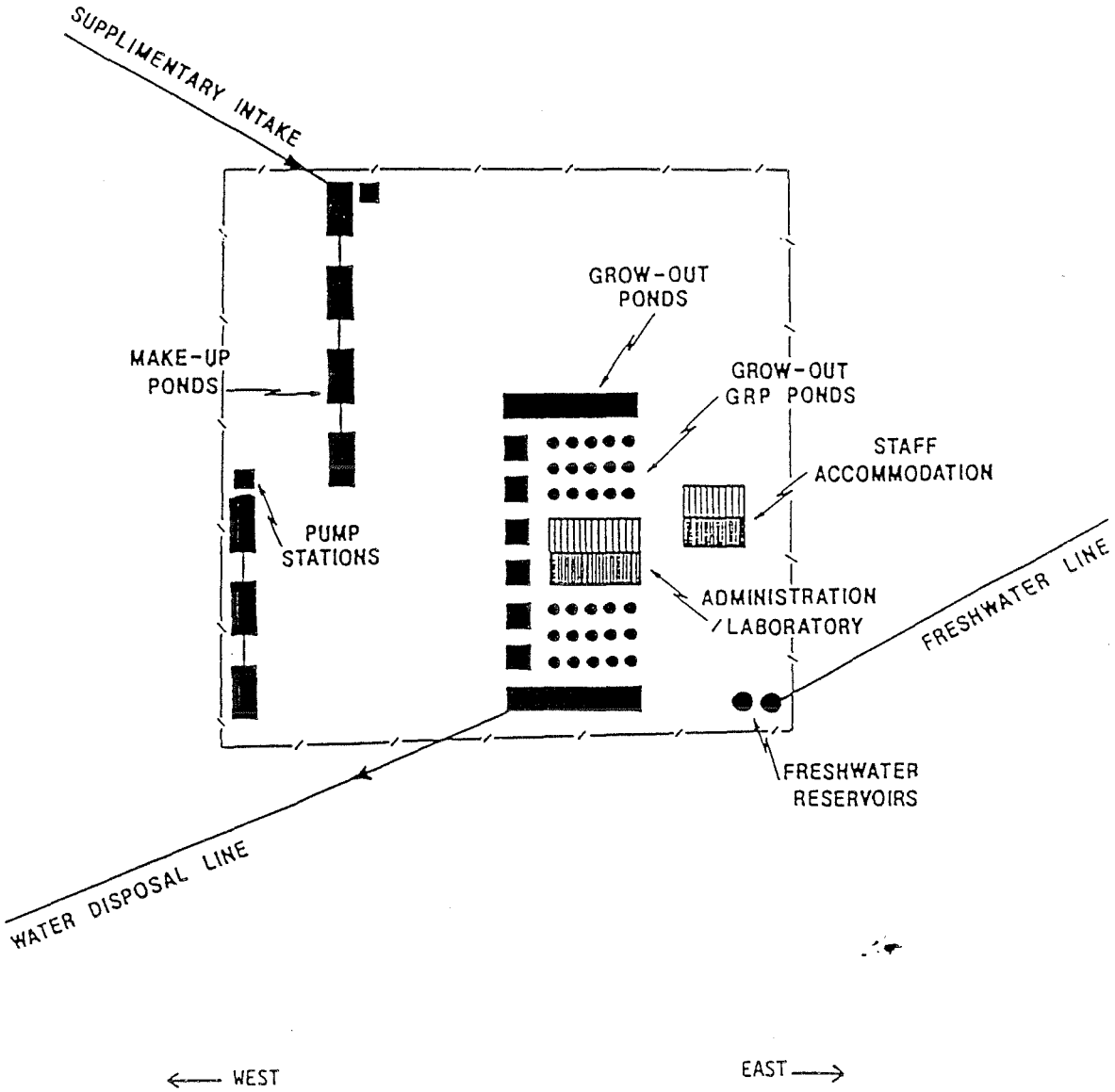

Figure 3. Layout of Proposed Pilot Plant
(from Southern Seas Farms Ltd)

In general, the Authority has found the proposal to be environmentally acceptable subject to the recommendations in this Report.

RECOMMENDATION 1

The EPA has concluded that the pilot stage of the proposal is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this Report.

2.1 DUNE STABILITY AND SITE MANAGEMENT

The site on which it is proposed to construct the pilot plant consists of a series of sand ridges parallel to the shore. These ridges vary in height between 4 and 6 metres AHD. Whilst the dunes in this area are reasonably well vegetated with shrubs and grasses characteristic of coastal areas, substantial blowouts occur to the north of the proposed site. This indicates that the area is susceptable to wind blown erosion, and therefore care needs to be taken to ensure that the existing vegetation on the site is not disturbed.

The potential for destruction of the vegetation and therefore erosion arises from several components of the proposal: fence construction, potential fires, construction of the ponds, disposal of pond construction spoil, construction of seawater intake and outlet pipes, access road construction, and construction of the infrastructure associated with the plant.

Therefore, the EPA is concerned to ensure that during all stages of construction and operation of the pilot plant, maximum care is taken to ensure the existing vegetation is maintained, and areas where any vegetation is disturbed are rehabilitated. To this end, the Authority believes that a management plan for the lease area should be prepared by the proponents before construction of the pilot plant commences. The management plan should address the management of all aspects of the proposal where a potential for disturbance of vegetation or soil erosion exists.

RECOMMENDATION 2

The EPA recommends that the proponent should, prior to construction of the 25 ha pilot plant, prepare and implement a management plan of the lease area, in consultation with the Coastal Management Section of the State Planning Commission and to the satisfaction of the Department of Land Administration and the Commissioner for Soil Conservation. The management plan should address fencing, management of the existing vegetation, fire control, disposal of spoil from pond construction, and disposal of solid wastes.

At present there are a number of tracks traversing the area surrounding the proposed lease for the pilot plant. To avoid the construction of further roads and thereby contributing to the potential for erosion of the site, the Authority believes that existing tracks should be used for access to the site as far as possible.

RECOMMENDATION 3

The EPA recommends that any construction of access roads through the proposed lease area and surrounding Crown land, should utilise existing tracks as far as possible, and any new roads be aligned and constructed to the satisfaction of the Department of Land Administration.

The proposal at this stage is for a pilot facility, where suitability of the chosen environment, suitability of a variety of pond types, and fish growth rates are to be determined before a full-scale commercial facility is proceeded with. Depending on the results gained in the pilot stage, the potential exists (however small) for the proposal to be abandoned after the pilot stage. The Authority believes that if the proposal is to be abandoned at any stage, then the site should be rehabilitated to its natural state.

RECOMMENDATION 4

The EPA recommends that, if the pilot stage should not proceed for any reason or activities at the site cease, the proponent should fill the pond excavations with soil, and rehabilitate the lease area in consultation with the Coastal Management Section of the State Planning Commission and to the satisfaction of the Department of Land Administration. All structures should be removed from the site.

2.2 SEAWATER INTAKE AND EFFLUENT DISPOSAL

In the pilot stage, the proponents propose to test the adequacy of the seawater supply lagoon to provide sufficient water for the proposal. If seawater from this source is found to be insufficient, an intake pipe is proposed to be constructed from the Southern end of Sandalwood Bay. A second pipe would be constructed to dispose salt water effluent from the ponds. The Authority believes that it is important to ensure minimal damage to the dune system and marine environment from construction of the intake and discharge pipes, and from discharge of the effluent to the ocean. In view of this discharge, a works approval issued under the Environmental Protection Act will need to be obtained by the proponent.

RECOMMENDATION 5

The EPA recommends that seawater intake and effluent discharge pipes be constructed in accordance with the requirements of the Department of Marine and Harbours and the Department of Land Administration.

A laboratory, accommodation units, and other infrastructure are to be constructed on the site, and fresh water provided to service these facilities. All fresh water wastes from these facilities should be disposed of to a septic tank system.

RECOMMENDATION 6

The EPA recommends that a septic tank system be constructed before commencement of the project and this system be used to treat all fresh water wastes.

There is the potential for solid waste to be produced as a result of pond cleaning, from the accommodation units and from the laboratory. Recommendation 2 of this Report has called for the disposal of this waste to be addressed in a management plan for the site.

2.3 FUTURE STAGES OF THE PROPOSAL

The proposed development at Sandalwood Bay is a pilot scale project only, and this Report and Recommendations apply to the pilot scale plan only. The recommendations in this Report should not be considered to imply environmental acceptability of a future full size facility. The Authority will use as a basis for evaluating environmental acceptability of a future

full scale plant, the environmental management performance of the proponent during the pilot stage, particularly in the area of management of dune stability.

RECOMMENDATION 7

The EPA recommends that the proponent should refer any expansion of the plant beyond the pilot stage, or any further works, to the EPA for assessment, prior to construction.

3. CONCLUSION

The EPA has concluded the the proposal as presented by Southern Sea Farms in the Notice of Intent and supplementary documentation is environmentally acceptable subject to this Report and recommendations.