



**PROJECT SEA DRAGON
STAGE 1 LEGUNE GROW-OUT FACILITY
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

VOLUME 5 - APPENDICES

**APPENDIX 17 - CSIRO ASSESSMENT OF THE
LEGUNE STATION SUITABILITY FOR PROJECT
SEA DRAGON**



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To: Dr Robert Bell
Managing Director
Seafarms Group Limited
Level 11, 225 St Georges Trc, Perth WA 6000

Subject: Legune Station & Project Sea Dragon – an assessment of the location and opportunity for large-scale aquaculture development

Dear Dr Bell,

In response to your request for an update from CSIRO on the implications of our scoping study on the suitability of Legune Station as a site for large-scale (>10,000 hectares) land based (ponds) aquaculture, the following is a summary of our assessment.

In brief, we applied the aquaculture site selection method developed by McLeod *et al.*, (2002), with some additional refinements, to identify optimal bio-geographic locations for large-scale (>10,000 hectares) to the Legune site. The results of this analysis, together with our knowledge of the factors required to optimise the environmental management of pond based marine aquaculture (Preston *et al.*, 2001), indicate that the Legune Station site has one of the highest levels of economic and environmental attributes for the sustainable development of large-scale land-based marine aquaculture across the whole of the northern Australian coastline. The following information summarises the reasons for this opinion:

Background

As part of scoping study for Seafarms, we undertook a project to identify key areas of northern Australia that could support large-scale, land-based (ponds) marine aquaculture (Project Sea Dragon). This process, which analysed climatic, biogeographic and infrastructure information overlays and analyses, identified several areas in northern Australia with high potential. One of the optimal areas identified was around the Ord River Irrigation Area (ORIA) on the Western Australia, Northern Territory border.

We note that, subsequent to this work, Seafarms undertook extensive work of their own to identify land parcels, which may be available for acquisition, and conducted your own feasibility studies for Project Sea Dragon, based on a 10,000-hectare industrial-scale prawn farming model. Your investigations included several cattle stations in the Kimberley region, including Legune Station in the East Kimberley, located just over the WA/NT border in the Northern Territory.

Combining the studies of CSIRO and Seafarm, we consider that the Legune Station site has the following positive attributes:

- An ideal tropical climate for growing prawns in land-based pond systems with rainfall largely confined to the hottest months on the year.
- Large areas of flat land on which to develop the ponds and infrastructure.
- Soils with good clay content (water retention) and low acid-sulphate content.
- Close proximity to the coast and ease of access to seawater sourced from large, high-flow estuaries with good water-quality and low levels of pollution.
- The station has been a cattle property for over 80 years. This has resulted in extensive clearing, grazing, fire and pasture planting activities and construction of a large dam, which is used for annual flood irrigation. These activities have extensively modified the natural environment. Despite this modification, the property still has areas of high environmental conservation which could be sustained and co-exist alongside the aquaculture development which will also have the impact of removing a large number of cattle from the coastal floodplain area of the property. Coastal vegetation, including mangrove and samphire, could also be maintained and relieved of pressures from cattle grazing.
- Plentiful fresh water via the 55,000 ML dam, could be used to maintain pond salinity at optimal levels as evaporation occurs. As the project expands, additional water from either an additional dam which could be sustained on the property or accessed via the adjacent ORIA.
- Location distant from industrial and urban development, allowing for ease of quarantine and biosecurity to reduce the risk of disease.
- Access to the port of Wyndham, close proximity to the town of Kununurra, as well as accessible proximity to Darwin by road, ship or air, ensuring access to skilled personnel, contractors and supplies, both during construction and upon commercial production commencing. in the ORIA
- Land tenure facilitated by the NT government to the Pastoral Lands Act, which allows for higher value uses to be developed on pastoral lease properties, including aquaculture. Native Title has been determined in this region and Project Sea Dragon offers a significant opportunity for engagement by and with the local traditional owners to develop economic, social and environmental programs to support local and regional communities, as well as the Project and other support infrastructure development.

Conclusions and recommendations

The scoping study by CSIRO, together with subsequent extensive analysis and feasibility work undertaken by Seafarms and other consultants engaged by Seafarms, indicate that Legune Station has one of the highest levels of economic and environmental attributes required for the sustainable development of large-scale land-based marine aquaculture in northern Australia.

The scoping of this proposal coincides with the recent Australian research advances in prawn farming technology that provide Australian prawn farmers with the ability to be globally competitive in the production of high quality, profitable and sustainable production of Black Tiger prawns (*Penaeus monodon*). In close collaboration with Australian prawn farmers, CSIRO have developed elite stocks of *P. monodon* with enhanced growth rates, survival, feed conversion efficiency and tolerance to disease that have tripled commercial prawn farm harvest yields (Preston *et al.*, 2010). CSIRO have also developed a novel, bioactive prawn feed additive (Novacq™). Farmed prawns fed (Novacq™) grow 20-40 per cent faster (Glencross *et al.*, 2013), and can be produced without the need for any products from wild fishery resources (Glencross *et al.*, 2014). The combined benefits of these research advances further strengthen Australian prawn aquaculture, which is already a global leader in sustainability and environmental management, by enabling prawn farmers to achieve world-record harvests, entirely move away from wild-caught fishery products, and instead use a more sustainable source of feed in order to meet increasing demand for food.

It conclusion, based on our scoping studies to date, there is huge potential for the establishment of large-scale (>10,000 ha), economically and environmentally sustainable land based (pond) prawn aquaculture in northern Australia, with the Legune Station site in the Northern Territory having among the highest attributes for such an enterprise across the whole northern coastline. We would strongly recommend further, more detailed, studies to test this conclusion more rigorously.

Yours sincerely



Dr Nigel Preston

Research Program Director

Integrated Sustainable Aquaculture Production

CSIRO Agriculture Flagship

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