Schedule of conditions

The aforementioned description of the ERA for which this authority is issued is simply a restatement of the activity as prescribed in the legislation at the time of issuing the authority. Where there is any conflict between the above description of the ERA for which this authority is issued and the conditions as specified in this authority as to the scale, intensity or manner of carrying out of the ERA, then such conditions prevail to the extent of the inconsistency.

This environmental authority consists of the following schedules of conditions relevant to various issues:

Schedule A - Property Descriptions

Schedule B - General Conditions

Schedule C - Air

Schedule D - Water

Schedule E - Stormwater Management

Schedule F - Land Application

Schedule G - Noise

Schedule H - Waste Management

Schedule I - Self Monitoring and Reporting

Schedule J - Approved Documents

Schedule K - Definitions

Schedule A - Property Descriptions

(A1) The environmentally relevant activity is situated on Lot 1, Plan 846427, County of Murchison, Parish of Long Hill located at Greenhills Road, Ilbilbie. (Lot 1, Greenhill Access Road, Greenhill.)

END OF CONDITIONS FOR SCHEDULE A

Schedule B - General Conditions

Requirements of Other Legislation

(B1) The granting of this environmental authority or the imposition of any condition hereof shall not be taken to prejudice the right in law of any other competent authority to impose any condition, refuse any application or take any action in relation to releases of any contamination as a result of the environmentally relevant activity/activities.

Compliance with Environmental Authority

(B2) Contaminants must not be released to the environment other than in accordance with this environmental authority.

(B3) All requirements of the environmental authority must be complied with.

Compliance with Application for Environmental Authority

(B4) The environmentally relevant activity must be constructed, operated and maintained in accordance with all undertakings of the environmental authority application and any other documents approved by the administering authority as set out in the attached Approved Documents Schedule.

(B5) In the event of any inconsistencies arising between the undertakings of the environmental authority application or other approved documents as set out in the Approved Documents Schedule and the conditions of this environmental authority, the conditions of this environmental authority must apply.

(B6) The holder of this environmental authority must take all measures, perform all acts and do all things necessary:

(i) to contain or prevent any release of contaminants prohibited by this environmental authority, and
(ii) to cease any release of contaminants prohibited by this environmental authority, and
(iii) to prevent any further release of contaminants prohibited by this environmental authority, and
(iv) to prevent, abate or mitigate any environmental harm or environmental nuisance resulting from any release of contaminants prohibited by this environmental authority.

(B7) The holder of this environmental authority must:

(i) install and operate all works and control equipment, and
(ii) take all measures, perform all acts and do all things,

necessary to ensure compliance with the conditions of this environmental authority.

Definitions

(B8) For the purposes of this environmental authority any term not otherwise defined in legislation or in the Definitions Schedule of this environmental authority shall have the meaning conferred to that term in its common usage.

(B9) In the event of any inconsistency arising between the meaning of any term provided in the Definitions Schedule of this environmental authority and common usage of that term, the meaning conferred in the Definitions Schedule of this environmental authority must apply.

Display of Environment Authority

(B10) A copy of this environmental authority shall be prominently displayed at all times in a location readily accessible to plant personnel.

(B11) A copy of this environmental authority shall be provided, on request, to any authorised person.

Trained Operators

(B12) All persons engaged in the conduct of the activity, including but not limited to employees and contract staff, must be trained in the procedures and practices necessary to:

(i) comply with the conditions of this environmental authority, and
(ii) prevent environmental harm or environmental nuisance during normal operations and emergencies;

or be under the close supervision of such a trained person.

Discharge of Electromagnetic Radiation

(B13) Any visible light released from the licensed place shall not cause an environmental nuisance at or beyond the boundary of the licensed place.

Environmental Management Plan

(B14) An Environmental Management Plan as supplied by the applicant and set out in Schedule J must be complied with.

Inspections by authorised persons

(B15) At all reasonable times, and to the satisfaction of an authorised person, the following must be provided to enable an authorised person to check compliance with the conditions of this environmental authority:

(i) monitoring facilities, and
(ii) access to such facilities, and
(iii) any reasonable assistance which the authorised person deems necessary.

Records

(B16) Any record required to be kept by a condition of this environmental authority must be kept in legible form at the premises and be conveniently located for examination by an authorised person.

(B17) Copies of any record required to be kept by a conditions of this environmental authority must be provided to any authorised person or the Administering Authority on request.

Alterations

(B18) No change, replacement or operation of any plant or equipment is permitted if the change, replacement or operation of the plant or equipment increases, or is likely to substantially increase, the risk of environmental harm or environmental nuisance.

Calibration

(B19) All instruments required under any condition of this environmental authority for the measurement of any parameter must be calibrated, operated and maintained according to the manufacturer's specifications.

(B20) A record shall be kept of the date and details of calibration of any instrument required to be kept and operated under this environmental authority.

(B21) The record of calibration must be made available to an authorised person or the Administering Authority upon request.

Maintenance Program

(B22) A maintenance program is to be in operation with emphasis on preventive maintenance rather than breakdown maintenance. The maintenance program referred to in this condition is to include, but not be limited to, equipment and facilities used for separating contaminants from the medium in which they are carried, any automatic devices used for securing the more efficient operation industrial plant, any device to indicate or record or give warning of excessive contaminant release and any other device or structure used for the purposes of limiting the release of contaminants.

Community Liaison Committee

(B23) The holder of the environmental authority must, in consultation with the administering authority, co-operate with and service any community environment liaison committee established in respect of either the licensed place specifically or the location of the licensed place in general, for example an industrial estate.

END OF CONDITIONS FOR SCHEDULE B

SCHEDULE C - AIR SCHEDULE

Release of Contaminants to Air

(C1) The environmentally relevant activity must be carried out by all practicable means necessary to prevent or minimise the release of contaminants to the atmosphere.

Nuisance

(C2) No release of contaminants, including but not limited to odour, dust, smoke, fume, particulate, and aerosols shall cause or be likely to cause an environmental nuisance beyond the boundaries of the licensed place.

END OF CONDITIONS FOR SCHEDULE C

SCHEDULE D - WATER

(D1) Contaminants must not be directly or indirectly released from the licensed place to any waters or the bed and banks of any waters except in compliance with the conditions of this Schedule.

Release Point/s

(D2) Contaminants must not be released from the licensed place to any waters at any point other than from the discharge structure of the final treatment pond (as shown in Conditions J1, Schedule J) to waters described as Knoblers Creek at a location described as Knoblers Creek at approximately 1.2 kilometres AMTD.

Contaminant Sources

(D3) The only contaminants permitted to be released from the discharge structure of the final treatment pond (as shown in Condition J1, Schedule J) to waters described as Knoblers Creek at a location described as Knoblers Creek at approximately 1.2 kilometres AMTD, are wastes originating from aquaculture ponds 1 to 10 (as shown in Condition J2, Schedule J) after treatment in the treatment pond system.

Release Point Details

(D4) The design, location and position of the discharge structure, as supplied by the applicant, is set out in Condition J1 of Schedule J.

Quantity of Wastewater Released

(D5) The quantity of wastewater released during any day shall not exceed 22 500 cubic metres. The total quantity of wastewater discharged during one calendar year shall not exceed 2 737 500 cubic metres, being an average of 7500 cubic metres per day.

Quality of Contaminant of Release to Waters

(D6) The release of contaminants to waters must comply with each of the following quality characteristics:

(i) the Suspended Solids shall not exceed a mean value, taken of at least five consecutive monthly samples, of 25 milligrams per litre with no single value to exceed 100 milligrams per litre;
(ii) the pH value shall be not less than 6.5 nor more than 8.7;
(iii) the Dissolved Oxygen shall be not less than 5 milligrams per litre;
(iv) the Total Nitrogen (as N) (determined as the sum of Organic Nitrogen, Ammonia Nitrogen, Nitrite plus Nitrate Nitrogen) shall not exceed a mean value, taken of at least five consecutive monthly samples, of 0.8 milligrams per litre with no single value to exceed 3.2 milligrams per litre;
(v) the Total Phosphorus as P shall not exceed a mean value, taken of at least five consecutive monthly samples, of 0.07 milligrams per litre with no single value to exceed 0.28 milligrams per litre;
(vi) the Chlorophyll 'a' concentration shall not exceed a mean value, taken of at least five consecutive monthly samples, of 25 micrograms per litre with no single value to exceed 100 micrograms per litre;
(vii) for other characteristics not listed above, the release shall not have any properties no contain any contaminants or organisms in concentrations which make or which, in the opinion of the Administering Authority, are capable of causing environmental harm or an environmental nuisance.

(D7) Where more than one limit is specified for a quality characteristic, the contaminants released must comply with each limit for that quality characteristic.

(D8) Notwithstanding the quality characteristic limits specified in this water schedule the release of contaminants to waters must comply with the following characteristics;

(i) the release must not have any properties nor contain any organisms or other contaminants which, in the opinion of the administering authority, are capable of causing environmental harm or an environmental nuisance.
(ii) the release must not produce any slick or other visible evidence of oil or grease.

Treatment of Wastewater

(D9) Wastewater shall be treated, to achieve the quality characteristics stated in Condition D6, using the Wastewater Treatment System described in Condition J3 of Schedule J.

Times of Release

(D10) The release of contaminants to waters must only occur from 1.5 hours after local high water until 1 hour before local low water.

END OF CONDITIONS FOR SCHEDULE D

SCHEDULE E - STORMWATER MANAGEMENT

Prevention of Contaminant Releases caused by Rainfall

(E1) The holder of this environmental authority must comply with the Stormwater Management Plan as supplied by the applicant and set out in the Conditions J5 of Schedule J.

(E2) Rainfall and stormwater runoff which may contact wastes or contaminants on the licensed site must not be released to any stormwater drain or waters without the holder of this environmental authority taking all practicable measures as may be necessary to prevent or minimise the release of such wastes or contaminants.

(E3) Rainfall and stormwater runoff not likely to contact any wastes or contaminants on the premises must be diverted away from any area of the licensed site where contact with wastes or contaminants could occur.

General

(E4) The maintenance and cleaning of vehicles and any other equipment or plant must not be carried out in areas from where contaminants may be released into any waters, roadside gutter or stormwater drainage system.

(E5) All spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable. Such spillage must not be cleaned up by hosing, sweeping or otherwise releasing such wastes, contaminants or material to any stormwater drainage system, roadside gutter or waters.

Bunding

(E6) All chemical and fuel tank storage must be bunded so that the capacity of the bund is sufficient to contain at least 100 % of the largest storage tank plus 10 % of the second largest tank within the bund.

(E7) All chemical drum storage must be bunded so that the capacity of the bund is sufficient to contain at least 25 % of the maximum design storage volume within the bund.

(E8) All bunding must be constructed of materials which are impervious to the materials stored.

(E9) All bunding shall be roofed where practicable.

(E10 Where it is impractical to completely roof a bunded area the onus is on the holder of this environmental authority to ensure that any stormwater captured within the bund is free from contaminants or wastes prior to any release.

(E11) A collection sump must be provided in the floor of the bunding to facilitate the removal of liquids. The bund floor must be graded so that the fall is towards the collection sump.

Acid Sulphate Soils

(E12) Any acid sulphate soils or potential acid sulphate soils disturbed, extracted or unearthed as a result of carrying out the environmentally relevant activity or activities must not be exposed to the atmosphere.

(E13) Any acid sulphate soils or potential acid sulphate soils existing at the licensed place must be maintained in a submerged state. Any leachate from acid sulphate soils or potential acid sulphate soils existing at the licensed place must be treated prior to being released, if the untreated leachate has a pH of 5 or less or is otherwise likely to cause environmental harm.

(E14) There must be no lowering of the groundwater table at the licensed place where such lowering would be likely to expose any acid sulphate soils or potential acid sulphate soils to aerobic conditions.

Treatment Pond Conditions

(E15) All ponds used for the storage or treatment of contaminants or wastes shall be installed and maintained to prevent any discharge through the bed or banks of the pond from causing environmental harm or environmental nuisance in any waters (including groundwaters).

(E16) All ponds used for the storage or treatment of contaminants or wastes shall be installed and maintained so that a freeboard of not less than 0.5 metres is maintained at all times.

(E17) All ponds used for the storage or treatment of contaminants or wastes shall be installed and maintained to ensure the stability of the ponds construction.

(E18) Ponds or other structures used for the storage or treatment of contaminants or wastes, including any associated pumps and control equipment, must not be located in any area below the one in ten year flood level.

(E19) Suitable banks and or diversion drains are to be installed and maintained which act to exclude stormwater runoff from any ponds or other structures used for the storage or treatment of contaminants or wastes.

(E20) Ponds shall be a maximum of two metres deep to maintain aerobic conditions.

(E21) All construction or modification of ponds must be in accordance with the Stormwater Management Plan.

END OF CONDITIONS FOR SCHEDULE E

SCHEDULE F- LAND APPLICATION

Prohibition of the Release of Contaminants to Land

(F1) No contaminants shall be released from the premises to any land except for any release to waters in accordance with the provisions of the Water Schedule (Schedule D) of this environmental authority or any solid pond waste in accordance with the Waste Management Schedule (Schedule H) of this environmental authority.

(F2) Pond sludges shall be disposed to land at the licensed premises in such a manner that contaminated rainfall and runoff is prevented from entering any waters.

END OF CONDITIONS FOR SCHEDULE F

SCHEDULE G - NOISE

Emission of Noise

(G1) The emission of noise from the licensed place must comply with the levels specified in Table 1 of the Noise Schedule

TABLE 1 - Noise Limits

Noise limits at a Noise Sensitive Place

Noise Level at a Noise Sensitive Place Measured as the Adjusted Maximum Sound Pressure Level $L_{Amax, T}$	Period
Background noise level plus 5 dB(A)	7 am - 6 pm
Background noise level plus 5 dB(A)	6 pm - 10 pm
Background noise level plus 3 dB(A)	10 pm - 7 am

Noise limits at a Commercial Place

Noise Level at a Commercial Place Measured as the Adjusted Maximum Sound Pressure Level $L_{Amax,T}$	Period
Background noise level plus 10 dB(A)	7 am - 6 pm
Background noise level plus 10 dB(A)	6 pm - 10 pm
Background noise level plus 8 dB(A)	10 pm - 7 am

c Notification

The holder of this environmental authority shall notify potentially affected residents and other land users of the company's methods of operation and intentions with respect to minimisation of noise emissions prior to commencement of operations.

END OF CONDITIONS FOR SCHEDULE G

HEDULE H - WASTE MANAGEMENT

ste

H1) The holder of this environmental authority must comply with the Waste Management Plan as provided by the applicant and set out in Condition J6 of Schedule J.

H2) Waste must not be released to the environment, stored, transferred or disposed contrary to any condition of this Schedule.

H3) Waste shall not be burnt or allowed to burn on the licensed site or removed and burnt elsewhere unless specifically permitted by an environmental authority.

H4) All solid wastes must be dealt with in accordance with the Waste Management Plan.

END OF CONDITIONS FOR SCHEDULE H

SCHEDULE I - SELF MONITORING AND REPORTING

General

(I1) Monitoring and recording must be performed in accordance with each of the requirements stated in this Schedule.

(I2) Records must be kept of the results of all monitoring required to be performed as a condition of this environmental authority.

(I3) The results of monitoring must be submitted in accordance with the requirements of this Schedule.

(I4) All records must be taken and maintained in accordance with the requirements of this Schedule.

Complaint Recording

(I5) All complaints received by the holder of this environmental authority relating to operations at the licensed place must be recorded in a log book with the following details:

(i) time, date and nature of complaint;
(ii) type of communication (telephone, letter, personal etc.);

(iii) name, contact address and contact telephone number of complainant (Note: if the complainant does not wish to be identified then "Not identified" is to be recorded);
(iv) response and investigation undertaken as a result of the complaint;
(v) name of person responsible for investigating complaint; and
(vi) action taken as a result of the complaint investigation and signature of responsible person.

(I6) The complaints record required by Condition I5 shall be maintained for a period of not less than 5 years.

Incident Recording

(I7) A record must be maintained of events including but not limited to:

(i) any outbreak of disease in any pond, the treatment methods used to control any outbreak of disease, and the quality of any wastes that may be discharged as a result of such treatment methods, including the quality and quantity of any discharge of chlorinated water including chloro-organic byproducts resulting from the use of chlorinated water;
(ii) any failure or collapse of dam or pond walls;
(iii) any inundation of ponds due to flooding.

(I8) The record required by Condition I7 shall be maintained for a period of not less than 5 years.

Notification of Emergencies and Incidents

(I9) As soon as practicable after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of the environmental authority, the holder of the environmental authority must notify the administering authority of the release by telephone or facsimile.

(I10) The notification of emergencies or incidents as required by Condition I9 shall include but not be limited to;

(i) the holder of the environmental authority;
(ii) the location of the emergency or incident;
(iii) the number of the environmental authority;
(iv) the time of the release;
(v) the time the holder of the environmental authority became aware of the release;
(vi) the suspected cause of the release;
(vii) the environmental harm and or environmental nuisance caused, threatened, or suspected to be caused by the release; and
(viii) actions taken to prevent further any release and mitigate any environmental harm and or environmental nuisance caused by the release.

(I11) Not more than 14 days following the notification of an emergency or incident, the holder of the environmental authority shall provide written advice of the information supplied in accordance with Condition I10 (i-viii) in addition to:

(i) proposed actions to prevent a recurrence of the emergency or incident;
(ii) outcomes of actions taken at the time to prevent or minimise environmental harm and or environmental nuisance, and
(iii) the results of any environmental monitoring performed.

(I12) The holder of this environmental authority shall notify an authorised person of any disease outbreak. The contents of a diseased pond shall not be released into the treatment pond or to the receiving waters without the approval of the chief executive.

Monitoring of Contaminant Releases to Waters

(I13) For the purposes of checking conformity with Condition D6 of the Water Schedule, the holder of this environmental authority must conduct a Wastewater Quality Monitoring Program to make determinations of the quality of the wastewater released. Such determinations shall be performed at least monthly for at least the following quality characteristics:

1. Suspended Solids;
2. Total Nitrogen as N (determined as the sum of Organic Nitrogen, Ammonia Nitrogen, Nitrite plus Nitrate Nitrogen);
3. Total Phosphorus as P;
4. Chlorophyll a;

and on each day that a discharge occurs for:

1. pH;
2. Salinity;
3. Dissolved Oxygen;
4. Temperature;
5. Turbidity.

(I14) Monitoring of the quality of wastewater shall include but not be limited to samples taken at the outlet of the final treatment pond at a time when maximum daily flow is occurring from the outlet.

(I15) The Wastewater Quality Monitoring Program as supplied by the applicant and set out in Condition J7 of Schedule J shall be commenced on the first day that a discharge to Knoblers Creek occurs.

(I16) All determinations of the quality of contaminants released to waters shall be made in accordance with methods prescribed in the Department of Environment and Heritage Water Quality Sampling Manual, 2nd Edition, February 1995, or more recent additions or supplements to that document as such become available.

(I17) All determinations of the quality of contaminants released must be performed by a person or body acceptable to the Administering Authority.

(I18) Records must be kept of the results of all determinations of the quality of contaminants released to waters for a period of at least 5 years.

(I19) For the purposes of checking conformity with Condition D5 of the Water Schedule, the volume of contaminants actually released each day must be determined by a method acceptable to the Administering Authority.

(I20) Records must be kept of the results of all determinations of the daily quantity of contaminants released to waters for a period of at least 5 years.

Environmental Monitoring

Receiving Waters Monitoring Program

(I21) The holder of this environmental authority must conduct a Receiving Waters Monitoring Program as supplied by the applicant and as set out in Condition J8 of Schedule J, to monitor the state of the environment prior to any impacts as a result of the proposal and subsequently, to monitor the impact of the environmentally relevant activity on the environment.

(I22) All determinations for the Receiving Waters Monitoring Program shall be made in accordance with methods, where prescribed, in the Department of Environment and Heritage Water Quality Sampling Manual, 2nd Edition, February 1995, or more recent additions or supplements to that document as such become available.

(I23) All determinations of the quality of contaminants released must be performed by a person or body acceptable to the Administering Authority.

(I24) Records must be kept of the results of all determinations and monitoring carried out under the Receiving Waters Monitoring Program for a period of at least 5 years.

Initial Environmental Monitoring Program

(I25) The holder of this environmental authority must conduct the Initial Environmental Monitoring Program as supplied by the applicant and as set out in Condition J9 of Schedule J, to monitor the state of the environment prior to any impacts as a result of the proposal.

(I26) The Initial Environmental Monitoring Program must be scientifically rigorous and include sufficient spatial and temporal resolution to enable statistically valid conclusions to be made concerning any impacts.

(I27) The Environmental Impact Monitoring Program must include sufficient spatial and temporal resolution to enable statistically valid conclusions to be made concerning any impacts.

Environmental Impact Monitoring Program

(I28) The holder of this environmental authority must conduct the Environmental Impact Monitoring Program as supplied by the applicant and as set out in Condition J10 of Schedule J, to monitor the impact of the environmentally relevant activity on the environment.

(I29) All determinations for the Environmental Impact Monitoring Program shall be made in accordance with methods, where prescribed, in the Department of Environment and Heritage Water Quality Sampling Manual, 2nd Edition, February 1995, or more recent additions or supplements to that document as such become available.

(I30) All determinations of the quality of contaminants released must be performed by a person or body acceptable to the Administering Authority.

(I31) Records must be kept of the results of all determinations and monitoring carried out under the Environmental Impact Monitoring Program for a period of at least 5 years..

Monitoring of Construction Effects

(I32) All erosion and pollution control works must be inspected following every rainfall event. In addition, weekly inspections, to ensure integrity of the works, must be undertaken during dry

weather periods. The dates of inspections, observed condition of the control works and any corrective measures taken must be recorded.

(I33) The following information must be recorded:

- dates of rainfall events;
- rainfall in millimetres;
- application of any flocculant or any other substance to any sediment control pond or first flush containment system;
- result(s) of any water quality monitoring of any bypass discharges of rainfall in excess of the design capacity of any sediment control pond or first flush containment system;
- the results of site and equipment inspections;
- corrective measures undertaken.

Waste Management Monitoring

(I34) Where waste is removed from the licensed site (other than by release as permitted under another schedule of this environmental authority) the holder of this environmental authority must monitor and record the following:

(a) the date, quantity and type of waste removed;
(b) name of the waste transport and/or disposal operator that removed the waste; and
(c) the treatment/disposal destination of the waste.

(I35) Where waste is disposed of on the premises (other than as permitted by another schedule of this environmental authority) the holder of this environmental authority must monitor and record:

(d) the date, quantity and type of waste disposed;
(e) the location of disposal of the waste;
(f) the method of disposal of the waste.

(I36) Where the holder of this environmental authority becomes aware that a waste transport and/or disposal operator has removed waste from the licensed site (other than by release as permitted under this environmental authority) and disposed of the waste in a manner not authorised by an environmental authority when such authorisation could be reasonably expected for the type and nature of the waste, then the holder of this environmental authority must as soon as practicable of becoming aware of the disposal, notify and advise the administering authority of all relevant facts, matters and circumstances known concerning the disposal.

Report Submission

(I37) The results of the monitoring programs required by Conditions I13, I21, I25 and I28 shall be submitted to the Central Region of the Environmental Protection Agency in a report of a person or body registered by the National Association of Testing Authorities or an appropriate Quality Assured organisation in respect of the testing required for that monitoring program within 28 days of the date of sampling.

END OF CONDITIONS FOR SCHEDULE I

SCHEDULE J - APPROVED DOCUMENTS SCHEDULE

For the purposes of this environmental authority the following stated documents, as provided by the applicant and reproduced below, are approved documents:

(J1) Details of the Discharge Structure

(J2) Plan of the Dams and Ponds

(J3) Wastewater Treatment System

(J4) Environmental Management Plan

(J5) Stormwater Management Plan

(J6) Waste Management Plan

(J7) Wastewater Quality Monitoring Program

(J8) Receiving Waters Monitoring Program

(J9) Initial Environmental Monitoring Program

(J10) Environmental Impact Monitoring Program

(J1) Discharge Structure

The 525mm diameter cement pipe, which forms the outlet from the settling pond, will drain onto a boarded cement slab measuring 3 metres wide by 2.5 metres long. This slab is designed so that water will only be able to drain off one side. After leaving the slab, the water will fall approximately 6 centimetres onto an area covered in rocks and gravel, measuring approximately 40 square metres. See diagram below.

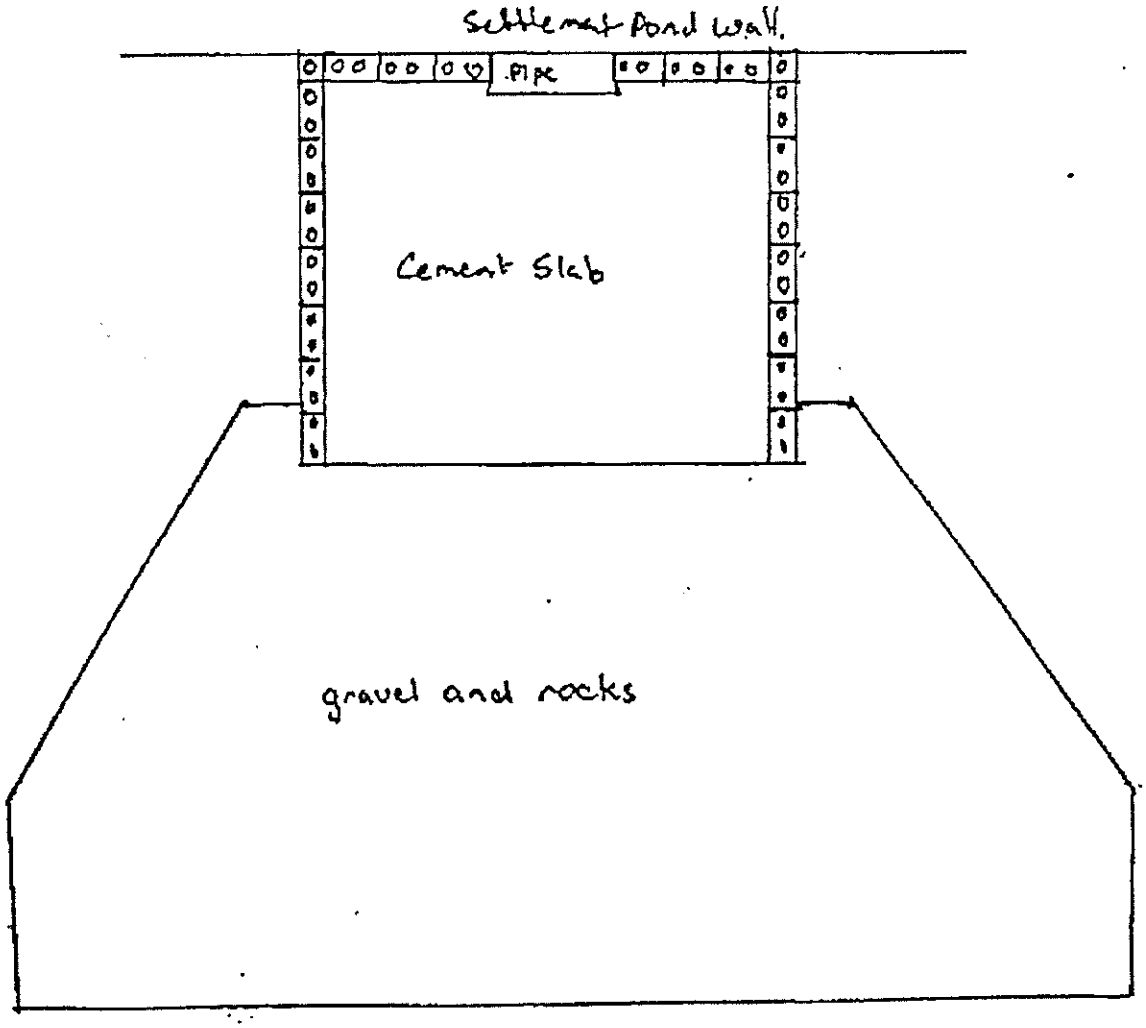
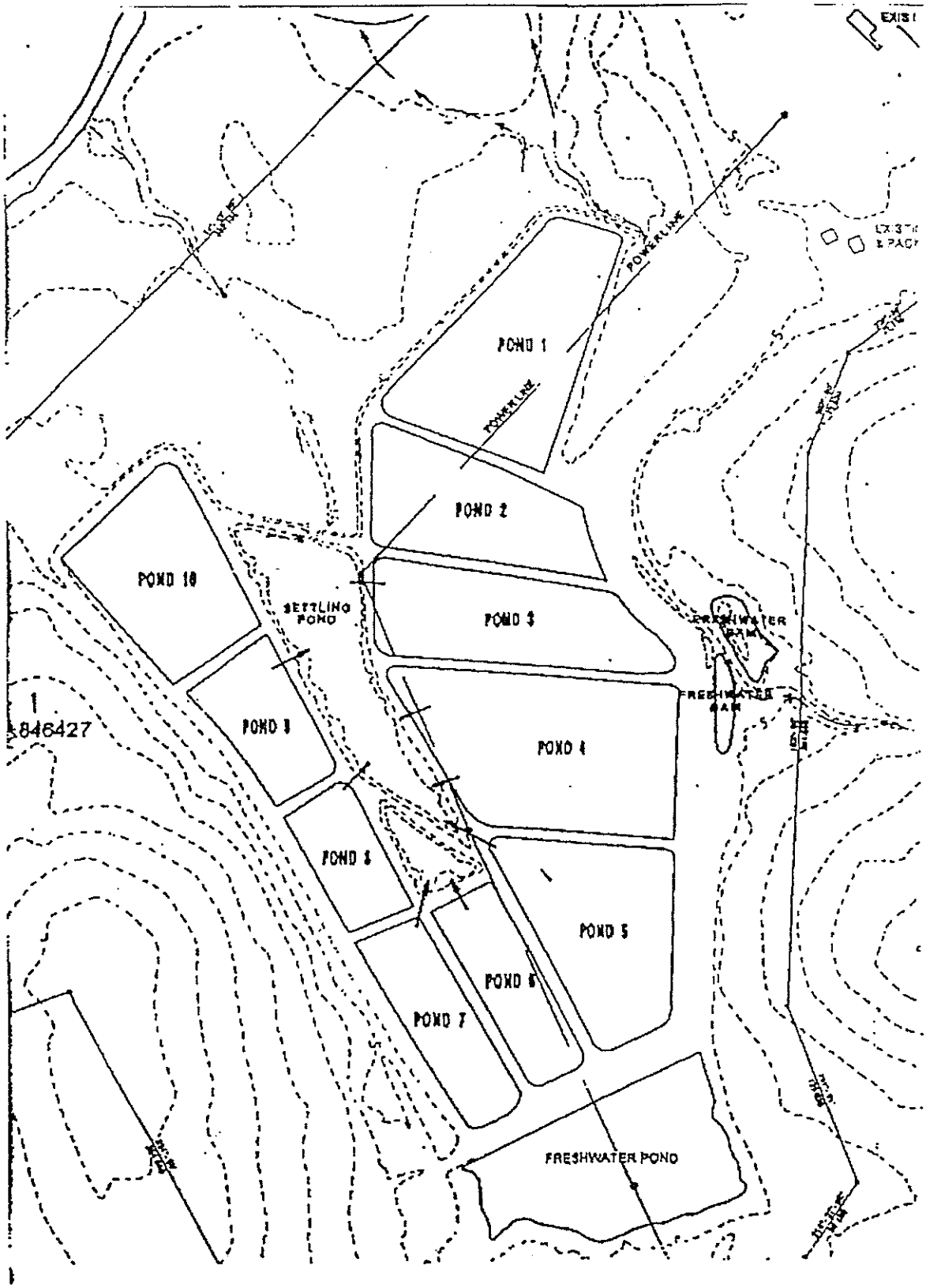


Diagram 1. Discharge Structure

(J2) Plan of the Dams and Ponds



(J3) Waste Water Treatment System

- All ponds will drain into a settlement pond
- The settlement pond will be operated and maintained to provide not less than 2 days detention of all wastewater.
- All practical measures will be taken to prevent short-circuiting in the settlement pond.
- Settlement pond's volume will be greater than 10% of farm volume (volume of ponds 1 to 10). Under full operations water exchange volume can be retained for 2 days. The water in the settlement will be retained for as long as possible to maximise settlement of particulate matter and breakdown/ionisation of organic and inorganic contaminants. Initially (summer 1995/1996) only four ponds will be stocked allowing discharge water to be held in the settling pond for extended periods to allow greater settlement and ionisation of organic and inorganic contaminants.
- *Gracilaria* and oysters will be grown in the settlement pond to reduce the level of contaminants. Methods of culture will be established to achieve to those best suited to this application. Examples of proposed methods of culture are:
- *Gracilaria* to be cultured using the rope method (similar to mussel culture)
- Oyster sticks with pre-spated oysters (ie. Sydney Rock culture method)
- Organisms arranged according to their physical requirements.
- Further information on culture methods has to be developed and help gfrom Nigel Preston (CSIRO) and other government departments will be sought.
- Culturing will begin when sufficient water is being discharged. This is estimated to be four to ten weeks after commencement of operations.
- Capability of organisms will be measured using:
- the percentage survival of the oysters;
- the increased biomass of the *Gracilaria,* and
- the projected economic viability.
- Final assessment of organisms will be supplied to the Department of Environment and Heritage (DEH) in a written report on or before 31st May 1996.
- Levels of contaminants will be reduced, where physically and economically viable, by the use of new technologies, as they are developed and proved.
- Water Exchange
- circa 10% every second day approaching harvest
- monk outlet, top 1,2 or 3 boards removed (10 to 40cm)
- surface water drains for six to eight hours (slow release)
- 10cm x 1 Ha - 1000m^3 (small volume 1000 to 1500m^3/pond exchange
- circa 1m drop ensures high Dissolved Oxygen (DO) for aerobes, algae and oysters in settlement pond
- if ponds exchanged in one day 5000 to 7.500m^3
- settling pond of about 1 Ha and 1.5m deep has a capacity for 10000 to 15000m^3
- Water exchange and settling retention times will be based on environmental monitoring data to ensure compliance with an Environmental Management System (ISO 14000 series standards)
- Feeding
- Ad libitum

- Checked by $1m^3$ feed trays 2 to 3 hours post feed
- Minimised waste and nutrient load due to feed

- Pond and Bloom Management
- Mr Shadbolt has extensive experience in inoculating the ponds in his charge with endemic phytoplankton and benthos, which cycle the minimal feed waste, fertiliser, faecal and excreted nutrient load in the pond. Hence the FCR, which will improve further.

- Harvest
- a net is placed over the pond outlet
- monk boards removed 1 or 2 at a time
- no disruption to pond bottom
- aeration turned off (At harvest, the paddlewheels are switched off to allow suspended solids to settle then water is drained gently to avoid resuspension)
- solids remain on pond bottom, leading to higher prawn quality and reduced nutrient and solids load on settlement pond
- solids are then scraped from the pond

(J4) Environmental Management Plan

(a) Operating Procedures

Feeds (aim is to reduce ie FCR)
- Good quality with good water stability
- Use feed trays from week 6 onwards
- Small feeds often to increase animal usage
- fresh feeds well stored to increase animal usage
- Not feed prior to harvest so as to assimilate anything left over in the pond

Water Exchanges (aim to produce stable environment and reduce particulate matter)
- Maintain healthy bloom
- Optimise available fresh water and reduced creek salinity during rainfall

Aeration (improved stability to pond and to accumulate particulate matter)
- Maintain 14-18 hp/hectare
- Arrange so particulates accumulate in the centre of the pond
- Switch off prior to harvest to allow particulate to settle

Training
- Train staff in all aspects of Environmental Management Plan so as to comply with condition of the environmental authority so as to prevent environmental harm or nuisance.

(a) Monitoring Procedures
- Any records that are required by the condition set out in the environmental authority will be taken in accordance with the authority and will be kept in clear legible way.
- Will be designed with the aid of Glyn Thomas to comply with ISO 14000 series standards.
- Complaint Recording will be as section I5 and I6 of the licence conditions.
- Incident Recording will be as section I7 and I8 of the licence conditions.
- Notification of Emergencies and Incidents will be as section I9, I10, I11 and I12 of the licence.

- Monitoring of contaminant releases to waters will be as section I13, I14, I15, I16, I17, I18, I19 and I20 of the licence.
- All samples are taken at the monks, daily samples are taken both at sunrise and sunset and will also include creek samples.
- Other relevant information will also be included ie. Temperature, Weather, Bloom colour, Smell, assessment of Stability, Estimate of biomass, Quantity of feed given, Quantity exchanged, Salinity, and any other relevant information.
- Further information see J7 and J8.

(a) Monitoring of the environmental impact

- This section is clearly outlined in J8, J9 and J10 and will be in compliance with conditions I21 and I31.

(a) Auditing of environmental performance

- All information that is required to be recorded by the conditions in the licence (but not limited to that) will be recorded in an appropriate manner being available for the perusal by the appropriate authorities.

- At where possible within reason an assessment will be made as to the environmental performance and procedures in relation to other acceptable industry standards with the guidance of the Australian Prawn Farms Association (which we will become a member once farming begins).

(a) Maintenance practices and procedures

- At the end of each crop the walls of each pond will closely inspected for signs of erosion, leakage and points of stress and will addressed in an appropriate manner.
- Prior to stocking, the ponds are held with water for two weeks, this will enable an assessment of the pond walls ability to last the crop.
- The farm in the past has been operational and any problems that occurred to best of knowledge have been rectified.

(b) Contingency Plans

- In case of an emergency conditions I7-I12 will be adhered to.
- In case of dissolved oxygen and pH crisis's emergency aeration and lime will be available.
- In the immediate term the farm has the ability to store discharge water for an estimated minimal of two days, this can be assisted in the reduction of feed from growth to maintenance (approx 25% min) and the addition of more aeration if available will allow time to help solve any unseeable problem.
- In the advent of an expected disease outbreak, a sample of prawns will be sent to the Department of Biomedical and Tropical Veterinary Science at James Cook University.

(g) Communication etc.

- Communication of procedures, plans, potential environmental problems and results, handling of environmental complaints, and keeping and producing records and reports, shall be done in accordance with conditions set out in the licence.

(J5) Stormwater Management Plan

- The three fresh water dams on site are located to catch storm water runoff from the surroundings hills, as seen in figure 1 (CMPS&F environmental assessment).
- There is a storm water channel surrounding the site which is designed to hold a 1 in 700 year rainfall event, according to James Cook University.
- Erosion control of the dam walls will be achieved with use of native grasses and rock/gravel from the gravel pit on the farm.
- The inside of the dam walls will be maintained with the use of gravel and salt resistant grasses such as pigs foot.
- Erosion control in the mangroves will be achieved by allowing the regrowth of mangroves and energy dissipating pools on the outlets to the environment, to minimise erosion.
- In the areas that erosion has occurred or has the potential to occur the area will addressed with either redressing for revegetation or covered in rock to stop erosion.

(J6) Waste Management Plan

- Prevention is best achieved through good farm management (ie. all our contaminants stem from the prawn feed, therefore reducing the FCR will reduce the contaminants). This is achieved through good pond and bloom management associated with a close and constant monitoring of feed given, growth, survival and water quality which is done twice a day at a minimum.
- Treatment is set out in J3 and J7.
- Pond sludge shall be disposed on site in a position that contaminated rainfall and runoff shall be prevented from entering any waters.
- Pond sludge will be allowed to breakdown naturally and allowed to revegetate.

(J7) Wastewater Quality Monitoring Program

- Conditions for monitoring set out in Conditions I13 to I20 will be met.
- Sample sites will include
- monk at settlement pond
- point of entry into Knoblers Creek
- 500m before the mouth of Knoblers Creek
- Approved control site (creek)
- Coral Sea (Point to be measured by hand held GPS)
- Monthly samples will be taken in the week of the 15 of each month weather permitting at or around the time when maximum daily flows from the settlement pond outlet are occurring.
- Samples are to be sent to DEH approved lab for independent analysis in accordance with correct scientific methods.
- Samples will be taken at 0.5 - 1.0 metre depth.
- On a daily basis the settlement pond will be compared with culture pond using turbidity and secchi readings.
- On a weekly basis the total ammonia will be compared between settlement pond and the culture ponds to enable us to establish effectiveness of ie settlement/treatment pond. Other weekly

tests could be added to this they are proved affordable and accurate enough once agreed to by the DEH.

- In all cases the water will be treated and tested to the best of our ability within reason.

(J8) Receiving Waters Monitoring Program

- Program will be run in close conjunction with the Initial Environmental Monitoring Program with sampling sites being the same as those chosen for transects in the Initial Environmental Monitoring Program.
- Initially the following water sampling sites are to be selected
- two samples in the creek (one above discharge point and one below discharge point)
- two in the Coral Sea, and
- two in the control site (approximately grid reference 535 957)
- These will cover the monthly water parameters with recording of the tidal and previous and current weather conditions.
- Positions of the samples will be given with reference to the distance from the mouth of the creek with the aid of a small GPS system (Eg. Meridian L).
- During the next wet season a salinity and temperature profile study will be undertaken
- at 10 sites in Knobles Creek the salinity and temperature will be measured on the bottom of the creek on the surface and in the middle.
- Two plume studies are to be done as detailed in the Initial Environmental Monitoring Program.

(J9) Initial Environmental Monitoring Program

Glyn Thomas, a Masters of Environment student at the University of Queensland, will design and perform:

(a) A mangrove community survey
(b) Benthic community survey
(c) Seagrass survey
(d) Current/Waste Plume dispersal study

Glyn Thomas will be supervised by an academic adviser appointed by Fleur Kingham, Director of the Masters of Environment Program, Technology Management Centre, The University of Queensland (Phone 07 365 3922, Fax 07 365 4222).

Below are the preliminary study parameters. These will be subject to approval by Glyn Thomas's masters supervisor/academic adviser and by QDEH (Northern Region). It is of primary importance to have large enough sample size to allow statistical validity. A statistical basis for sample sizes and experimental design is being investigated currently, this may vary the design given below.

Vegetation/Benthos Survey

- three study transects and one control transect
- 500 or 1000m transects

- five 10 metre by 10 metre quadrats per transect
- assess canopy cover and photograph
- species lists (floristic samples identified using Stamialy and Ross and other keys, and/or compared herbarium)
- nearest neighbour
- species distribution (dominant species - canopy and under stories)
- ten randomly placed quadrats 1m by 1m
- benthic species distribution
- one 100g soil sample
- sieved / washed
- identify and count organisms in substrate sample
- fix
- analysis of variance, chi squared and dendrograms to compare data.

Seagrass Survey

- if beds in tidal zone
- transect or grid and quadrat survey

- if beds in subtidal zone
- if visibility is poor
- transect or grid and quadrate survey carried out in scuba - depending on diver safety
- if good visibility
- transects surveyed on manta board could be used (these would be more qualitative in nature) - size of beds, percentage covered and condition assessed.

- floristic compositions of beds and fauna distributions would be compared over sites and time.

Plume Dispersal Study

- two plume studies are to be done using 12 dozen oranges on each occasion
- the oranges will be released at the point of discharge in Knoblers Creek at the top of the tide
- the oranges will be attempted to be found at the next preceding low and high tide. The orange's position will be recorded and marked with the aid of a GPS system.
- the Study will be done twice:
- once before the discharge, and
- once during a period of wet.
- the studies will have to be restricted to times of reasonable weather so as to assist in the location and plotting of the oranges.
- the results will be compared by anova-frequency distribution, plotted on a map and be submitted for DEH perusal.
- radio tracking could also be used depending on equipment availability.
- The Environment Program, Department of Environment and Heritage (DEH) Northern Region will be given 14 days prior notification of the plume study to enable the opportunity for overseeing the study by a DEH officer.

(J10) Environmental Impact Monitoring Program

Glyn Thomas, a Masters of Environment student at the University of Queensland, will design and perform an annual ongoing monitoring program. This will be based on and will repeat the survey's in the Initial Environmental Monitoring Program (except for the Plume Dispersal Study).

END OF CONDITIONS FOR SCHEDULE J

SCHEDULE K - DEFINITIONS

For the purposes of this environmental authority the following definitions apply:

(K1) "Act" means the Environmental Protection Act 1994.

(K2) "Administering Authority" means the Department of Environment and Heritage or its successor.

(K3) "Authorised Person" means a person holding office as an authorised person under an appointment under this Act by the chief executive of the Department of Environment and Heritage.

END OF CONDITIONS FOR SCHEDULE K

END OF ENVIRONMENTAL AUTHORITY