

OUTLINE DEVELOPMENT PLAN
MAHI-MAHI AQUACULTURE PROJECT
Marine Farms Limited
LYNDON LOCATIONS 55 AND 142 EXMOUTH

TABLE OF CONTENTS

1.0	PURPOSE OF PLAN	3
2.0	PROPONENT	3
3.0	LOCATION AND EXTENT OF PLAN AREA.....	3
4.0	LEGAL DESCRIPTION OF LAND AND TENURE	3
5.0	BIOPHYSICAL ENVIRONMENT	4
6.0	EXISTING USE	5
7.0	PROPOSED USE	5
8.0	GENERAL LAYOUT AND FORM OF INTENDED DEVELOPMENT ...	7
9.0	VEHICULAR MOVEMENT AND PARKING	9
10.0	PEDESTRIAN MOVEMENT	9
11.0	OPEN SPACE AND LANDSCAPE.....	9
12.0	ESSENTIAL SERVICES	9
13.0	IMPLEMENTATION PROGRAMME.....	10
14.0	LAND USE MANAGEMENT	10

OUTLINE DEVELOPMENT PLAN
MAHI-MAHI AQUACULTURE PROJECT
LYNDON LOCATIONS 55 AND 142 EXMOUTH

1.0 PURPOSE OF PLAN

The purpose of this Outline Development Plan (ODP) is threefold:

- to establish the general nature and desired character of aquaculture use and development permitted on the land;
- to illustrate the desired spatial arrangements of buildings and structures thereon, and their spatial relationships with surrounding use and development; and
- to illustrate desired movement patterns both within the land and to and from the land.

2.0 PROPONENT

The project proponent is Marine Farms Limited ('Marine Farms').

3.0 LOCATION AND EXTENT OF PLAN AREA

The subject site is located on North West Cape approximately 6 kilometres south of the Exmouth town centre, and about 250 metres south of the townsite south boundary, flanked by the Exmouth – Minilya Road to the west, and Exmouth Gulf to the east. A location plan is provided at Figure 1.

Lyndon Location 55 has a frontage of approximately 120 metres to the Exmouth – Minilya Road, the principal point of access to the site. Lyndon Location 142 abuts Lyndon Location 55 along its eastern boundary and has no road frontage.

Except for the Exmouth – Minilya Road frontage, the site is fully surrounded by unallocated Crown Land (UCL), including the western shore of Exmouth Gulf.

Together, the two locations total an area of approximately 32.3 hectares.

4.0 LEGAL DESCRIPTION OF LAND AND TENURE

Lyndon Locations 55 and 142 are presently comprised in Crown Reserve 36475, vested in the Shire of Exmouth for the purpose of gravel extraction (Vesting Order 1117/65).

To facilitate the proposed aquaculture use and development on the land, the Shire has resolved to surrender the vesting order, and for the land to be suitably revested for aquaculture purposes. The Department of Land Administration (DOLA) has been advised of this accordingly.

It is understood that DOLA initially proposes to grant a commercial lease over the land – generally confined to the northeast corner of the site - to the proponent for development of stages 1 and 2 only of the aquaculture project. A plan denoting the extent of the stages 1 and 2 development and possible future development is provided at Figure 2.

5.0 BIOPHYSICAL ENVIRONMENT

Climate

The site lies within the arid, subtropical climate zone, which is characterised by hot, dry summers and mild-warm winters, and variable rainfall, most of which results from cyclonic activity that generally occurs between November and April.

Mean daily temperatures range from a minimum of 23°C to a maximum of 36°C between January and March to a minimum of 11°C and a maximum of 26°C between June and August (Makaira/Ecologia, 1999).

Total rainfall averages 278 mm per year.

Prevailing winds are from the south and south-west, however the site is somewhat buffeted from the full force of these winds experienced on the west side of North West Cape, due to the presence of Cape Range to the south and west.

Tropical cyclones may be experienced between November and April.

Landform And Topography

The site is generally flat and featureless, except for a centrally located gravel pit. The pit is irregular in shape, extending almost the length of the site.

A small dry creek traverses the northeast corner of the site. A low foredune extends the length of the site's eastern boundary, protecting the western shore of the Gulf.

The site is generally elevated between 2 and 5 metres AHD.

Soil And Geology

Soils within the site comprise brownish or early sands to a depth of 60-100 cm overlying highly porous limestone formations (Kolkovski and Machin, 2002).

Extensive karst formations occur in the general region but there are no recordings of any karst formations under the site.

Hydrology (Surface And Groundwater)

No permanent water surfaces are present within the site.

The highly porous underground limestone formation should enable seawater extraction (required to supply the aquaculture facility) via a series of beach wells dug within the site and adjacent to the beach.

Flora And Fauna (Including Subterranean Fauna)

Vegetation of the site comprises low to medium density coastal heath and shrubs with some medium-height trees.

A database search by the proponent revealed no listings of rare or threatened species of flora and fauna or ecological communities within the site.

However, subsequent on-site surveys conducted by the proponent revealed four cave sites within or immediately adjacent to Lyndon Location 55. The proposed development will be sited away from these caves to avoid any disturbance to them.

The proponent also intends to undertake a flora survey prior to development commencing and will limit clearing to the extent of proposed Stages 1 and 2.

There is also a Critically Endangered Threatened Ecological Community (TEC) approximately 1.6 km northwest of the site known as the *Cameron's Cave Troglotic Community*. However, the proposed aquaculture facility will not impact upon it.

6.0 EXISTING USE

The site was previously used by the Shire of Exmouth for the purpose of gravel extraction but is no longer used for this purpose.

No other use or development occurs on or in the subject land, nor is any use or development occurring on surrounding land.

7.0 PROPOSED USE

The proponent - Marine Farms - is a Western Australian company specialising in the research, development and production of marine finfish and shellfish, utilising well-developed aquaculture technology.

It now seeks to establish and operate a commercial finfish (mahi-mahi) production facility at the subject site.

The project will comprise an intensive, tank-based production system located entirely on land, characterised by:

- an onshore, integrated hatchery and grow-out farm;
- a flow-through water-based system using seawater pumped from beach wells;
- a system to treat the used seawater in an environmentally sound manner prior to its discharge back into the ocean; and
- a high level of management control over the production system.

No cages or any other structures will be deployed offshore.

It is intended to develop the facility in two stages - the first stage (16 – 18 months duration) being a pilot facility producing up to approximately 50 tonnes of fish (whole weight) per year ("t/yr"); the second stage being a fully operational commercial facility within three (3) years of the project's commencement, with a production capability of 250 t/yr.

The principal objectives of the pilot facility will be to confirm the compatibility of the site with the species and the proposed production system; to identify and solve any site-specific problems that may arise; and to generate the environmental information needed to ensure the project remains environmentally sustainable.

The hatchery and grow-out culture units will comprise aboveground tanks of various size, design and fabrication. The hatchery tanks will ordinarily, be manufactured from fibreglass. The grow-out tanks will be manufactured from concrete or other appropriate material and will be located aboveground on concrete slabs.

The tank drains will be located beneath the slab, enabling each tank to be fully drained by gravity. The stage 1 development will accommodate six tanks, each measuring between 10 - 18 metres x 6 metres.

The two-stage development is intended to occupy an area of about 7 hectares, predominantly in the northeast corner of the site, as denoted in Figure 2. This includes space to be set aside for future expansion of stages 1 and 2.

Stage 1 will occupy an approximate area of 7,710 m² (including land comprising the access road). Stage 2 will comprise an additional approximate area of 1,690 m². Total developed area will be approximately 9,400 m² (0.94 hectares).

The staged development process will also determine the potential for further expansion and enhancement of the aquaculture use within the subject site. An area of approximately 5 hectares immediately to the south has been notionally denoted in Figure 2 for potential long - term expansion.

A site development plan and a development plan of proposed Stages 1 and 2 are provided at Figures 3 and 4 respectively.

Seawater Supply

The seawater required for the project will be supplied from beach wells located as close as practicable to the high water mark but ideally, at least 100 metres from the mean high-water mark (MHW). The specific location and construction of the beach wells will be determined in consultation with the Department of Environment Water and Catchment Protection (DEWCP).

Monitoring bores will be constructed to ensure the seawater extracted from the beach wells does not adversely affect existing aquifers. Although the production system is based principally on flow-through, the proponent anticipates that, after treatment, some used seawater may be recirculated through the grow-out tanks.

The proponent estimates the seawater flow requirements for the pilot facility at 80 - 100 litres per second (L/s). This flow rate could be reduced, according to the degree of recycling that can be incorporated into the system.

Seawater Treatment and Discharge

As a consequence of the production process, the used seawater will contain biological matter mainly comprising particulate material and dissolved nutrients. This seawater will be treated to remove most of the nutrients, by way of various filtration mechanisms and settlement ponds.

The proponent intends to ensure the proposed development is environmentally sustainable by using "world's-best-practice" treatment methods. The treatment system will be thoroughly tested and modified where necessary on the pilot facility, to enable the company to fully evaluate the efficiency of the treatment system before proceeding with Stage 2 of the development.

The proponent also proposes to utilise an existing watercourse on the site to return the treated seawater back to the ocean.

This watercourse is normally dry except during the wet season when it carries run-off water from the nearby Cape Range.

The use of this existing watercourse will significantly reduce the environmental impact of the proposal, by removing the need to cut drainage channels through the primary dune system and laying unsightly discharge pipes through or across the beach and some distance into the sea.

The discharge system would be constructed and managed in such a way to avoid erosion, not impede natural coastal processes, nor restrict beach access.

8.0 GENERAL LAYOUT AND FORM OF INTENDED DEVELOPMENT

Proposed Buildings and Structures

An overview follows of the nature, type and purpose of the proposed buildings and structures denoted in Figures 3 and 4 to be constructed as part of stages 1 and 2:

Residences

The nature of the aquaculture activities is such that it is essential to maintain a 24-hour staff presence onsite. Accordingly, provision has been made for two onsite residences: a 120 m² (approx) manager's residence and a 72 m² (approx) accommodation unit.

The manager's residence is intended to be standard three-bedroom house, the specific design and style to be determined at the time an application for planning consent is made to the Shire of Exmouth.

The accommodation unit will probably be an AUSCO - type demountable dwelling. The purpose of the accommodation unit is principally to accommodate staff when the manager is absent.

Office

An 108 m² (approx) AUSCO - type demountable building.

Toilets and Amenities

A stand-alone building, comprising separate male and female showers and toilets. The specific design, style and size of the building will be determined at the time an application for planning consent is made to the Shire of Exmouth.

Hatchery

A 384 m² (approx) steel-frame, zincalume-clad, gable-roofed (11° pitch) building. It will house facilities for live-feed production, broodstock, larval rearing, weaning and pre grow-out, as well as providing for various component uses.

Generator Room

A 24 m² (approx) sound-proofed, steel-frame, zincalume-clad structure to house an emergency generator.

Feed Store

An 18 m² insulated, temperature-controlled, vermin-proof, steel-frame, zincalume-clad shed for the storage of fish food.

Cold Store

An 18 m² insulated, temperature-controlled, vermin-proof steel-frame, zincalume-clad shed for the storage of harvested fish prior to shipping the fish to processing facilities.

Grow-out Area

A 1,900 m² (approx) grow-out area, principally comprising grow-out tanks located on a concrete slab, underneath a post and wire supported shade structure.

Garage-Workshop

An 54 m² (approx) steel-frame, zincalume-clad building adjoining the feed store.

Built Form

Elevation drawings depicting the indicative built form of the residences and the office and hatchery are provided at Figure 5.

Colour schemes and textures of external materials and fixtures will be nominated in the applications made to the Shire of Exmouth for planning and building approvals.

Boundary Setbacks

As nominated on the site development plan provided in Figure 3.

Relationship to surrounding development

There is no surrounding development.

Firebreaks

Firebreaks will be provided to the specifications and requirements of the Shire of Exmouth. Alternatively, provision of a strategic 6.0 metre wide firebreak around the perimeter of the subject land will be considered.

9.0 VEHICULAR MOVEMENT AND PARKING

A 20 bay (approx) car park – as denoted in Figure 3 - will be provided for both staff and visitor parking, and be designed to the specifications and requirements of the Shire of Exmouth.

10.0 PEDESTRIAN MOVEMENT

No footpaths are proposed, however, the proposed access road can be utilised for pedestrian movement and access.

11.0 OPEN SPACE AND LANDSCAPE

Approximately half of the total area of the site will remain undeveloped for the foreseeable future, and remain in its natural state.

Disturbed areas will be revegetated with indigenous species as an erosion control measure.

Perimeter landscaping will be provided around the two proposed residences, the car park, and across the frontage of the proposed office and toilet/amenities building.

12.0 ESSENTIAL SERVICES

The supply and transmission of power/energy

Power will be supplied from existing power transmission lines extending along the Exmouth – Minilya Road.

Western Power has advised the proponent that Exmouth's existing power supply system has sufficient capacity to supply the proposed aquaculture facility.

A diesel generator will be used to supply emergency power during power outages.

The supply and reticulation of potable water

Potable water for domestic use will be provided from the existing town water supply scheme. Additional supply will be provided from on-site rainwater storage tanks.

The town water supply scheme will not be used for the aquaculture production.

Disposal of wastewater and effluent

Grey-water will be collected and used to irrigate vegetated areas around the facility. Effluent will be collected and disposed through an installed septic system, designed and constructed to the requirements of the Shire of Exmouth.

Waste by-product from the hatchery will be disposed of in landfill, to the satisfaction of the Shire of Exmouth, should no market for its use be available.

Stormwater drainage

Stormwater from buildings will be collected and stored in on-site rainwater tanks as an additional source of potable water for the facility.

Stormwater, if any, from the hardstand area beneath the grow-out tanks and other structures will be directed to the vegetated areas of the site, away from developed areas.

Telecommunication services

Telecommunications will be supplied from existing infrastructure located in the Exmouth – Minilya Road.

13.0 IMPLEMENTATION PROGRAMME

Development of stage 1 is intended to commence upon planning and building approvals being granted by the Shire of Exmouth. Stage 2 will follow once the development objectives of the pilot facility (see section 7.0) have been achieved or deemed capable of being achieved. This is envisaged within 18 months of Stage 1 commencing.

Future expansion and development of the site (as denoted in Figure 2) will be subject to environmental approval from the Environmental Protection Authority (EPA), and development and building approval from the Shire of Exmouth, subject to the submission and endorsement of, and compliance with further Outline Development Plans, or suitable modifications being undertaken to this ODP.

14.0 LAND USE MANAGEMENT

The proposed use and development of the subject land for an aquaculture finfish (mahi-mahi) facility should result in minimal or negligible impact on the natural environment, except for some land clearing and the installation of beach wells.

Use and development of the site is to generally accord with this ODP and is subject to the Shire of Exmouth granting development approval pursuant to the Shire's Town Planning Scheme N^o 3.

Where the Shire – when evaluating and determining applications for development approval – has some uncertainty about the impacts of certain aspects of any proposed use/development associated with the project on the land and the surrounding environment, it may refer the applications to relevant authorities for consideration and advice to assist it in determining the development applications.

Potential impacts of the proposed use/development are addressed in context of the following environmental elements:

Ecological Processes and Bio-diversity

Any proposed material change to land or modification to natural environments impacts upon ecological processes.

However, the extent and level of impact is often the critical issue to be addressed, particularly where balance is sought between competing community values for preservation or conservation of the natural environment on the one hand, and exploitation of that same environment to provide for community needs and wants considered essential to sustainability of the community itself, on the other hand.

The small-scale of the proposed development, and that it is considered not to lie in an area of prime environmental importance or significance, suggests that the proposed development will not adversely impact on ecological processes to any significant extent, nor on the region's bio-diversity, which will still be well-represented elsewhere.

The form of use/development proposed, ie. aquaculture, will also reduce the pressure to 'farm' Exmouth Gulf, potentially, a more sensitive natural environment where impacts may have a far greater effect compared to conducting land-based farm operations.

Declared Flora and Fauna

As previously stated, there are no listings of rare or threatened species of flora and fauna or ecological communities within the site.

Vegetation Associations and Habitat

Retention of existing vegetation, and replanting of vegetation in proposed landscaped areas will minimize the risk of land degradation. Such actions can be imposed as conditions on any subsequent development approvals granted for development on the site.

During the construction phase the proponent will implement erosion control procedures such as silt traps, to reduce or prevent erosion on the site.

Water Quality and Quantity

The use and provision of freshwater from the town water supply scheme is subject to the specifications and requirements of the Western Australian Water Corporation.

The site is also outside the boundaries of both the Corporation's existing groundwater reserve and its proposed groundwater reserve.

Proposed beach wells will require to be licensed by the Waters and Rivers Commission (WRC), and be subject to its relevant specifications and requirements.

The underlying seawater aquifer is recharged from the ocean. This supply will not have any impact on groundwater reserves in the area.

Beach wells have the benefit of being significantly less susceptible to storm damage compared to offshore marine intakes, have lower establishment and maintenance costs, and provide higher-quality water in terms of thermal stability and the absence of disease-causing organisms.

They also occupy less space, whether onshore or offshore, thereby having a minimal environmental footprint. Beach wells can be positioned behind the primary dunes without the need for intake lines to cross the beach.

This reduces visual impact, removes potential conflict with other users of the area, and removes the need to excavate through the dunal system, thus reducing the amount of disturbance to the vegetation of the area.

Additionally, the proponent intends to install a monitoring bore for monitoring any changes that may occur in the seawater aquifer over time.

Onsite stormwater will be collected and channelled to vegetated and landscaped areas.

Noise

Adverse noise emissions will be negligible.

Machinery required to run the aquaculture facility – such as air blowers, pumps and emergency generators - will be housed in insulated, unobtrusive and remote structures.

Air Quality

No unpleasant odours will be emitted as a result of aquaculture processes.

The nature of intensive aquaculture production systems requires hygiene to be of paramount importance.

Strict hygiene procedures are enforced in the hatchery and grow-out areas, incorporating footbaths, disinfection baths, restricted access areas etc. to ensure cleanliness and hence prevent the production of odours.

Odour prevention strategies for this project include:

- mortalities and other biological wastes being stored frozen prior to off-site disposal; and
- feedstuffs being maintained in insulated, temperature-controlled and vermin-proof buildings.

Landform and soil stability

The soil and geology of the site renders it stable, with minimal erosion risk.

The proposed development will be sited away from the four caves identified within or near Lyndon Location 55 and will not significantly alter existing contours or the landform.

The tank-based production system will ensure no seepage into the underlying seawater aquifer or any nearby fresh groundwater lenses.

Visual impact

Visual impact will be minimal.

The proposed development will be sited at least 350 metres (or thereabouts) from the closest edge of the Exmouth – Minilya Road, and be screened by existing vegetation and the natural folds of the landscape, and proposed landscaping provided across the front of the proposed office and toilet/amenities building.

The development will also be largely hidden when viewed from Exmouth Gulf, as it will be located behind the primary foredune.

The surrounding vegetated UCL will also screen the subject site from view.

As previously stated, apart from clearing of the proposed development areas, existing vegetation will be retained.

All proposed structures will be no greater than 4.0 m in height and will be constructed in materials sympathetic to the local landscape.

Environmental health risk

The proposed aquaculture facility is unlikely to poses any significant environmental health risk.