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8.0 HEALTH & SAFETY

A risk management approach focuses on a likelihood and consequence approach. A summary table is provided of the risks and consequences at the end of the discussion.

8.1 Prevention and Handling of Fires

The main activity involving fire will be the burning of cleared vegetation in windrows prior to commencement of earthworks each year of construction. Burning will be undertaken if mulching is not required. The risks associated with this activity are considered low, given that they will occur in the cooler months of the year.

Nevertheless all necessary precautions will be undertaken prior to burning including:

- Provision of adequate fire break distances between windrows and any nearby vegetation;
- Fore-warning of local fire authorities before commencement of burning, and liaison with those authorities throughout the burning operation;
- Provision of appropriate fire fighting equipment, monitoring and control measures during burning, as required by local authorities; and
- Avoidance of carrying out burning during periods of high winds.

The risk of fire during normal farm operation is low. If a fire occurs it may be during cooking in the processing plant or as a result of electrical equipment failure. All buildings will be built to the appropriate building codes so that fire safety standards are met. Fire extinguishers will be provided as required and other fire prevention measures will be adopted as required according to the building code.

A wildfire may burn through the wetland. This is unlikely considering the moist nature of the wetland, however in drought conditions a fire may occur. The pipeline will be buried so fire will have no impact on the integrity of the pipe. Firebreak distances will be maintained around the pump station to minimise the risk to that structure.

8.2 Maintenance of Equipment

There are no critical items of equipment that will shut down the operation of the prawn farm.

The pumps in the pump station are important for the regular exchange of pond water. The loss of pumping due to a mechanical or electrical malfunction would stop the exchange of pond water for a period of time until repairs could be affected. There is a capacity within the pond farm to manage exchanges internally by recirculation and the use of the reservoir for a period of 20 days so that repairs of the pumps can be undertaken.

Sections of replacement pipe will be stored on site in the event of a need to replace damaged sections of pipe.

Regular pigging of the pipeline will be undertaken in the off - season when the ponds are fallow.

8.3 Contingency Measures

Back-ups generators will be installed throughout the farm to meet any demands because of the loss of electricity, most importantly to provide emergency power for the aerators within the ponds. A loss of oxygen in the ponds because of a power loss to aerators, particularly at night time may lead to high prawn mortality. A back-up generator will maintain aerator operation, thus eliminating the need for increased water exchange and any unplanned prawn farm discharges.

These back up generators will also assist in providing power to the pump on the farm in the event of a power failure. A rigorous maintenance program for key items of plant and equipment will be instigated, as the commercial success of the farm depends upon the reliable operation of farm machinery and other auxiliary equipment.

No backup power provision is planned for the seawater intake pump station. It is considered that the risk of long-term loss of power at this location is minimal, and the farm can operate for a considerable period without pumping capacity. If necessary a portable power generator can be deployed whilst power is reinstated.

There is a capacity within the pond farm to manage exchanges internally by recirculation and the use of the reservoir up to a period of 20 days for repairs of the pumps to undertaken. Release of waters from the settlement ponds may occur, depending upon the amount of reuse required. If waters are released, they will be treated in the normal way with primary sedimentation then passage through settlement ponds prior to discharge.

Regular maintenance of the cooking and freezing facilities will be undertaken during the off-season.

8.4 Training of Operatives

Training and working on the farm, according to the required Workplace Health and Safety requirements, is a key element of Pacific Reef Fisheries operating strategy. Copies of Pacific Reef's Induction Training and Workplace, Health and Safety Policy are attached as Appendix P.

The following elements are all contained in the induction program:

- Aim of WH&S;
- Workers obligation under the act;
- Hazards;
- Reporting;
- Unfamiliar workplaces
- Procedures relating to emergencies;
- Fire, and fire fighting equipment;
- Use of alcohol and drugs;
- Hazardous substances;
- Personal protective Equipment;
- Manual Lifting procedures and handling of materials;
- Fatigue and Heat stress;
- Electrical Safety;

- Falling from heights or on slippery surfaces;
- Safety harnesses;
- Different Hazards eg:
 - Protruding Hazards;
 - Things left unattended;
 - Vehicles;
 - Sunburn; and
 - Wearing Jewellery.

- Things that can be fall into ponds, pits, trenches, holes, and floor openings;
- Safety signs and barriers;
- Working in confined spaces;
- Use of workplace amenities, cleanliness and housekeeping;
- Workplace Safety Plans; and
- Workplace Health and Safety meetings.

Site Policies:

- Roads;
- Ponds;
- Water Channels;
- Reservoirs;
- Machinery guarding;
- Single piece and multi-piece rim wheels;
- Snakes;
- Spiders;
- Skin Cancer;
- Heat Stress; and
- Procedures for the operation of four wheeled ATV, Skid Steer Loader, and Excavator.

This policy will be actively implemented on this project.

8.5 Emergency Procedures

In the event of cyclone, all essential safety measures will be adopted including:

- Acknowledging all safety messages and liaison with the local State Emergency team;
- All equipment to be tied down or stored as appropriate;
- All non essential personnel to leave the site; and
- Return to site of personnel at the Manager's direction.

In order to plan any necessary emergency response for the project, the proponents have committed to undertake an all hazard risk management assessment in accordance with AS/NZS 4360:1999, in consultation with the local Bowen Emergency Services co-ordinator. This would allow an appropriate mitigation plan to be developed.

8.6 Risk Assessment

The formal evaluation and management of risk via Risk Analysis is generally accepted as one of the basic instruments of good management practice. Risk Analysis involves:

- Identifying the hazards/components e.g. fire on pipeline;
- Analyzing those that pose a risk; loss of pipeline integrity;
- Determining appropriate management options eg. bury the pipeline;
- Implementing the best of these options; and
- Reviewing their effectiveness e.g. monitoring program.

Table 8-1
Likelihood Table

Level	Descriptor
Likely (6)	It is expected to occur
Occasional (5)	May occur
Possible (4)	Some evidence to suggest this is possible here
Unlikely (3)	Uncommon, but has been known to occur elsewhere
Rare (2)	May occur in exceptional circumstances
Remote (1)	Never heard of, but not impossible

To complete the risk-based matrix, a combination of the values of likelihood multiplied by the value of consequence is completed.

Table 8-2
Risk Matrix

(Numbers in cells indicate risk value, the shades indicate risk rankings)

		Consequence					
		Negligible	Minor	Moderate	Severe	Major	Catastrophic
Likelihood		0	1	2	3	4	5
Remote	1	0	1	2	3	4	5
Rare	2	0	2	4	6	8	10
Unlikely	3	0	3	6	9	12	15
Possible	4	0	4	8	12	16	20
Occasionally	5	0	5	10	15	20	25
Likely	6	0	6	12	18	24	30

**Table 8-3
Hazard and Risk Management**

Hazard	Likelihood	Consequence	Risk	Management Option	Monitoring
Fire	5	3	15	Bury pipeline.	During construction, ensure pipeline is buried.
Electricity fault	5	4	20	Ensure back-up generators are available to run pond aerators.	During construction, sufficient back-up generators are available to replace electricity as required.
Fire in Processing Area	4	4	16	Trained staff. Correct fire extinguishers are available and procedures are in place to manage fire.	Regular training of all processing staff and audit of fire equipment.
Cyclones	3	5	15	An emergency plan with the local Bowen Emergency Services has been implemented and rehearsed.	Regular annual audits of plan with all relevant personnel.