MARICULTURE VENTURE EXMOUTH GULF

SERMARINE PTY LTD

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 301 August 1987

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i SUMMARY AND RECOMMENDATIONS

Sermarine Pty Ltd proposes to establish a mariculture development at several locations within Exmouth Gulf (see Figure 1). The proposal is a staged development, and this Report and these Recommendations apply to Stage 1 (the pilot stage) only.

A Notice of Intent (NOI) was submitted by the proponent, describing the proposal, in April 1987.

The Authority has assessed the environmental impacts of the proposal from the NOI and from advice received from other Government agencies.

The EPA points out that further stages of the project beyond Stage 1 will require environmental impact assessment, and the environmental acceptability of subsequent stages is not assured. The Authority will use as a basis for evaluating environmental acceptability, the environmental management performance of the proponent during Stage 1, particularly the effects on mangroves.

RECOMMENDATION 1

The EPA has concluded that Stage 1 of the proposal is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this Report and the commitments made by the proponent.

RECOMMENDATION 2

The EPA recommends that the infrastructure development at Area B be relocated further inland to the area of sand plain to minimise the risk of wind blown erosion of the coastal foredunes and dune ridge.

RECOMMENDATION 3

The EPA recommends that the design of all ponds and seawalls be conducted in consultation with the Department of Marine and Harbours.

RECOMMENDATION 4

The EPA notes that liquid effluent will require licensing under the Environmental Protection Act 1986, and recommends that effluent not be permitted to discharge to the landward side of the mangroves and that discharge be direct to the sea beyond the mangroves.

RECOMMENDATION 5

The EPA recommends that:

the water intake pipe access through the mangroves is such that damage to the mangroves is minimised:

no interruption of groundwater flows to the mangroves occurs such that they are threatened or degraded;

. natural drainage channels are retained or diverted around structures to prevent localised flooding; and

. every care be taken to maintain the viability of the existing mangrove stands.

RECOMMENDATION 6

The EPA recommends that any intention to proceed with further stages of the proposal be referred to the Authority for environmental impact assessment, and this be accompanied by the results of the environmental monitoring of Stage 1 which should consist of:

- an assessment of the status of the mangroves prior to commencement of the project;

- an assessment of the status of the mangroves at the time that the intention to proceed with further stages of the proposal is notified to the Authority; and

- an assessment of the effectiveness of effluent disposal, and associated environmental impacts.

1. DESCRIPTION OF THE PROPOSAL

Sermarine Pty Ltd propose to establish a mariculture venture at several locations within Exmouth Gulf in the North-West of Western Australia. The proposal covers the culture of a variety of products including algae (Dunaliella salina), brine shrimp (Artemia), prawn species indigenous to the area, oysters indigenous to the area, and fish of various species.

The proposal is a staged development and this Report and Recommendations applies to Stage 1 of the proposal only.

Stage 1 comprises essentially three parts:

- the construction of pilot ponds for algae, prawns, fish and brine shrimp on land adjacent to Giralia Bay (see area A on Figure 1). A total of 9 one hectare ponds is to be established on saline coastal flats on the landward side of the mangroves. The ponds will be excavated and the spoil used to build up the pond banks. Shallower ponds for which excavation is not required will be constructed using spoil taken from the immediate surround. Water for the ponds will be drawn from the mangrove fringed creek beds;

- the construction of infrastructure on Sandalwood Peninsula (see area B on Figure 1). This will include accomodation and domestic facilities and a laboratory, hatchery and feed mill; and

- the constuction of pilot ponds for prawns and rafts for oysters at Area C on Figure 1. The rafts will be anchored on the seaward side of of the mangroves.

It is proposed that discharge from all ponds will be pumped to dams on the coastal flats on the landward side of the ponds, and allowed to filter to the groundwater.

The further stages of the project would comprise significant expansion of all pilot projects and will involve further areas within Exmouth Gulf.

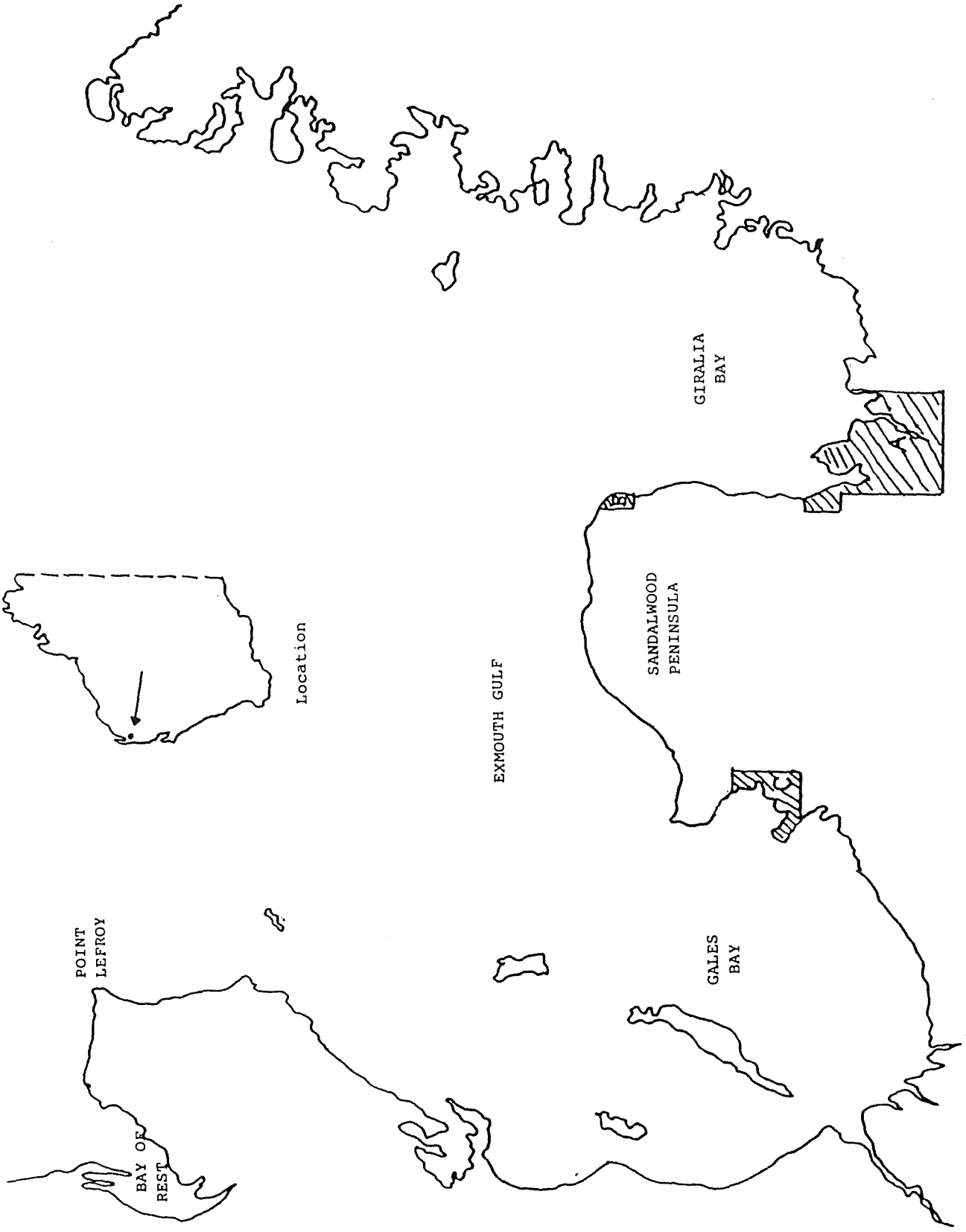
2. ENVIRONMENTAL IMPACTS

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

2.1 INFRASTRUCTURE DEVELOPMENT

The landforms in Area B comprise mostly low coastal foredunes fronting a large Holocene dune ridge, landwards of which is a relatively protected area of sand plain. The large dune ridge in particular is susceptible to wind erosion due to the prevailing NE winds. From the NOI, it appears that the majority of the proposed infrastructure facilities will be located on the large dune ridge and coastal foredunes to seaward. The Authority considers that all facilities should be relocated further inland to the area of sand plain. A pedestrian accessway to the coast and a road to the landing facility should be constructed such that the risk of wind erosion is minimised.

FIGURE ONE


GIRALIA BAY
SANDALWOOD PENINSULA
Location
EXMOUTH GULF
POINT LEFROY
BAY OF REST
GALES BAY

RECOMMENDATION 2

The EPA recommends that the infrastructure development at Area B be relocated further inland to the area of sand plain to minimise the risk of wind blown erosion of the coastal foredunes and dune ridge.

2.2 POND CONSTRUCTION AT AREAS A AND C

It is proposed to construct ponds on the salt flats that lie on the landwards side of the mangroves. The Authority is concerned to ensure that pond construction, and the construction of the seawall, is adequate to protect the facilities from the erosive effects of storm surges and cyclones. Erosion that could occur in the event of a cyclone would result in increase water turbidity in the tidal creeks, with a possible loss of fringing mangroves.

RECOMMENDATION 3

The EPA recommends that the design of all ponds and seawalls be conducted in consultation with the Department of Marine and Harbours.

2.3 EFFLUENT DISPOSAL

In the NOI it is stated that disposal of all pond effluent will be to dam structures located on the landward side of the ponds, and on the saline coastal flats. The Authority is not satisfied that disposal of nutrient enriched effluent to the landward side of the mangroves will not effect their viability. The Authority believes that a more appropriate method of effluent disposal would be direct to sea, beyond the fringing mangroves, to a distance were adequate dilusion would ensure that the mangroves are not effected to a great extent. Basic effluent treatment to remove solids should be undertakent prior to discharge.

The discharge of effluent to the sea will need to be licenced under the Environmental Protection Act 1986.

RECOMMENDATION 4

The EPA notes that liquid effluent will require licensing under the Environmental Protection Act 1986, and recommends that effluent not be permitted to discharge to the landward side of the mangroves, and that discharge be direct to the sea beyond the mangroves.

2.4 IMPACT ON THE MANGROVES

The proposed development has the possiblility of impacting on the mangroves in several ways. These include construction of the water intake pipes through the mangroves, pond construction resulting in possible increased turbidity and algal mat removal with consequent effects on the mangroves, and anchoring of oyster rafts on the intertidal areas. The potential impacts of effluent disposal and erosion as a result of cyclonic conditions have been discussed above.

The Authority recognises the ecological importance of the mangrove stands, and their value as spawning grounds for native prawn species. It is therefore important that developments in mangrove areas are managed so as

to have minimal impact on their viability. The Authority notes the commitment made in the NOI that any disturbance of the mangroves that occurs as a result of the project will be corrected immediately.

RECOMMENDATION 5

The EPA recommends that:

. water intake and disposal pipe access through the mangroves is such that damage to the mangroves is minimised;

. no interruption of groundwater flows to the mangroves occurs such that they are threatened or degraded;

. natural drainage channels are retained or diverted around structures to prevent localised flooding; and

. every care be taken to maintain the viability of the existing mangrove stands.

2.5 FUTURE STAGES OF THE PROPOSAL

The proposed development within Exmouth Gulf is to be a staged development, and this Report and Recommendations applies to Stage 1 only. The Recommendations made in this Report should not be considered to imply environmental acceptability of future stages of the development. The Authority will use as a basis for evaluating environmental acceptability, the environmental management performance of the proponent during Stage 1, particularly the effects on mangroves.

To enable this to be done, the Authority believes that the environmental management of Stage 1 should be monitored by the proponent, and these results provided to the Authority with any intention to proceed to further stages. Such monitoring should include an assessment of the status of the mangroves before commencement of Stage 1, and after commissioning of the development when a decision to proceed with further stages is made. An assessment of the management of waste water should also be undertaken by the proponent.

RECOMMENDATION 6

The EPA recommends that any intention to proceed with further stages of the proposal be referred to the Authority for environmental impact assessment, and this be accompanied by the results of the environmental monitoring of Stage 1 which should consist of:

- an assessment of the status of the mangroves prior to commencement of the project;

- an assessment of the status of the mangroves at the time that the intention to proceed with further stages of the proposal is notified to the Authority; and

- an assessment of the effectiveness of effluent disposal, and associated environmental impacts.

3. CONCLUSION

The EPA concludes that the proposed development by Sermarine Pty Ltd is environmentally acceptable subject to the recommendations in this report and the commitments made by the proponent in the Notice of Intent.