Application form

Environmental Protection Act 1994

Application to amend an environmental authority

This approved form is to be used when applying to amend an environmental authority under sections 222 to 227A of the Environmental Protection Act 1994 (EP Act) for an environmentally relevant activity (ERA).

If you are applying to amend a progressive rehabilitation and closure plan (PRCP) schedule and or applying for a joint PRCP schedule and EA amendment do not use this form. You should instead use the Application to amend a PRCP Schedule or joint PRCP Schedule and environmental form (ESR/2019/4956).

IMPORTANT NOTE:

For applications to the Department of the Environment, Tourism, Science and Innovation, you can apply through Online Services at: https://www.business.qld.gov.au/running-business/environment/online-services.

It is recommended that prior to making an amendment application, you read the information on what to provide with an application. This information is located on the Business Queensland website at www.business.qld.gov.au (use the search term "Environmental licence"). This website includes a diagnostic tool called a "Forms and fees finder" which will help identify fees and supporting information you need to make an application.

You are encouraged to have a pre-lodgement meeting before applying to amend your environmental authority (EA). If you would like to have a pre-lodgement meeting:

- for intensive animal industry ERAs (prescribed ERAs 2, 3 and 4)—contact the Department of Primary Industries by email at livestockregulator@dpi.qld.gov.au or by phone on 13 25 23.
- for any other ERAs —prior to lodging this application form, please fill and lodge the form Application for pre-lodgement services (ESR/2015/1664) with the Department of the Environment, Tourism, Science and Innovation.

If you require assistance in answering any part of this form or have any questions about your application, please contact the relevant department. Contact details are at the end of this form (Section 33).

Privacy statement

The Department of the Environment, Tourism, Science and Innovation (the department) is collecting the information on this form in accordance with and as authorised by Chapter 5 of the Environmental Protection Act 1994 *(EP Act). Some of the information may be disclosed to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development and Queensland Treasury for the purpose of processing this application.*

Pursuant to section 540 of the EP Act, the department is required to maintain a register of certain documents and information authorised under the EP Act. A copy of this document will be kept on the public register. The register is available for inspection by members of the public who are able to take extracts, or copies of the documents from the register. Documents that are required to be kept on the register are published in their entirety, unless alteration is required by the EP Act. There is no general discretion allowing the department to withhold documents or information required to be kept on the public register. For more information on the department's public register, search 'public register' at www.qld.gov.au. For queries about privacy matters please email privacy@dsdsi.qld.gov.au or telephone 13 74 68.

Queensland Government

Section 1 – Environmental authority number

EA number for this application	EPPR00204313

Section 2 – Applicant details

Details of the applicant are to be provided in this section.

NAME / COMPANY NAME Aqua Pharma Australia Pty Ltd	TRADING NAME (IF An organisation) Monagold Prawn Farm
REGISTERED BUSINESS ADDRESS / RESIDENTIAL ADDRESS (NOT A POST OFFICE BOX) 217 Flinders St Adelaide SA 5000	POSTAL ADDRESS (WHERE DIFFERENT) GPO Box 3112 Brisbane QLD 4001
ABN / ACN (IF An organisation) 77 154 424 165	NAME OF APPLICATION CONTACT John Moloney
EMAIL johnmoloney.ext@aqua-pharma.com	TELEPHONE 0428878675

☒ INDICATE IF YOU WANT TO RECEIVE CORRESPONDENCE VIA EMAIL

☐ INDICATE IF THERE ARE JOINT HOLDERS OF THE ENVIRONMENTAL AUTHORITY. IF THERE ARE JOINT HOLDERS, PROVIDE THE ADDITIONAL CONTACT DETAILS AS AN ATTACHMENT.

Section 2.1 – Agent details

If there is an agent acting on behalf of the applicant, details of the agent are to be provided. An agent could be a consultant or contactor for the applicant.

Is this form being completed by an agent for the applicant? * NOTE: If an agent is nominated, please provide evidence of appointment by the authority holder/s.	☒ Yes – Provide details below ☐ No – Go to next section
NAME / COMPANY NAME John Moloney	TRADING NAME
REGISTERED BUSINESS ADDRESS / RESIDENTIAL ADDRESS (NOT A POST OFFICE BOX) 42 Irving St Ayr 4807	POSTAL ADDRESS (WHERE DIFFERENT)
ABN / ACN (IF AN ORGANISATION) 68 126 827 829	CONTACT NAME John Moloney
EMAIL johnmoloney.ext@aqua-pharma.com	TELEPHONE 0428878675

Section 3 – Checklist questions

An application to amend an EA is not appropriate in all circumstances. If you answer **Yes** to any of the preliminary questions below, you cannot use this application form. If you answer **No** to all of the preliminary questions, you may continue to use this application form.

Is the amendment to correct a clerical or formal error?	☐ Yes ☒ No
If yes, you cannot use this form. This request should be made in writing directly to the administering authority (no fees apply).	
Is the amendment to add an ERA to an amalgamated project authority and the proposed activity does not form part of the single integrated operation conducted under the authority?	☐ Yes ☒ No
If yes, you cannot use this form. You will need to apply for a new EA.	
Is the amendment to add an ERA to the environmental authority and the addition of the ERA would result in the environmental authority not meeting the definition of an "ERA project"?	☐ Yes ☒ No
If yes, you cannot use this form. You will need to apply for a new EA.	
Is the amendment to amalgamate two or more EA's?	☐ Yes ☒ No
If yes, you cannot use this form. Please use either the form Application to amalgamate two or more environmental authorities into an amalgamated corporate authority (ESR/2015/1734), or Application to amalgamate two or more environmental authorities into an amalgamated project or local government authority (ESR/2015/1735).	
Is the amendment to add an ERA to an amalgamated local government authority and there is not an appropriate degree of integration between the proposed activity and the existing activities on the authority?	☐ Yes ☒ No
If yes, you cannot use this form. You will need to apply for a new EA.	
Is the amendment to amend the financial assurance or estimated rehabilitation cost only?	☐ Yes ☒ No
If yes, you cannot use this form. Please use the form Application to amend or discharge financial assurance held for an environmental authority (ESR/2015/1752) or Application for a decision on the estimated rehabilitation cost (ESR/2018/4425).	
Is the proposed amendment to add a resource activity to an EA for a prescribed ERA project?	☐ Yes ☒ No
If yes, you cannot add the resource activity to the EA. You will need to apply for a new EA.	
Is the proposed amendment to add a prescribed ERA, other than an ancillary activity, to an EA for a resource project?	☐ Yes ☒ No
If yes, you cannot use this form. You can apply using the standard, variation or site-specific application forms.	
Are you applying to extend the term of an EA that was issued to conduct research into, or test, technology or processes relating to an ERA, and for which information mentioned in section 125(1)(l)(i) and (ii) of the EP Act was not available at the time the authority was applied for?	☐ Yes ☒ No
If yes, you cannot use this form. You will need to apply for a new EA.	

Section 4 – Checklist questions for prescribed ERAs Does the application relate to an EA that is only for prescribed ERAs?	☐ Yes – Answer the questions in this section ☒ No – Go to next section

Does the proposed amendment involve changes to the relevant activity that require a new development application to be lodged under the *Planning Act 2016* and the application for the development application has not been lodged.	☐ Yes ☐ No
If yes, the development application must be lodged before an EA amendment application can be made. Under the EP Act, a development application for a material change of use of premises for an ERA is deemed to be also an application for an environmental authority. In this case, an EA amendment application should not be lodged.	
Is the proposed amendment solely to add or remove vehicles for ERA 57 (Regulated waste transport)?	☐ Yes ☐ No
If yes, you do not need to submit this application form. You can update vehicle details online through Online Services or use the form Details of regulated waste vehicles (ESR/2015/1851).	
Is the amendment for the holder of the EA to transfer all or part of the EA to a person?	☐ Yes ☐ No
If yes, you cannot use this form. Please use the form Request to transfer all or part of an environmental authority (prescribed environmentally relevant activities) (ESR/2015/1718).	
Is the amendment for the surrender of an EA?	☐ Yes ☐ No
If yes, you cannot use this form. Please use the form Application to surrender an environmental authority for a prescribed ERA (ESR/2015/1719) .	

Section 5 – Checklist for resource activities Is the application to amend an EA for a resource activity?	☐ Yes - Answer the questions in this section ☒ No – Go to next section

Is the amendment for a partial surrender of an EA for a mining, geothermal or petroleum resource activity?	☐ Yes ☐ No
If yes, you cannot use this form. Please use the form Application for surrender or partial surrender of an environmental authority (resource activity) (ESR/2015/1751).	
Is the amendment for an EA that has a PRCP schedule and approval of the amendment application would result in the EA to which the application relates being inconsistent with the relevant PRCP schedule?	☐ Yes ☐ No
If yes, you cannot use this form. The amendment to the EA must not be inconsistent with the PRCP Schedule otherwise you must apply to amend your PRCP Schedule. Please use the form Application to amend a progressive rehabilitation and closure plan schedule (PRCP schedule) or joint PRCP schedule and environmental authority (ESR/2019/4956) .	

Section 6 – Major or minor amendment

Is the application for a major or minor amendment?

Your application is a minor amendment (condition conversion) if you want to convert all conditions of your EA to the standard conditions for the ERA to which the EA relates. By selecting this amendment type you are certifying that you have a complete and thorough understanding of, and can comply with, the ERA Standard (eligibility criteria and standard conditions).

For applications other than a minor amendment (condition conversion), the administering authority decides if an application is a minor amendment (threshold) or a major amendment and will send you a notice of the decision.

If the application is a major amendment, an assessment fee of 30% of the annual fee for your EA is required to be paid. The assessment of your amendment application will not proceed until the assessment fee is paid.

No additional assessment fees apply if your application is determined to be a minor amendment.

By considering what type of amendment your application is likely to be, you will have a better idea of whether the assessment fee will be payable.

For further information see the Guideline - Major and minor amendments (ESR/2015/1684) and s223 of the EP Act. If you have questions regarding whether your amendment will be a minor or major amendment you are encouraged to arrange a pre-lodgement meeting with the administering authority. Only an indication can be given as to whether the proposed changes are likely to be a minor or major amendment, at a pre-lodgement meeting as this decision can only be made when the actual application is submitted.

- ☐ Major amendment
- ☒ Minor amendment (threshold)
- ☐ Minor amendment (condition conversion)

For minor amendment (condition conversion) go to Section 31 (Payment of fees).

Section 7 – Amendment options

Complete this section for all applications, tick all that apply

I would like to amend the EA:	☒ Activities – includes changes to thresholds ☐ Locations – removal/addition of activity locations ☒ Conditions – includes conversions to standard conditions and variations

Section 8 – Describe the proposed amendment

Provide a detailed description of your proposed amendment.

Include justification of how your proposed amendment meets the criteria for a major or minor amendment and attach any supporting information to this application.

If the amendment is to add or delete a location, tenure or activity, or to change the threshold of an activity, provide details below.

The proposed amendment relates to Schedule J of the existing EA. It incorporates several prescriptive requirements that reference documentation submitted by the original applicant. The proposed changes seek to modernise the EA and better align it with model operating conditions. The exact changes are explained in the attached supporting information and detailed below.

It is proposed these amendments should be considered minor as they will not result in a change to the relevant activity and does not increase the scale or intensity of the relevant activity.

☒ I HAVE ATTACHED ADDITIONAL DETAILS FOR THIS SECTION.

Section 9 – Describe the land that will be affected by the proposed amendment

Describe if the activity will be carried out within the existing designated areas of the environmental authority, a new area, or if the activity is mobile or temporary.

No change to existing EA for designated areas

☒ I HAVE ATTACHED ADDITIONAL DETAILS FOR THIS SECTION.

Section 10 – Development permits and other land use approvals *(Prescribed ERAs only)*

Does the EA only include a prescribed ERA/s?	☒ No – Go to next section ☐ Yes – Provide details below
Are there any development permits or other land use approvals in effect or have any development applications been made under the *Planning Act 2016* to carry out the proposed amendment?	☐ No – Go to next section ☐ Yes – Provide details below

Provide a list of applicable development permits or applications below.

Development permit / application number	Development permit / application name	Assessment manager	Date of application or approval	Expiry date

If a land use approval other than a development permit is in effect, provide details below.

☐ I HAVE ATTACHED ADDITIONAL DETAILS FOR THIS SECTION.

Section 11 – Amend activities

Do you wish to amend activities under the EA, including removing ERAs, adding ERAs or changes to threshold(s)?	☒ No – Go to next section ☐ Yes – Provide details below
Section 11.1 – Removing ERA(s) Does the proposed amendment remove an ERA from the EA?	☐ No – Go to section 11.2 ☐ Yes – Continue on below

Provide a list of all the ERAs that are to be removed from the EA and identify whether the ERA has commenced.

ERA number	Threshold	Name of ERA	Has the ERA commenced?
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No
			☐ Yes ☐ No

☐ I HAVE ATTACHED DETAILS OF ADDITIONAL ERA(s) TO BE REMOVED.

Does your EA contain any rehabilitation conditions that are applicable to the ERA(s) that are requested to be removed from the EA?	☐ No – Go to section 11.2 ☐ Yes – Provide details below

A statement addressing compliance with EA conditions is to be completed by, or on behalf of, the EA holder. Attach a separate document to this application form which states the extent to which:

1. The ERAs being removed from the EA have complied with each relevant condition of approval; and
2. The final rehabilitation report is accurate (include the date of the final rehabilitation report).

PROVIDE DETAILS OF THE DATE, METHOD AND EVIDENCE USED TO VERIFY COMPLIANCE:

PROVIDE DETAILS OF THE NAME, POSITION AND CONTACT NUMBER OF THE PERSON SIGNING THE STATEMENT:

DESCRIBE THE QUALIFICATIONS AND EXPERIENCE OF THE PERSON SIGNING THE STATEMENT:

☐ I HAVE ATTACHED THE REQUIRED STATEMENT ADDRESSING COMPLIANCE WITH CONDITIONS.

For guidance on what a rehabilitation report should contain you may use the Final rehabilitation report with landowner statement (ESR/2015/1616). Methods to verify compliance may include a desktop assessment of documentation, an interview with the landowner/holder or a field operator or a site inspection. Evidence used may include photographs, statements and other documents such as maps, plans, approvals, monitoring results etc.

Section 11.2 – Adding ERA(s) Does the proposed amendment add an ERA to the EA?	☒ No – Go to next section ☐ Yes – Continue on below

Provide details of which ERA(s) you wish to add. If the ERA has eligibility criteria and standard conditions[1] identify whether you can comply with them. Select "N/A" where there are no eligibility criteria and standard conditions for that ERA. If you cannot comply with all of the applicable standard conditions, select "no" and attach details of the standard conditions you cannot comply with.

ERA number	Threshold	Name of ERA	I can comply with the eligibility criteria	I can comply with all the standard conditions
			☐ Yes ☐ N/A ☐ No	☐ Yes ☐ No
			☐ Yes ☐ N/A ☐ No	☐ Yes ☐ No
			☐ Yes ☐ N/A ☐ No	☐ Yes ☐ No
			☐ Yes ☐ N/A ☐ No	☐ Yes ☐ No
			☐ Yes ☐ N/A ☐ No	☐ Yes ☐ No
			☐ Yes ☐ N/A ☐ No	☐ Yes ☐ No
			☐ Yes ☐ N/A ☐ No	☐ Yes ☐ No

☐ I HAVE ATTACHED DETAILS OF ADDITIONAL ERA(s) TO BE ADDED.

☐ I HAVE ATTACHED DETAILS OF THE STANDARD CONDITIONS THAT I CANNOT COMPLY WITH.

If you cannot comply with the eligibility criteria as a result of the proposed amendment, then an amendment to the relevant eligibility criteria condition will also be required. The department will only approve an amendment of the eligibility criteria condition if it is a result of factors beyond your control such as residential encroachment, rather than a change to the activity.

[1] ERAs with eligibility criteria and standard conditions are listed at: www.business.qld.gov.au (use the search term "eligibility criteria").

Section 12 – Single integrated operation confirmation

Will the activities be undertaken as a single integrated operation?	☒ No – Go to next section ☐ Yes – Provide details below

PROVIDE DETAILS OF THE ACTIVITIES THAT WILL BE OPERATED AS A SINGLE INTEGRATED OPERATION AND SUPPORTING INFORMATION SHOWING THEY ARE A SINGLE INTEGRATED OPERATION:

Single integrated operation occurs when all of the below criteria are met:

(a) the activities are carried out under the day-to-day management of a single responsible individual, for example, a site or operations manager;

(b) the activities are operationally interrelated;

(c) the activities are, or will be, carried out at one or more places; and

(d) the places where the activities are carried out are separated by distances short enough to make feasible the integrated day-to-day management of the activities.

Section 13– Amend location(s)

Does the proposed amendment relate to the location where the ERA(s) are undertaken, including adding a location, removing a location or changing a location?

This section is not applicable to changes in monitoring locations, infrastructure locations ect. unless the new location is outside the currently authorised area for the environmental authority. Amendments to change the location of monitoring or infrastructure where the monitoring or infrastructure location is still within the currently authorised area are considered amendments to vary conditions.

☐ No – Go to Section 14

☐ Yes – Provide details below

ERA number and threshold	Location (lot on plan(s), tenure(s) or mobile and temporary)	Add or remove

☐ I HAVE ATTACHED DETAILS OF ADDITIONAL LOCATIONS FOR THIS SECTION.

Section 13.1 - Rehabilitation conditions *Are you proposing to remove locations from the EA?*	☒ No – Go to next section ☐ Yes – Continue on below
Does your EA contain any rehabilitation conditions that are applicable to the locations that are requested to be removed from the EA?	☐ No – Go to next section ☐ Yes – Continue on below
Has a statement addressing compliance with EA rehabilitation conditions been attached as per section 11.1?	☐ No – Go to next section ☐ Yes – Continue on below

PROVIDE DETAILS OF THE DATE, METHOD AND EVIDENCE USED TO VERIFY COMPLIANCE:

PROVIDE DETAILS OF THE NAME, POSITION AND CONTACT NUMBER OF THE PERSON SIGNING THE STATEMENT:

DESCRIBE THE QUALIFICATIONS AND EXPERIENCE OF THE PERSON SIGNING THE STATEMENT.

☐ I HAVE ATTACHED THE REQUIRED STATEMENT ADDRESSING COMPLIANCE WITH CONDITIONS.

For guidance on what a rehabilitation report should contain you may use the Final rehabilitation report with landowner statement (ESR/2015/1616). Methods to verify compliance may include a desktop assessment of documentation, an interview with the landowner/holder or a field operator or a site inspection. Evidence used may include photographs, statements and other documents such as maps, plans, approvals, monitoring results etc.

Section 14 – Seek to vary conditions	
Are you looking to vary the condition(s) of the EA?	☐ No – Go to next section ☒ Yes – Provide details below

IMPORTANT NOTE: The administering authority considers what is necessary or desirable when setting the conditions of an EA. Seeking to vary the conditions is likely to change the environmental risk of an activity and will require an assessment of the environmental values. If this is not provided, the application may not be valid.

Provide details of: (a) condition number(s); (b) proposed change; and (c) justification for the change.

1. Remove reference to Schedule J in condition B14. A stand-alone Environmental Management Plan with review processes to be referenced.
2. Remove reference to Schedule J in condition D2
3. Remove references to Schedule J in condition D3
4. Remove reference to Schedule J in condition D4 and provide release point description in D4
5. Remove reference to Schedule J in condition D9
6. Remove reference to Schedule J in condition E1 and reference Environmental Management Plan
7. Remove reference to Schedule J in condition H1 and reference Environmental Management Plan
8. Remove reference to Schedule J in condition I15
9. Remove conditions I21-I24 and integrate with conditions I28-I31
10. Remove reference to Schedule J in condition I28 and replace with reference to approved REMP. A proposed REMP has been drafted by Nautilus Collaboration and updated to include DETSI pre-lodgement advice recommendations, and is provided in the attached documentation

11. Remove schedule J. If any other references required (such as farm map) to be included as Appendices

Justification is provided in supporting information

☒ I HAVE ATTACHED ADDITIONAL DETAILS FOR THIS SECTION.

If the activities were assessed as part of a coordinated project declared under the State Development and Public Works Organisation Act 1971, you are only able to amend Coordinator General conditions if the Coordinator General's evaluation report for the project has lapsed. If you are unsure if the Coordinator General's evaluation report has lapsed, contact the Department of State Development, Infrastructure and Planning for more information.

Section 15 – Compliance with any eligibility criteria

Are there any eligibility criteria for the activity(s)?	☒ No – Go to next section ☐ Yes – Provide details below

State whether each relevant activity will, if the amendment is made, comply with any eligibility criteria for the activity.

Include a declaration (below) that the above statement is correct

I John Moloney representing Aqua Pharma Australia Pty Ltd

(INSERT NAME, POSITION AND COMPANY NAME OF PERSON MAKING THE STATEMENT)

- make the statement by or for the holder of the EA;
- confirm that, to the best of my knowledge, all information provided as part of this statement, including attachments, is true, correct and complete.
- understand that under section 480 of the EP Act, it is an offence to give the administering authority or an authorised person a document that contains information that I know, or ought reasonably know, to be false or misleading in a material particular.
- understand that under section 480A of the EP Act, if I am required to give a document to the administrating authority, it is an offence to give a document that I know, or ought reasonably to know, contains incomplete information in a material particular.
- confirm that, to the best of my knowledge, this statement, including attachments, does not include false, misleading or incomplete information;
- confirm that, to the best of my knowledge, I have not knowingly failed to reveal any relevant information or document to the administering authority;

- confirm that, to the best of my knowledge, all information provided in this statement, including attachments, address the relevant matters and are factually correct;
- confirm that the opinions expressed in this statement, including attachments, are honestly and reasonably held; and
- understand that all information supplied as part of this statement, including attachments, can be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.

SIGNATURE	DATE
	23/9/25

Only a person with appropriate environmental expertise and/or experience in planning and executing site operations should sign this statement. This person may be the EA holder, a full time employee of the EA holder or a consultant to the EA holder.

Section 16 – Environmental values

Attach a document that provides an assessment of the likely impact of the proposed amendment on environmental values (EVs). Note: All fields below are mandatory, therefore a statement is required where there are no likely impacts to an EV.

Environmental Values

☒ Water	☐ Wetlands	☐ Land use	☐ Acoustic
☐ Groundwater	☐ Land	☐ Air	☐ Waste

☒ I HAVE ATTACHED A DOCUMENT THAT PROVIDES AN ASSESSMENT OF LIKELY IMPACTS ON EVs.

Note that the EP Act, s226A(1)(f) states the information required relating to impacts on EVs which include:

a) a description of the environmental values likely to be affected by the proposed amendment; and
b) details of any emissions or releases likely to be generated by the proposed amendment; and
c) a description of the risk and likely magnitude of impacts on the environmental values; and
d) details of the management practices proposed to be implemented to prevent or minimise adverse impacts; and
e) if a PRCP schedule does not apply for each relevant activity - details of how the land the subject of the application will be rehabilitated after each relevant activity ceases.

Section 17 – Environmental offsets	
Will the ERA(s) being applied for cause, or be likely to cause, a significant residual impact to a prescribed environmental matter (other than a matter of local environmental significance)?	☒ No – Go to next section ☐ Yes – Provide details below

☐ Yes - Attach supporting information that:

- details the magnitude and duration of the likely significant residual impact on each prescribed environmental matter (other than matters of local environmental significance) for the entire activity;
- demonstrates that all reasonable measures to avoid and minimise impacts on each of those matters will be undertaken;
- includes a notice of election, if it has not already been submitted; and
- if the activity is to be staged, details of how the activity is proposed to be staged.

An environmental offset may be required for an ERA where despite all reasonable measures to avoid and minimise impacts on certain environmental matters, there is still likely to be a significant residual impact on one or more of those matters. You must verify the presence, whether temporary or permanent, of those environmental matters. For more information refer to the State Significant Impact Guideline at the Queensland Government website, at: www.qld.gov.au/environment/pollution/management/offsets/index.html.

Section 18 – Matters of national environmental significance	
Would the carrying out of the proposed ERA, or where relevant the ERA project, be likely to have a significant impact on any matters of national environmental significance?	☒ No – Go to next section ☐ Yes – Provide details below
Are the impacts covered by transitional provisions for the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act)?	☐ No – Go to next section ☐ Yes – Provide details in an attachment
Has the proposal been referred to the Federal Government Environment Minister or a delegate for formal assessment and approval?	☐ No – Go to next section ☐ Yes – Provide details below
If Yes - Has an approval issued under the EPBC Act required an environmental offset for the same, or substantially the same, impact and the same, or substantially the same, matters of national environmental significance?	☐ No – Go to next section ☐ Yes – Provide details below
If Yes - Are there any matters of national environmental significance which are assessed under the EPBC Act which are the same, or substantially the same as any matters of national environmental significance, but that were not conditioned in the approval?	☐ No – Go to next section ☐ Yes – Provide details below

☐ I HAVE ATTACHED DETAILS OF MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE INCLUDING ANY APPLICABLE TRANSITIONAL PROVISIONS.

☐ I HAVE ATTACHED A COPY OF THE EPBC ACT APPROVAL.

There are currently nine matters of national environmental significance (MNES) which have been defined in the *EPBC Act*. To determine whether the proposed ERA(s) will have a significant impact on MNES and for referral requirements, please refer to the guidance provided by the Federal Government's Department of Environment on www.australia.gov.au and www.dcceew.gov.au/.

Section 19 – Waste

Attach a document that provides details of the proposed measures for minimising and managing waste generated by any amendment(s) to the relevant activity.

☒ I have attached a document that provides the required information; or

☐ If waste is to be managed according to an existing waste management plan, provide the name of the plan and the relevant page or section numbers below:

Section 20 – Regional interest areas *(Resource activities only)*

Is the activity a resource activity?	☒ No - Go to Section 26 ☐ Yes - Continue below
Is the resource activity located anywhere within an area of regional interest?	☐ No – Go to next section ☐ Yes – Provide details below

If yes - Which area of regional interest, has or will require a regional interest development approval (RIDA)?

- ☐ Priority agricultural areas (PAAs)
- ☐ Priority living areas (PLAs)
- ☐ Strategic environmental areas (SEAs)
- ☐ Strategic cropping area (SCA)
- ☐ No RIDA required, I am an exempt activity.

If you have applied or been approved for a RIDA, provide the application reference:	

A regional interests development approval (RIDA) is required when a resource activity is proposed in an area of regional interest under the *Regional Planning Interests Act 2014*. Further information, including application forms, can be found on the Department of State Development, Infrastructure and Planning website at www.planning.qld.gov.au.

Section 21 – ANZSIC code *(Resource activities only)*

Provide the ANZSIC code for the resource activity.

- ☐ 1101 Black coal mining
- ☐ 1102 Brown Coal Mining
- ☐ 1311 Iron ore mining
- ☐ 1312 Bauxite mining
- ☐ 1317 Silver-lead-zinc ore mining
- ☐ 1200 Oil and gas extraction
- ☐ 1313 Copper ore mining
- ☐ 1314 Gold ore mining
- ☐ 1315 Mineral sand mining
- ☐ 1316 Nickel ore mining
- ☐ 1319 Metal ore mining (other metallic mineral ores)
- ☐ Other (provide details): _____

The Australian and New Zealand Industrial Classification (ANZSIC) is used by the Australian Bureau of Statistics. It is required to be displayed in the public register.

Section 22 – Environmental impact statement (EIS)* *(Resource activities only)*	
Has an application been made for a decision on whether an EIS would be required for the proposed amendment activity?	☒ No ☐ Yes
Has a decision been made on the application on whether an EIS would be required for the proposed amendment activity?	☐ Yes, a decision was made that an EIS is required – Attach decision. ☐ Yes, a decision was made that an EIS is not required – Attach decision. ☐ No, a decision has not yet been made. ☐ NA – No application has been made.
☐ I HAVE ATTACHED THE DECISION.	
Has an EIS process that includes the proposed amendment been completed?	☐ No - Go to next section ☐ Yes
If yes - Has the EIS assessment report lapsed under section 59A of the EP Act?	☐ No - Provide details below ☐ Yes – Go to next section
I have assessed the environmental risks of the proposed amendment and consider them to be: ☐ The same as was assessed in the EIS process ☐ Different to what was assessed in the EIS process	
☐ I HAVE ATTACHED THE ASSESSMENT OF THE ENVIRONMENTAL RISKS OF THE PROPOSED AMENDMENT.	

* EIS refers to both the EIS process under the *EP Act* and the EIS process under the *State Development and Public Works Organisation Act 1971*.

* For further information about the EIS process is available at www.qld.gov.au, using the search term 'environmental impact statements'.

Section 23 – Environmental impact statement triggers*	
Is the application to amend/alter an existing mine?	☒ No - Continue below ☐ Yes - Answer questions 1-6
Is the application for petroleum and gas activities?	☐ No – Go to next section ☐ Yes – Answer questions 7-9
For proposals to amend/alter an existing mine	
1. Is the proposed amendment for an increase in the annual extraction of more than 100% or 5 million tonnes per year (whichever is the lesser)? *NOTE: Only answer this question if the current ERA project is for an existing mine extracting between 2–10 million tonnes per year of run of mine (ROM) ore or coal; otherwise select N/A.*	☐ Yes ☐ No ☐ N/A
2. Is the proposed amendment for an increase in annual extraction of more than 50% or 10 million tonnes per year (whichever is the lesser)? *NOTE: Only answer this question if the current ERA project is for an existing mine extracting over 10 million tonnes per year of ROM ore or coal; otherwise select N/A.*	☐ Yes ☐ No ☐ N/A

3. Is the proposed amendment for an increase in annual extraction of greater than 25%? *NOTE: Only answer this question if the current ERA project is for an existing mine extracting over 20 million tonnes per year of ROM ore or coal extraction, otherwise select N/A.*	☐ Yes ☐ No ☐ N/A
4. Would the proposed amendment involve an extension into and significant impact on a Category A or B environmentally sensitive area, which is not already authorised by the State?	☐ Yes ☐ No
5. Would the proposed amendment involve a substantial change in mining operations—such as from underground to open cut, or (for underground mining) a change in operations from one causing little subsidence to one likely to cause substantial subsidence?	☐ Yes ☐ No
6. Would the proposed amendment introduce a novel or unproven resource removal process, technology or activity?	☐ Yes ☐ No
For petroleum and gas activities	
7. Would the proposed amendment involve a total disturbance area of greater than 2,000 hectares at any one time during the life of the proposed project? This includes areas occupied by well pads (single or multi-directional), access tracks and roads, water storages, and process plants?	☐ Yes ☐ No
8. Would the proposed amendment involve the construction of a high pressure pipeline over a distance of 300 kilometres or greater?	☐ Yes ☐ No
9. Would the proposed amendment involve the construction of a liquefied natural gas plant?	☐ Yes ☐ No
☐ I HAVE ATTACHED DETAILS OF HOW THE CRITERION IS TRIGGERED INCLUDING DETAILS OF THE IMPACT.	

* EIS refers to both the EIS process under the *EP Act* and the EIS process under the *State Development and Public Works Organisation Act 1971*.

* There are numerous criteria used to make the EIS decision, for further information about the EIS process is available at www.qld.gov.au, using the search term 'environmental impact statements'.

Section 24 – Coal seam gas (CSG) activities *(Resource activities only)*	
Does the application relate to an EA for a CSG activity that is an ineligible ERA?	☒ No – Go to next section ☐ Yes – Provide details below
Does the amendment change the way that CSG water is managed?	☐ No – Go to next section ☐ Yes – Provide details below
If the amendment will change the way that CSG water is managed the following information must be provided with this application.	
☐ I have attached a document that details:	
☐ The quantity of CSG water the applicant reasonably expects will be generated in connection with carrying out each relevant CSG activity.	
☐ The flow rate at which the applicant reasonably expects the water will be generated.	
☐ The quality of the water, including changes in the water quality the applicant reasonably expects will happen while each relevant CSG activity is carried out.	
☐ The proposed management of water including, for example, the use, treatment, storage and disposal of the water.	

☐	The measurable criteria ('management criteria') against which the applicant will monitor and assess the effectiveness of the management of the water, including, for example, criteria for each of the following: (i) the quantity and quality of the water used, treated, stored or disposed of; (ii) protection of the environmental values affected by each relevant CSG activity; and (iii) the disposal of waste, including, for example, salt, generated for the management of the water.
☐	The action proposed to be taken if any of the management criteria are not complied with, to ensure that the criteria will be able to be complied with in the future.
☐	If the application includes a CSG evaporation dam, an evaluation of the following must be provided: (i) best practice environmental management for managing CSG water; (ii) alternative ways for managing CSG water; and (iii) whether there is a feasible alternative to a CSG evaporation dam for managing the water. Note if the evaluation shows that there is a feasible alternative option, the CSG evaporation dam cannot form part of the water management for this amendment application.

Section 25 – Underground water rights *(Resource activities only)*

Is the activity proposed to be undertaken on a mineral development licence (MDL), mining lease (ML) or petroleum lease (PL)?	☒ No – Go to next section ☐ Yes – Provide details below
Does the proposed amendment involve changes to the exercise of underground water rights?	☐ No – Go to next section ☐ Yes – Provide details below

☐	I have attached a document that details:
☐	The areas in which underground water rights are proposed to be exercised.
☐	For each aquifer affected, or likely to be affected, by the exercise of underground water rights: (i) a description of the aquifer; (ii) an analysis of the movement of underground water to and from the aquifer, including how the aquifer interacts with other aquifers and surface water; and (iii) a description of the area of the aquifer where the water level is predicted to decline because of the exercise of underground water rights; and. (iv) the predicted quantities of water to be taken or interfered with because of the exercise of underground water rights during the period in which resource activities are carried out.
☐	The environmental values that will, or may, be affected by the exercise of underground water rights and the nature and extent of the impacts on the environmental values.
☐	Any impacts on the quality of groundwater that will, or may happen because of the exercise of underground water rights during or after the period in which resource activities are carried out.
☐	Strategies for avoiding, mitigating or managing the predicted impacts on the environmental values of the impacts on the quality of groundwater.

For more information about exercising underground water rights or the associated requirements refer to the guideline Requirements for site-specific and amendment applications—underground water rights (dsdsatsip.qld.gov.au)

Section 26 – Financial assurance / estimated rehabilitation cost

Do you currently have financial assurance or scheme assurance held for the approved EA?	☒ No – Go to next section ☐ Yes – Provide details below
☐	I will not need to change the financial assurance or scheme assurance in relation to this amendment.

☐ I will be changing the financial assurance and have attached the form Application to amend or discharge financial assurance held for an environmental authority (ESR/2015/1752).

☐ I will be applying for a new estimated rehabilitation cost decision if this amendment application is approved.

Section 27 – Compliance and enforcement tools or site management plan

Is this land currently subject to an environmental enforcement order (EEO), environmental protection order (EPO), transitional environmental program (TEP) or a site management plan (SMP)?	☒ No – Go to next section ☐ Yes (EEO) - provide details below ☐ Yes (EPO) - provide details below ☐ Yes (TEP) - provide details below ☐ Yes (SMP) - provide details below

PROVIDE THE REFERENCE NUMBER AND BRIEF DETAILS INCLUDING: DESCRIPTION OF LAND; LOT AND PLAN NUMBERS; AND LOCAL GOVERNMENT AREA

Section 28 – Environmental management register

Is any part of the land currently recorded in, or has previously been removed from, the environmental management register?	☒ No – Go to next section ☐ Yes – Provide details below

☐ The land is currently in the environmental management register.

☐ The land has been removed from the environmental management register.

You must attach evidence (e.g. Notice) advising that the details have been removed.

Section 29 - Website address

Is the application for a mining activity on a mining lease, or a geothermal, petroleum, or greenhouse gas storage activity?	☒ No – Go to next section ☐ Yes – Provide details below	
Provide the website address for the application notice and application documents.		
Provide details of the contact person if technical assistance is required.	NAME	TELEPHONE
	EMAIL	

Section 30 – Site contact

Would you like to nominate a site contact?	☒ No – Go to next section ☐ Yes – Provide details below

SITE CONTACT NAME	POSITION
EMAIL	TELEPHONE

☐ INDICATE IF YOU WANT THE SITE CONTACT TO RECEIVE CORRESPONDENCE VIA EMAIL

A site contact is an alternative contact nominated by the legal entity which holds, or will in future hold, a relevant authority issued by the department. The department may direct correspondence relating to actual or potential compliance matters to the site contact.

Section 31 – Payment of fees

Application fee:	$ 346

For fees payable to the Department of the Environment, Tourism, Science and Innovation

Preferred

☒ Apply using Online Services – submit the application online and pay by credit card.

Alternatively

☐ Email the completed application with a request to pay the application fee by BPOINT. Please do not email your credit card details – we will send you a link to pay securely by credit card via BPOINT.

For fees payable to the Department of Primary Industries

☐ Payment by cheque or money order made payable to the Department of Primary Industries (attached).

☐ Please contact me (the applicant) for credit card payment:

Phone number: Insert phone no.

An application fee is payable at the time the application is made. Information on the fee can be located on the website Forms and fees for environmental authorities | Business Queensland. Where the proposed amendment is determined by the administering authority to be a major amendment, an assessment fee of 30% of the annual fee for the authority at the time of application, is also payable. The assessment fee is payable once notification of the assessment level decision is issued. The assessment fee must be paid before the assessment of the amendment application can proceed.

The supplementary annual fee is payable where the amendment is approved and results in the aggregate environmental score (and hence the annual fee) for the EA increasing. The supplementary annual fee is a pro-rata adjustment to the annual fee for the period from when the amended EA takes effect to the next anniversary day for the EA. This is payable within 20 business days after the approval date. The supplementary annual fee can be calculated using the Fee calculator (ESR/2015/1731).

Section 32 – Declaration

Note: If you have not told the truth in this application you may be prosecuted.

I declare that:

- I am the holder of the EA, or authorised signatory for the holder of the EA.
- The information provided is true and correct to the best of my knowledge.
- I understand that under section 480 of the EP Act, it is an offence to give the administering authority or an authorised person a document that contains information that I know, or ought reasonably know, to be false or misleading in a material particular.
- I understand that under section 480A of the EP Act, if I am required to give a document to the administrating authority, it is an offence to give a document that I know, or ought reasonably to know contains incomplete information in a material particular.
- I understand that failure to provide sufficient information may result in the application being refused. I understand that an incomplete application may be invalid. Invalid applications will be returned without processing and will only be processed if resubmitted with all invalidating issues addressed.
- I understand that all information supplied on or with this application form may be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.
- If the proposed amendment is made, the relevant activities will continue to comply with the ERA Standard (eligibility criteria and standard conditions) for all eligible ERAs, or where they cannot comply, I have indicated otherwise in my application and provided the required supporting information.
- If the proposed amendment is a minor amendment (condition conversion), I can comply with the ERA Standard (eligibility criteria and standard conditions) for each of the ERAs authorised by the EA.
- If the proposed amendment is made, I will continue to comply with all conditions of my environmental authority as well as any relevant provisions in the EP Act.
- I understand that I am responsible for managing the environmental impacts of these activities, and that approval of this application is not an endorsement by the administering authority of the effectiveness of management practices proposed or implemented.

Where an agreement is in place between all holders of the EA, one holder can sign on behalf of the other joint holders. Please tick the checkbox below.

☒ I HAVE AUTHORITY TO SIGN THIS FORM ON BEHALF OF ALL THE JOINT HOLDERS OF THE EA

Applicant's or authorised signatory's signature

FULL NAME	POSITION	COMPANY / ORGANISATION
John Moloney	Consultant	
SIGNATURE		DATE
		23/9/25

Joint holder(s) signature if applicable		
NAME, POSITION AND COMPANY NAME	SIGNATURE	DATE
NAME, POSITION AND COMPANY NAME	SIGNATURE	DATE
NAME, POSITION AND COMPANY NAME	SIGNATURE	DATE
OR ☐ I HAVE ATTACHED A DOCUMENT THAT PROVIDES THE REQUIRED INFORMATION FOR ALL JOINT HOLDERS.		

Where the EA holder is a company, this form must be signed by an authorised person for that company. Where there is more than one holder of the EA, this declaration is to be signed by all holders, unless there is an agreement between all holders that one can sign on behalf of the other(s).

Section 33 - Submission

Please submit your completed application to:

For ERA 2, ERA 3 or ERA 4:

Post: Senior Environmental Scientist
Intensive Livestock Unit
Department of Primary Industries
PO Box 102
TOOWOOMBA QLD 4350

Enquiries: Phone: (07) 4688 1374
Fax: (07) 4529 4192
Email: livestockregulator@dni.qld.gov.au

For a mining ERA where the proposed amendment impacts upon the resource tenure:

Enquiries: Mining Registrar
Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development
The Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development has a list of office locations for mining registrars on its website https://www.nrmmrrd.qld.gov.au.

For all other ERAs:

Post: Permit and Licence Management
Department of the Environment, Tourism, Science and Innovation
GPO Box 2454
BRISBANE QLD 4001

Enquiries: Website: www.business.qld.gov.au
Email: palm@detsi.qld.gov.au
Phone: 13 QGOV (13 74 68)

Applications and enquiries should not be submitted to individual officers. The latest version of this publication can be found at Application to amend an environmental authority (ESR/2015/1733).

Section 34 - Definitions to terms used in this form

(Where there is inconsistency between the definition of terms used here and the terms used in the EP Act, the terms in the EP Act apply)

Condition conversion	For an EA, means an amendment replacing all the conditions of the authority with the standard conditions for the environmentally relevant activity which the authority relates. The relevant eligibility criteria and standard conditions must be able to be met.
Eligibility criteria	For an environmentally relevant activity, means eligibility criteria that are in effect for the activity under – (a) An ERA standard; or (b) A code of environmental compliance; or (c) A regulation in respect of a mining activity.

Environmentally relevant activity (ERA)	A resource activity or a prescribed ERA.
ERA project	A prescribed ERA project or a resource project.
ERA standard	For an environmentally relevant activity, means the eligibility criteria and/ or the standard conditions set by the administering authority.
Major amendment	For an environmental authority, means an amendment that is not a minor amendment.
Material change of use of premises for an ERA	A category of assessable development requiring a development permit under the *Planning Act 2016*. Refer Schedule 10, Division 2, Item 8 of the Planning Regulation 2017.
Minor amendment	For an environmental authority, means an amendment that is – (a) a condition conversion; or (b) a minor amendment (threshold).
Minor amendment (threshold)	For an environmental authority, means an amendment that the administering authority is satisfied— (a) is not a change to a condition identified in the authority as a standard condition, other than— (i) a change that is a condition conversion; or (ii) a change that is not a condition conversion but that replaces a standard condition of the authority with a standard condition for the environmentally relevant activity to which the authority relates; or (iii) a change that will not result in a change to the impact of the relevant activity on an environmental value; and (b) does not significantly increase the level of environmental harm caused by the relevant activity; and (c) does not change any rehabilitation objectives stated in the authority in a way likely to result in significantly different impacts on environmental values than the impacts previously permitted under the authority; and (d) does not significantly increase the scale or intensity of the relevant activity; and (e) does not relate to a new relevant resource tenure for the authority that is – (i) a new mining lease; or (ii) a new petroleum lease; or (iii) a new geothermal lease under the Geothermal Energy Act; or (iv) a new GHG injection and storage lease under the GHG storage Act; and

	(f) involves an addition to the surface area for the relevant activity of no more than 10% of the existing area; and (g) for an environmental authority for a petroleum activity— (i) if the amendment involves constructing a new pipeline—the new pipeline does not exceed 150km; and (ii) if the amendment involves extending an existing pipeline—the extension does not exceed 10% of the existing length of the pipeline; and (h) if the amendment relates to a new relevant resource tenure for the authority that is an exploration permit or GHG permit—the amendment application under section 224 seeks an amended environmental authority that is subject to the standard conditions for the relevant activity or authority, to the extent it relates to the permit.
Mobile and temporary ERA	A prescribed ERA, other than an activity that is dredging material, extracting rock or other material, or the incinerating of waste: (a) carried out at various locations using transportable plant or equipment, including a vehicle (b) that does not result in the building of any permanent structures or any physical change of the landform at the locations (other than minor alterations solely necessary for access and setup including, for example, access ways, footings and temporary storage areas) (c) carried out at any one of the locations: (iii) for less than 28 days in a calendar year, or (iv) for 28 or more days in a calendar year only if the activity is necessarily associated with, and is exclusively used in, the construction or demolition phase of a project.
Prescribed ERA	An environmentally relevant activity that is not a resource activity and is prescribed under section 19 of the EP Act.
Prescribed ERA project	All prescribed ERAs carried out, or proposed to be carried out, as a single integrated operation.
Registered suitable operator	A person who, or a corporation which, under section 318I of the EP Act has been assessed as being suitable to carry out an ERA and has been listed on the suitable operator register.
Resource activity	An activity that is any of the following: (a) a geothermal activity (b) a greenhouse gas (GHG) storage activity (c) a mining activity (d) a petroleum activity.

Resource project	Resource activities carried out, or proposed to be carried out, under 1 or more resource tenures, in any combination, as a single integrated operation.
Single integrated operation	Occurs when all of the below criteria are met: (a) the activities are carried out under the day-to-day management of a single responsible individual, for example, a site or operations manager; (b) the activities are operationally interrelated; (c) the activities are, or will be, carried out at one or more places; and (d) the places where the activities are carried out are separated by distances short enough to make feasible the integrated day-to-day management of the activities.
Underground water rights	Means any of the following: (a) underground water rights within the meaning of the *Mineral Resources Act 1989*; (b) underground water rights within the meaning of the *Petroleum and Gas (Production and Safety) Act 2004*; (c) underground water rights within the meaning of the *Petroleum Act 1923*, section 87(3).

Aqua Pharma Australia Pty Ltd Receiving Environment Monitoring Program (REMP) Design



NAUTILUS COLLABORATION

Document Version: 1.0
Updated: 23 September 2025

Farm Details

Farm Name	Aqua Pharma Australia Pty Ltd
Address	947 Greenhill Rd, Ilbilbie QLD 4738
Lot / Plan	Lot 50 on SP208545
Environmental Authority	EPPR00204313

Document Control

Title	Aqua Pharma Australia – Receiving Environment Monitoring Program
Version	2.0
Last Revised	23 Sept 2025
Next Revision Due	8 July 2026

Document Revision History

Rev	Changes made	Approved by	Date Approved
1			
2	Incorporated DETSI requested amendments	JM	23/9/25

This document has been prepared by Nautilus Collaboration in consultation with Aqua Pharma Australia Pty Ltd.

NAUTILUS COLLABORATION

CONTENTS

Acronyms and Abbreviations 5
1 INTRODUCTION 6
1.1 Aim of the REMP 6
1.2 Objectives of the REMP design Report 7
2 REGULATORY REQUIREMENTS 9
2.1 Development approval 9
2.2 Environmental authority 9
3 LAND USE 10
4 FARM OPERATION 11
5 RELEASE CHARACTERISATION 15
5.1 Contaminants and sources 15
5.2 Potential impact 15
6 RECEIVING ENVIRONMENT ATTRIBUTES 17
6.1 Climate 17
6.2 Geology and Soils 17
6.3 Coastal Processes 20
6.4 Matters of National Environmental Significance 20
6.5 Matters of State Environmental Significance 22
6.6 Plane Creek Catchment 25
6.7 Reef 2050 Water Quality Improvement Plan 26
6.8 Environmental Values and Water Quality Objectives – Plane Basin 27
7 MONITORING PROGRAM DESIGN 29
7.1 Monitoring program components 29
7.2 Water Quality Monitoring 29
7.2.1 Sampling Sites 29
7.2.2 Sampling Protocol 34
7.2.3 Physicochemical Parameters and Frequency 34
7.2.4 Quality Assurance and Quality Control 36
8 DATA ANALYSIS METHODOLOGY 39
8.1 Comparison with Guideline Values 39
9 REVIEWING AND REPORTING 40
REFERENCES 41
Appendix A – EA (EPPR00204313) 43
Appendix B – DAMS Mapping 67

Appendix C - MSES 73
Appendix D - MNES..... 74

Acronyms and Abbreviations

APG Aus	Aqua Pharma Group Australia
DA	Development approval
DPI	Department and Primary Industries
DIN	Dissolved inorganic nitrogen
EA	Environmental Authority
ERA	Environmentally Relevant Activities
EV	Environmental Values
PN	Particulate nitrogen
PP	Particulate phosphorus
REMP	Receiving Environment Monitoring Program
WQO	Water Quality Objectives
WaTERS	Water Tracking and Electronic Reporting System

1 INTRODUCTION

Aqua Pharma Australia Pty Ltd (APG Aus) owns and operates a prawn farm located at 947 Greenhill Rd, Ilbilbie in Queensland. The farm is situated approximately 250m from the coast, on the floodplain of the Plane Creek catchment. A caravan park is bordering the farm to the east, low density residential development to the south and west, and marshes and wetlands buffering Knobler Creek to the north (Figure 1 and Figure 2).

At present, black tiger prawns (*Penaeus monodon*) are grown from larvae to harvest size in 13 earthen ponds. Once harvested, the prawns are processed in a separate shed before distributed on the market. Water required for filling and replenishing the ponds is sourced from Knobler Creek and distributed via open channels on site. A central settlement pond collects and treats wastewater prior to the release to Knobler Creek.

A development approval (DA) for material change of use that is aquaculture was issued with conditions in 1996 and last amended in 2012 (authority ID 2005BC0280). This approval authorises for the following species to be farmed on site:

- Banna prawn (*Penaeus merguiensis*)
- Black tiger prawn (*Penaeus monodon*)
- Brown tiger prawn (*Penaeus esculentus*)
- Kuruma Prawn (*Penaeus japonicus*)

In addition to the DA, the farm operates under an environmental authority (EA), transferred to APG Aus on 15 April 2024 (EPPR00204313), which permits for he following Environmentally Relevant Activity (ERA) to be carried out on site:

ERA 01 – Aquaculture 1

1(b) - Cultivating or holding crustaceans in enclosures that are on land and have a total area of more than 10ha but not more than 100ha

Monitoring of wastewater release, environmental impact and receiving waters are required and programs briefly outlined in schedule J of the EA. This Receiving Environment Monitoring Program (REMP) design report has been prepared by Nautilus Collaboration in consultation with Aqua Pharma Australia and will replace any earlier monitoring programs developed and implemented on site.

1.1 Aim of the REMP

The aim of the REMP is to quantify and verify the extent of potential impact of activities carried out on farm, may have on the receiving environment. This to ensure that receiving environmental values are protected and maintained and regulatory requirements are met.

1.2 Objectives of the REMP design Report

The objective is to document protocols for monitoring to meet the aim of this REMP. This by identifying and describing:

- Regulatory requirements (section 2);
- Farm operation (section 3)
- Potential contaminants and impacts associated with the licenced activity (section 5);
- Receiving environment attributes, environmental values and management intent(s) (section 6);
- Relevant water quality objectives (section 6);
- Monitoring sites and indicators (section 0); and
- Methodology for sampling, analysing and reporting of data (section 0, 8 and 9) .



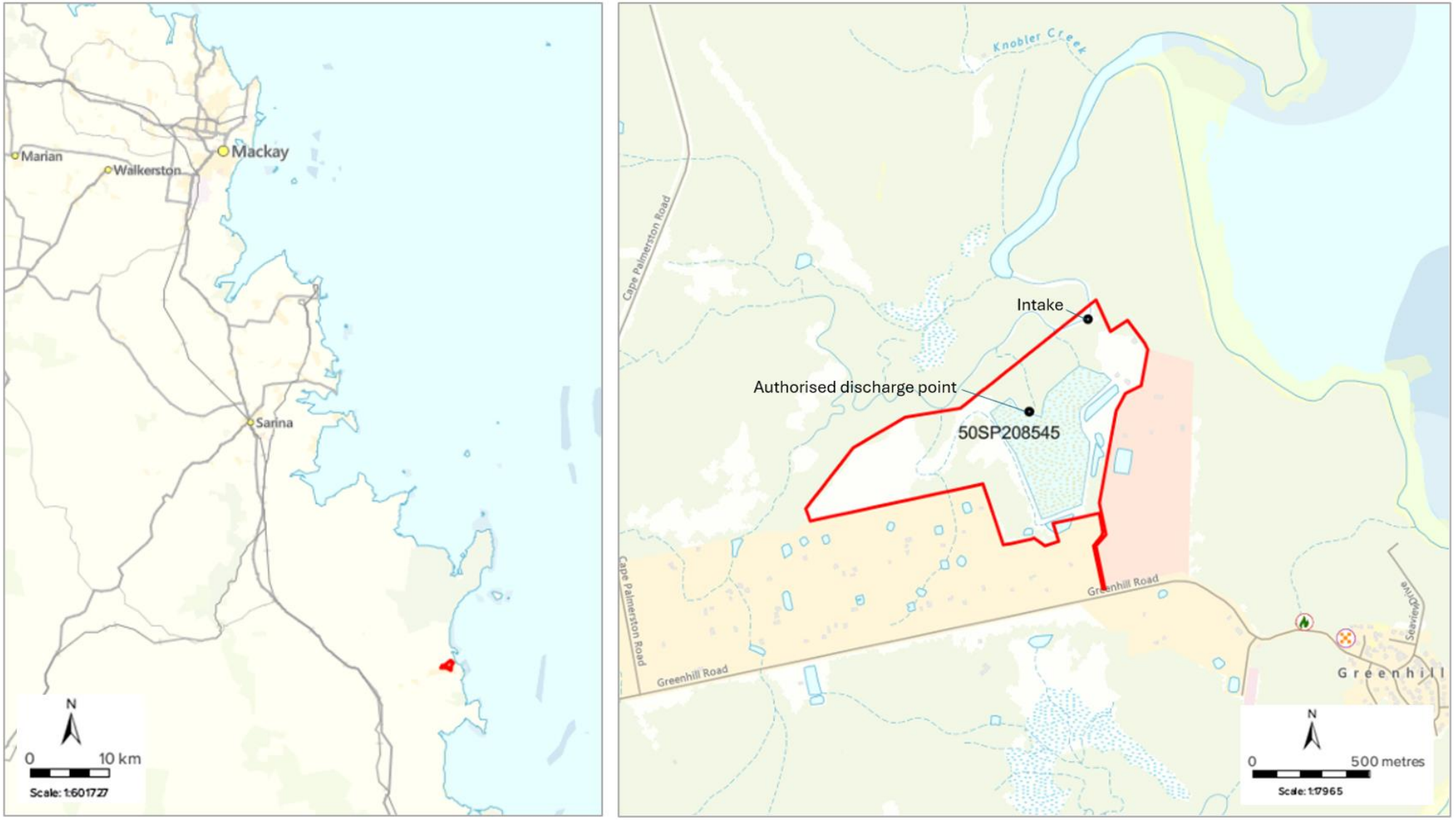


Figure 1. Map showing farm (left) situated south of Mackay and (right) intake and authorised discharge point on Knobler Creek (QLD Globe)

2 REGULATORY REQUIREMENTS

2.1 Development approval

A development approval (DA) for the material change of use that is aquaculture was originally issued on 17 November 1996. An amendment was made, and a new DA issued with conditions on 22 August 2006 and again on 12 July 2012 (authority ID 2005BC0280). The approval has now been registered under the current owner's name (APG Aus) by submitting a "Change of Contact Details (Development Approval)" form to the then Department of Agriculture and Fisheries (now the Department and Primary Industries (DP)I).

The approval, issued under the *Fisheries Act 1994*, lists several conditions relating to the act. This includes, but not limited to, requirements of submitting an aquaculture production return by 31 July each year, measures for preventing escapes and spreading of disease, and species authorised to be farmed on site (see DA 2005BC0280 for further details).

2.2 Environmental authority

In addition to the DA, the farm operates under an environmental authority (EA) that was transferred to APG Aus on 15 April 2024 (EPPR00204313). The EA lists a large number of conditions, whereof several relates to the monitoring required to be carried out on site, including:

- Release limits for water quality and quantity released to the receiving environment (condition D5 and D6)
- Requirements for monitoring of contaminants released to waters under a Wastewater Quality Monitoring Program (condition I13 – I20 and J7)
- Requirements for environmental monitoring, including a:
    - Receiving Waters Monitoring Program (condition I 21 – I24 and J8)
    - Initial monitoring Program (I25 –I27 and J9)
    - Environmental Impact Monitoring Program (I28 – I31 and J10)
    - Monitoring of construction effects (I32 – I33)

For further details, see EA shown in Appendix A.

3 LAND USE

The farm is in a rural setting, primarily surrounded by areas of land classified as “other minimal use” (i.e. areas that are largely unused in the context of prime use but may have ancillary uses such as stock reserves, residual native cover etc) or “grazing of native vegetation” (ALUM). Additionally, a caravan park is bordering the farm to the east, low density residential development to the south, and marshes and wetlands are buffering Knobler Creek north of site (Figure 2).

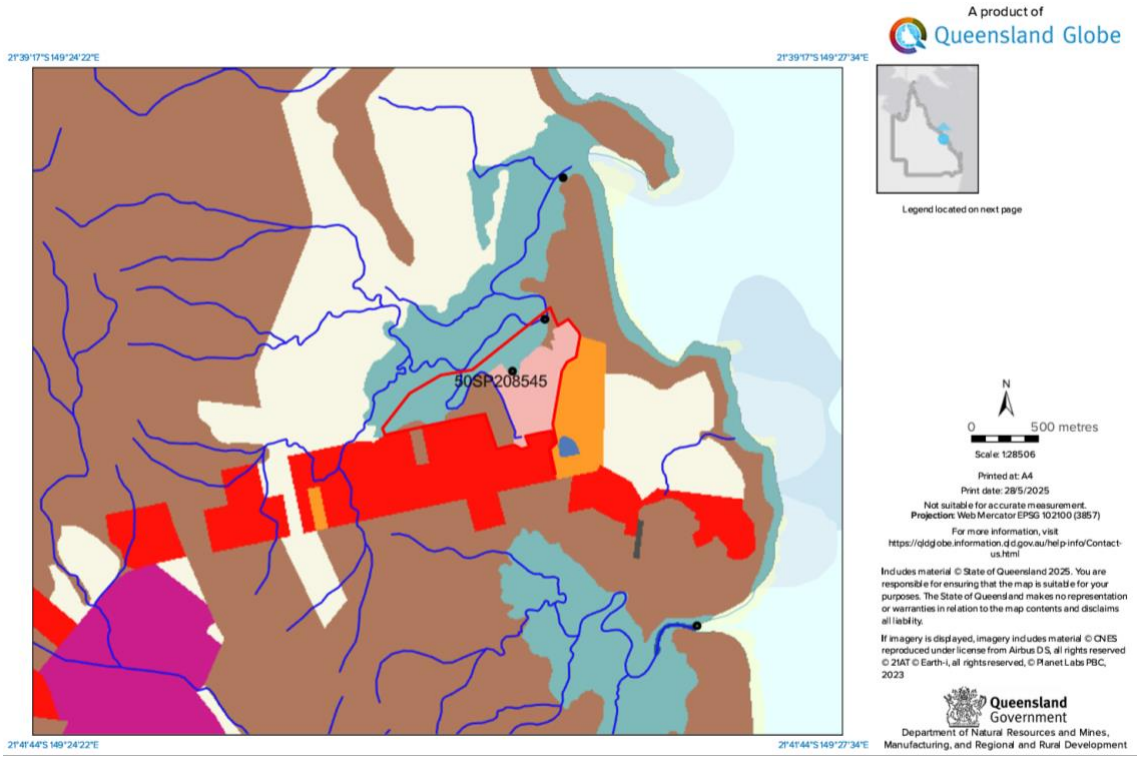




Figure 2. Land use near farm.

4 FARM OPERATION

The farm, located at 947 Greenhill Rd, Ilbilbie in Queensland (50/SP208545), has been operating as a prawn fam for decades. The now owner (APG Aus) purchased and took over the operation of farm in 2024.

At present, the farm grows black tiger prawns (*Penaeus monodon*) from larvae sourced from a local nursery, to harvest size (25 - 35g). The ponds are generally stocked in October to November, with harvesting occurring between February and May. The larvae initially feed on microalgae, which are encouraged to grow in the ponds by adding "blue dye" to the water, and then transitioned to a manufactured feed. Once harvested, the prawns are processed through grading/sizing, cooking (boiling in water), freezing and packaging in a shed on site. Town water is used for the cooking process and ice is sourced outside farm. Rainwater collected on site, is used elsewhere.

Water required for filling and replenishing the production ponds, is pumped from Knobler Creek and distributed via open clay-lined channels that runs around the outside of the ponds. There are 13 production ponds, all constructed at a typical depth of 1.8m from the bottom of the pond to the top of the bank. The water levels are generally maintained at approximately 1.5m. Wastewater is collected and treated in a central settlement pond, which has a concrete monk with timber boards used to control the discharge to the receiving environment (Knobler Creek) through the outlet pipe at the opposite end.

There is another shed, in addition to the processing shed, used as a workshop and for storage of vehicles, feed, farm equipment and chemicals. A fuel tank, kept in a bunded area outside the shed, is used on site. There are also a couple of buildings used by staff, including an office.

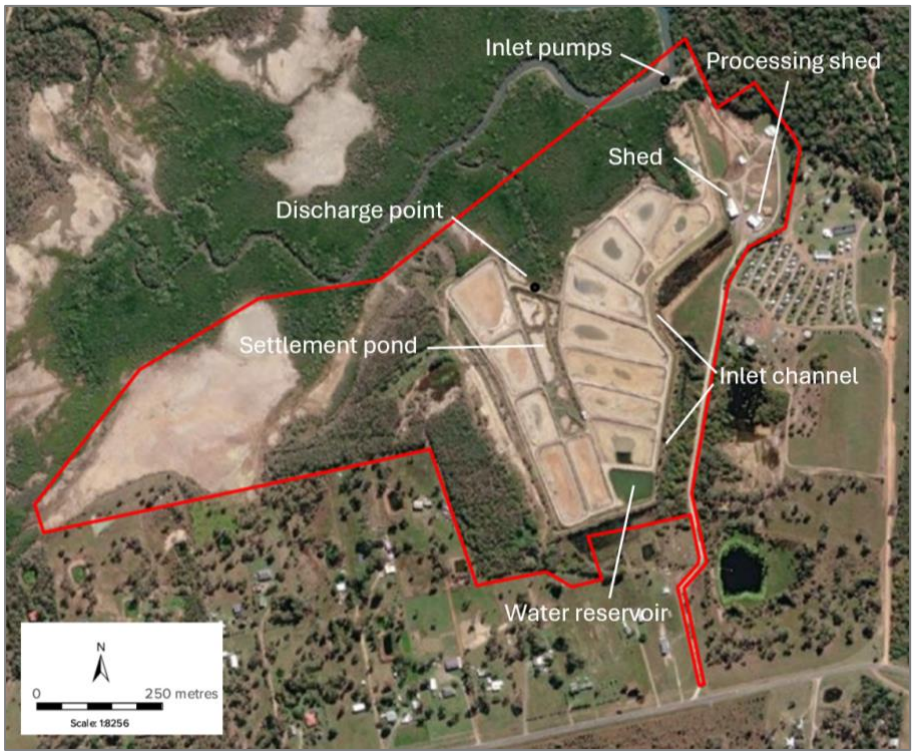


Figure 3. Map of farm and main structures on farm (QLD Globe)



Figure 4. Picture of production ponds prior to stocking



Figure 5. Picture of inlet pumps at Knobler Creek



Figure 6. Picture of inlet channel



Figure 7. Picture of monk at settlement pond, prior to stocking and while dry



Figure 8. Picture of discharge pipe on opposite side of monk at settlement pond

5 RELEASE CHARACTERISATION

5.1 Contaminants and sources

According to the National pollutant inventory technique manual for aggregated emissions from temperate water finfish aquaculture, "waste from aquaculture include all materials used in the process which are not removed from the system during harvesting" (NPI 2001). The quantity of the waste produced and released into the environment, is therefore closely linked to the culture system used.

In general, the main pollutants associated to aquaculture are organic matter and nutrients (nitrogen and phosphorus), which predominantly originates from feed and feeding practices on farm. This includes:

- Feed loss from dust
- Uneaten feed
- Feacal matter from undigested component of feed
- Waste metabolites excreted form prawn

In a pond system, the nutrients will leave through several pathways, including:

- Harvest
- Volitation
- Remaining stock
- Discharge water
- Pond sediments (NPi 2000)

Waste can also originate from chemicals used on site to control diseases (bactericides, fungicides, parasiticides), aquatic vegetation (algae) and other nuisance organisms (insecticides, pesticides). It may also include chemicals or compounds used to reduce handling-trauma to species being cultured (anaesthetics), to induce spawning or promote growth (hormones). There are also a range of compounds used to disinfect water, improve water quality and increase productivity (lime, fertilisers) (NPi 2001).

5.2 Potential impact

The release of nutrients and organic material to waterways can lead to algal blooms, smothering of flora and fauna, low oxygen levels, asphyxiation of aquatic animal life, impairment of ecosystem structure and function due to reduced diversity and system resilience. Algal blooms can also result in human health impacts and the closure of local waterways for human use. In addition, the release of some chemicals and ammonia can be toxic to aquatic life. Aquaculture can also pose a biosecurity risk, by the spread of disease or introduction of species (ESR/2015/1654).

Table 1. Potential issues of concern and water quality contaminants relating to Aquaculture release identified in the Technical Guideline (ESR/2015/1654)

Activity	Potential issues	Water quality contaminants
Aquaculture releases	Asphyxiation of aquatic animal life (e.g. low dissolved oxygen levels leading to fish kills), algal blooms, smothering of flora and fauna, impairment of ecosystem structure and function, diseases and introduced species	Carbonaceous material, suspended solids, nutrients and toxicants (biocides, etc) Diseased organisms and antibiotics may be an issue in some operations

6 RECEIVING ENVIRONMENT ATTRIBUTES

6.1 Climate

The farm is located roughly 80km south of Mackay, on the coastline of central Queensland. The climate of the region can be described as tropical, with hot and wet summers (wet season) and warm and sunny winters (dry season). The Bureau of Meteorology's (BOM) weather station at Mackay Airport (Mackay Aero, station ID: 033045) has a large data set and is located relatively close to site. Table 2 presents a summary of the data collected, which shows that the average rainfall is roughly 1531mm per annum. Most of it falls in December through to April, while August and September are the driest months. The maximum daytime temperatures are typically 29-30 degrees during summer and 22-25 degrees during winter (BOM).

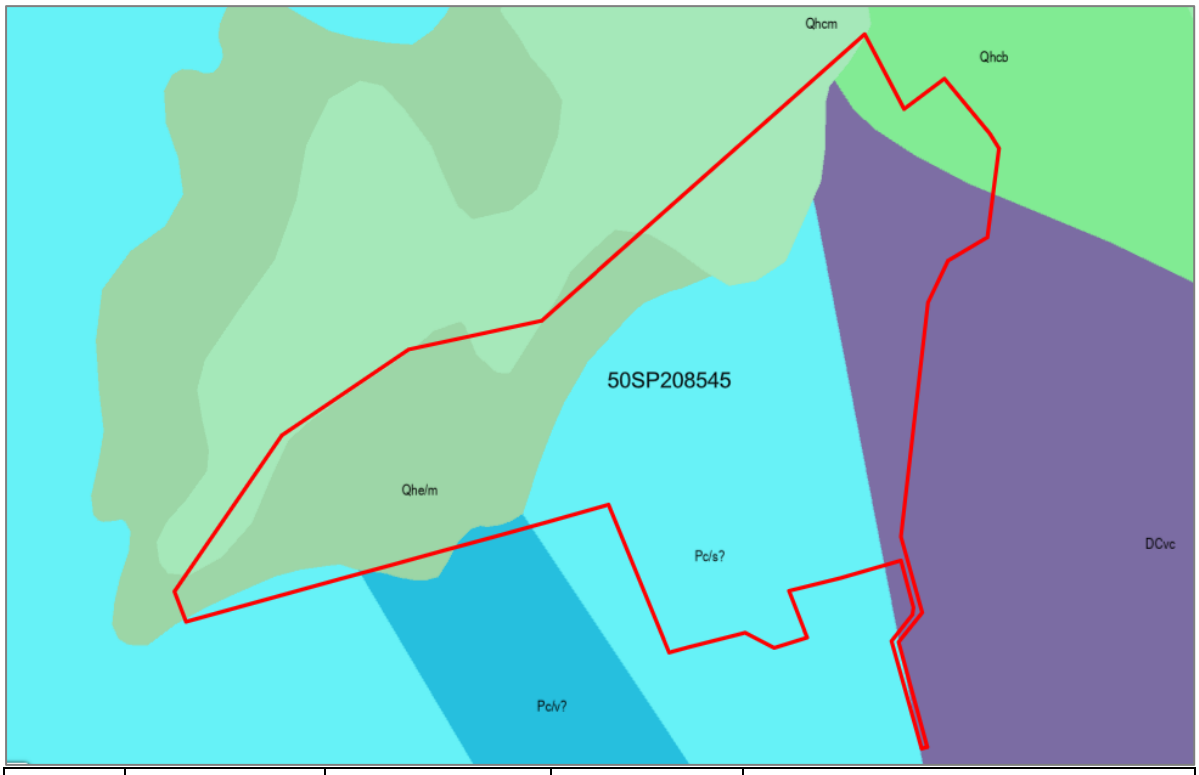
Queensland cyclone season is officially from November to April, but they can occur at other times (BOM).

Table 2. Climate Statistics for Mackay Aero from 1950-2024 (temp and rainfall) 1950-2010 (clear/cloudy days) (Station ID: 033045) (BOM)

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean max temp (°C)	30.5	30.3	29.5	27.7	25.3	23.3	22.8	23.9	26.1	28.5	29.7	30.8	**27.4**
Mean min temp (°C)	23.1	23.2	22.2	19.6	15.8	12.9	11.4	12.1	14.9	18.3	20.6	22.3	**18.0**
Mean rainfall (mm)	309.3	322.7	248.4	164.7	88.5	57.6	40.2	31.6	23.1	35.6	87.1	139.6	**1530.7**
Mean number of days of rain ≥ 1 mm	12.9	14.2	12.6	10.7	7.8	5.9	4.1	3.2	2.6	3.9	6.1	8.8	**92.8**
Mean number of clear days	5.1	3.1	4.6	8.6	9.2	10.3	12.8	14.8	11.3	12.2	9.6	8.4	**110.0**
Mean number of cloudy days	15.3	13.5	12.5	7.7	7.8	6.5	5.9	4.6	3.0	3.8	5.5	6.3	**92.4**

6.2 Geology and Soils

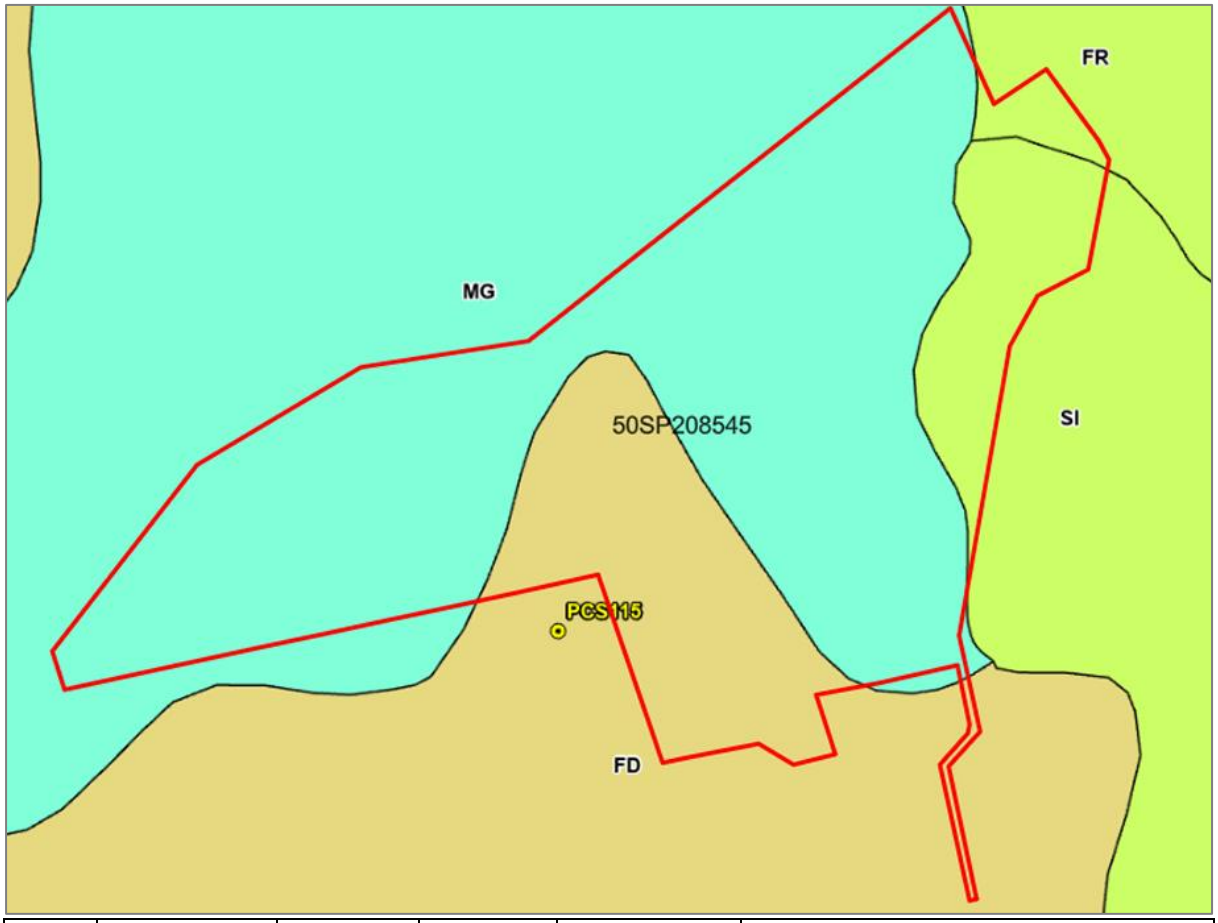
The site geology is mainly mapped as mixed volcanic and sedimentary rocks, miscellaneous unconsolidated sediments, and mixed mafites and felsite (Figure 9) (Surface geology, QLD Globe).



Map Legend	Age	Dominant Rock	Rock Type	Lithological Summary
Qhcm	Holocene	Mud	Stratified unit (including volcanic and metamorphic)	Mud and sandy mud; mangrove swamps; estuarine deposits
Qhe/m	Holocene	Miscellaneous unconsolidated sediments	Miscellaneous unconsolidated sediments	Mud, sandy mud, muddy sand and minor gravel: estuarine channels and banks, supratidal flats and coastal grasslands
Qhcb	Holocene	Sand	Stratified unit (including volcanic and metamorphic)	Moderately well-sorted, fine to coarse-grained quartzose to shelly sand and minor gravel, silt, mud: mainly beach ridges and cheniers
Pc/s?	Early Permian	Mixed volcanic and sedimentary rocks	Stratified unit (including volcanic and metamorphic)	Siltstone and mudstone, volcanilithic sandstone and conglomerate; minor altered basalt and local rhyolitic to dacitic volcanic rocks
Pc/v?	Early Permian	Felsites (lavas, clastics & high-level intrusives)	Stratified unit (including volcanic and metamorphic)	Rhyolitic to andesitic volcaniclastic rocks (poorly sorted, volcanic sandstone and breccia and ignimbrite); minor altered basalt; intruded by abundant diorite dykes
DCvc	Late Devonian to Early Carboniferous	Mixed mafites and felsites (mainly volcanics)	Stratified unit (including volcanic and metamorphic)	Sandstone, siltstone, mudstone (locally with radiolarians), pebbly sandstone, breccia, mafic hyaloclastite, rhyolitic ignimbrite; minor conglomerate, lapilli tuff, limestone

Figure 9. Map of surface geology relevant to site (QLD Globe)

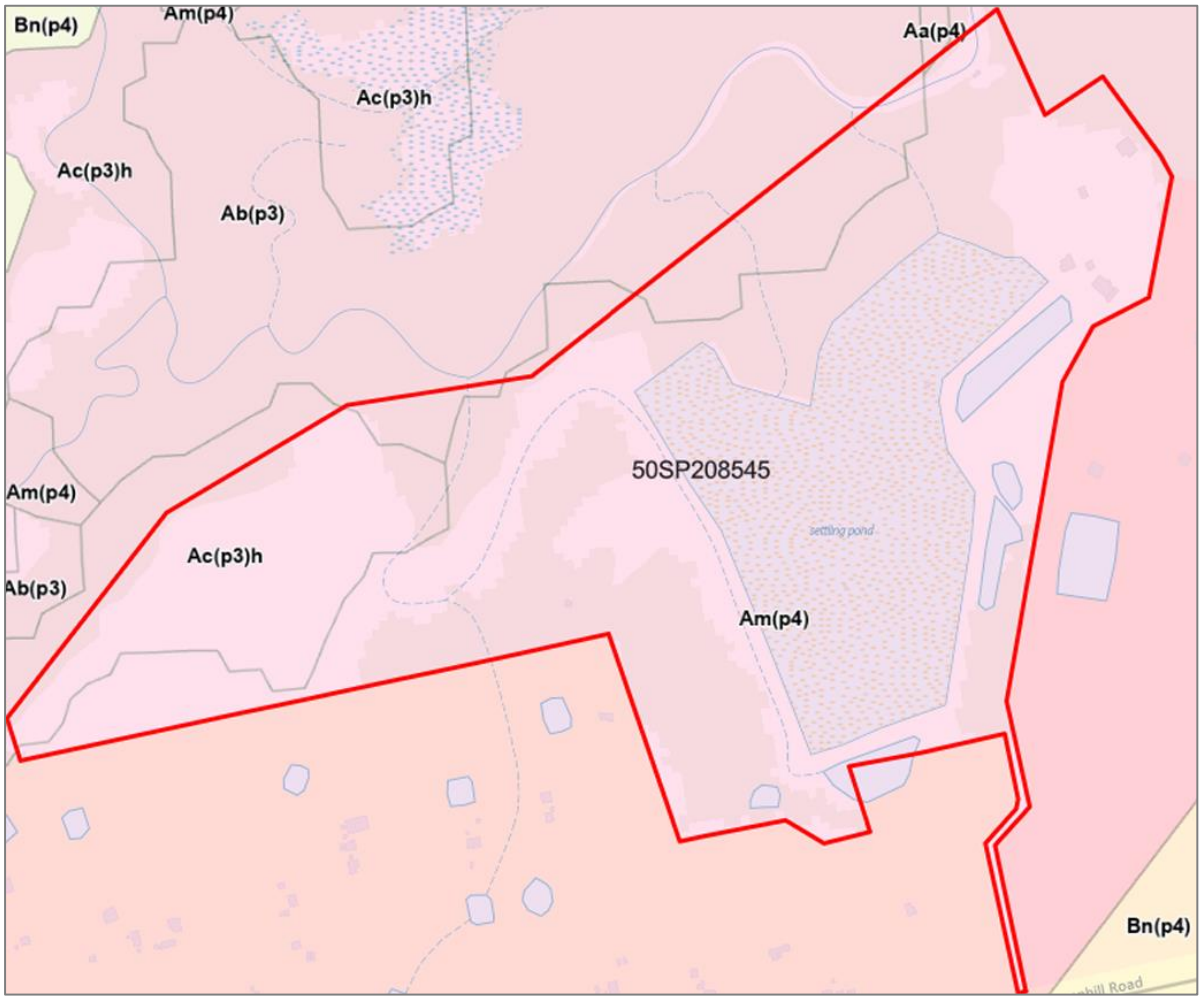
The operational area of the farm consists of Hydrosol and Kurosol soils (QLD Globe). Hydrosol is mainly found in mangroves and saltmarsh in coastal areas in Queensland and are typically saturated with water for long periods of time. Kurosols are also generally found along the coast. They are texture-contrast soils (i.e. an abrupt change in texture between the surface and subsoil) and are strongly acid (pH below 5.5). (QLD Globe, QLD Environment).



Map Code	Code Meaning	ASC	Drainage	Permeability	Description
MG	Mangroves and saltmarsh	**Hydrosol**	3	2	Unclassified land mangroves. Miscellaneous type of mapping unit, used to identify areas not typically assessed in detail. Soft surface condition.
FD	Freddy	**Kurosol**	3	2	Sand or loam over sodic clay. Gravelly, acid, bleached, mottled, light grey duplex soil. Hardsetting surface condition.
FR	Frontal dunes	**Rudosol**	5	4	Miscellaneous type of mapping unit, used to identify areas not typically assessed in detail. Loose surface condition.
SI	Samourgassi	**Rudosols**	6	4	Shallow, stony, acid, brown, lithosol to gradational soil on moderate to steep slopes. Hardsetting surface condition.

Figure 10. Soil mapping (Australian soil classification (ASC)) and soil site (PCS115) QLD Globe)

Acid sulfate soil mapping available on a national scale, suggests high probability of occurrence of acid sulfate soil (>70%) on site. It should be noted that no necessary analytical data are available for this layer. However, confidence is fair based on knowledge of similar soils in similar environments (Figure 11) (QLD Globe).



*Confidence class: No necessary analytical data are available but confidence is fair, based on a knowledge of similar soils in similar environments

Figure 11. Acid sulfate soils mapping, available on a national scale for site (QLD Globe)

6.3 Coastal Processes

The farm is situated approximately 250m from the coast in a declared coastal management district, identified as being vulnerable to coastal erosion and storm tide inundation. Knobler Creek, located at the northern end of farm, is a major tidal waterway (Appendix B) (DAMS).

6.4 Matters of National Environmental Significance

The Great Barrier Reef, two listed threatened ecological communities and several threatened or migratory species have been identified as Matters of National Environmental Significance (MNES) relevant to site (Table 3, Figure 12- Figure 14 and Appendix D).

Table 3. Matters of National Environmental Significance relevant to site

MNES	Name	Threatened Category	Presence
World Heritage Properties (1)	Great Barrier Reef	-	-
National Heritage Places (1)	Great Barrier Reef	-	-
Great Barrier Reef Marine Park (3)	General Use (zone ID: GU-19-6010), Habitat Protection (zone ID: HP-21-5266), Habitat Protection (zone ID: HP-21-5277)		
Listed Threatened Ecological Communities (2)	Broad leaf tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland	Endangered	Community likely to occur within area
	Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Listed Threatened Species (44)	Appendix D (Table 14)		
Listed Migratory Species (47)	Appendix D (Table 15)		

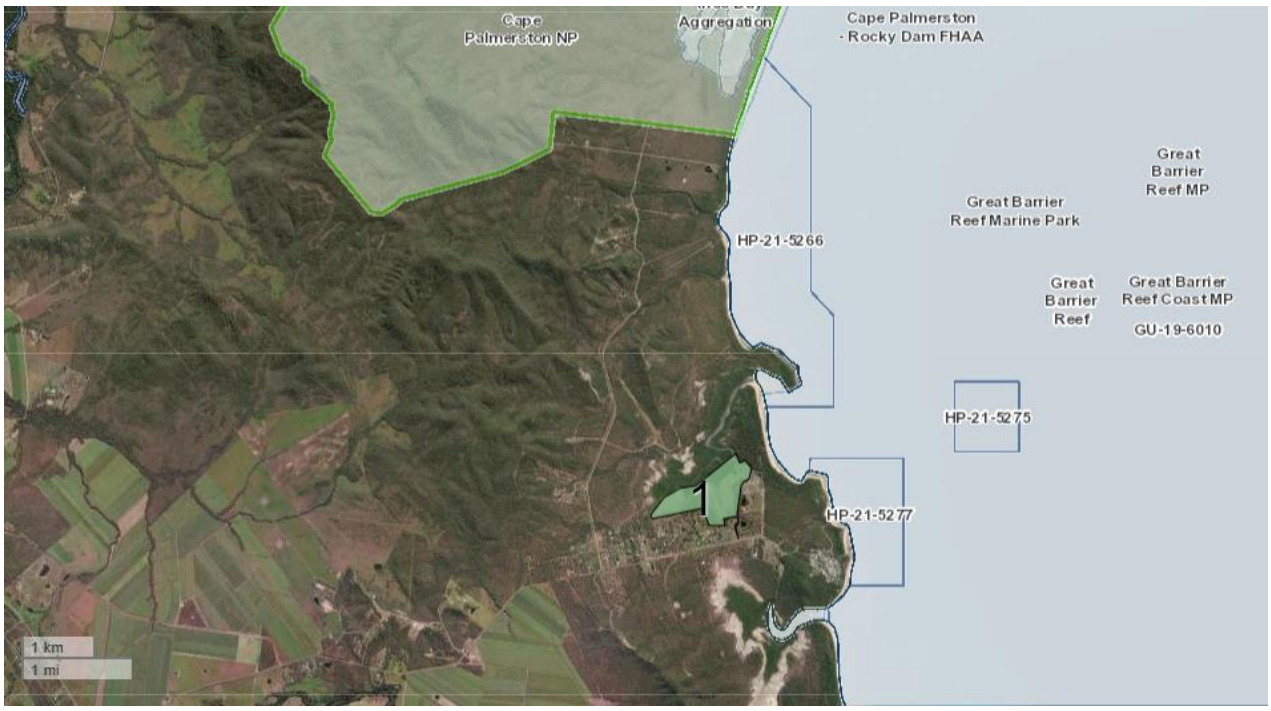


Figure 12. MNES near farm (PMST)



Figure 13. MNES listed Threatened Ecological Communities "Broad leaf tea-tree woodlands" (PMST)



Figure 14. PMST listed Threatened Ecological Communities "Littoral Rainforest and Coastal Vine Thickets" (PMST)

6.5 Matters of State Environmental Significance

The following Matters of State Environmental Significance (MSES) have been identified within a 2km radius of the site:

- Wildlife habitat (endangered or vulnerable)
- Regulated vegetation (category B)
- Regulated vegetation (category R)
- Regulated vegetation (essential habitat)
- Regulated vegetation (intersecting a watercourse)

The area north of farm, buffering Knobler Creek, has been identified as MSES "Wildlife habitat (endangered or vulnerable)" and "Regulated vegetation (essential habitat)" (Figure 15) due to habitat areas for threatened wildlife prescribed under the *Nature Conservation Act 1992* (NCA) have been identified. Appendix C lists the threatened (endangered or vulnerable) species identified, where water mouse (*Xeromys myoides*) has been nominated as core habitat (Table 4). Regulated vegetation relevant to or near farm, is shown in Figure 16 and described in Table 5.

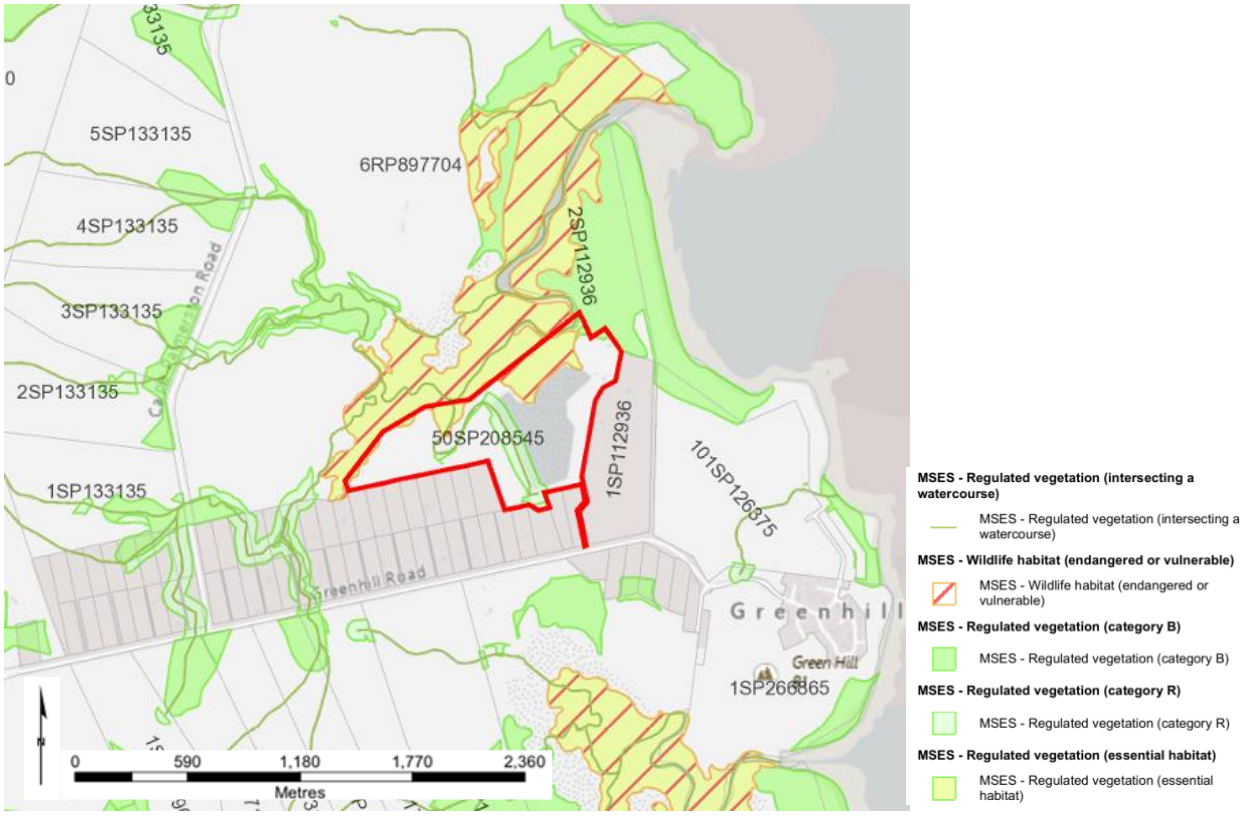


Figure 15. Map of MSES at and near farm (SPP IMS)

Table 4. Essential habitat in Category B (Vegetation management report)

Label	Specie(s)	NCA Status*	Vegetation Community / Altitude / Position in Landscape
724	Water mouse (*Xeromys myoides*)	Vulnerable	Sedgeland (Juncus, Baumea, Lepironia, Cyperus, Eleocharis), salt meadow/saline grassland (Sporobolus virginicus), wet heathland (Banksia robur, Gahnia spp.) and saltmarsh-chenopod grassland behind mangroves; and in open-closed mangrove scrub-forest (e.g. Avicennia marinus subsp. australasica in SEQ, Ceriops tagal & Bruguiera spp. but forage in adjacent Avicennia and saltpan areas in CQC), Melaleuca quinquenervia swamp forest or fresh-water mangrove, and supralittoral banks with Callitris and Casuarina Sea level to 100m Coastal areas near mangroves/swamps

*The Nature Conservation Act 1992 (NCA)

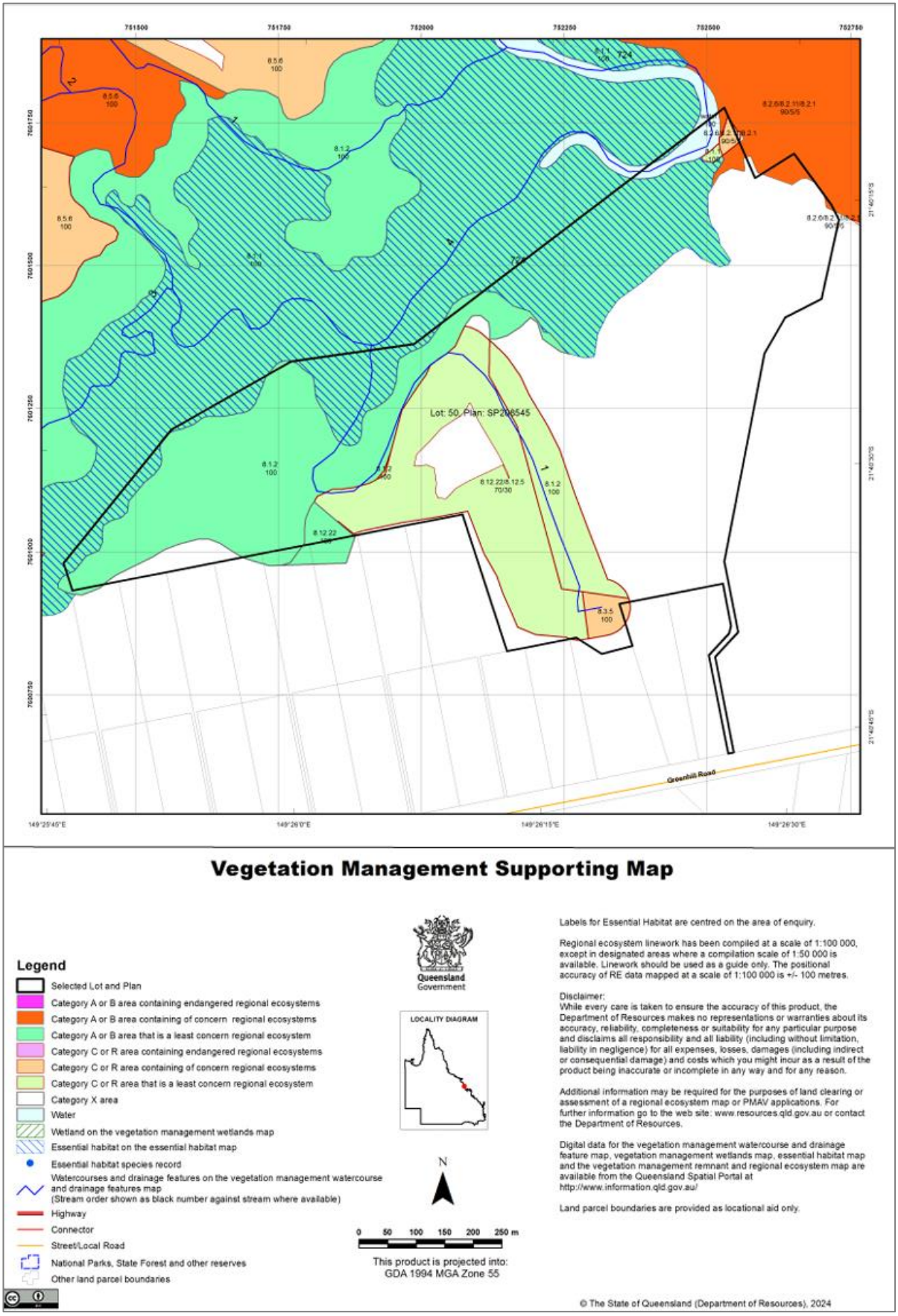


Figure 16. Vegetation management supporting map (Vegetation management report)

Table 5. Regional ecosystems identified at or near farm (Vegetation management report)

Regional Ecosystem	VMA Status*	Category	Short Description
8.1.1	Least concern	B / R	Mangrove closed forest to open shrubland of marine clay plains and estuaries
8.1.2	Least concern	B / C / R	Samphire open herbland on saltpans and plains adjacent to mangroves
8.12.22	Least concern	B / C / R	*Eucalyptus drepanophylla* and/or *Corymbia clarksoniana* +/- *C. erythrophloia* +/- *E. platyphylla* +/- *E. exserta* +/- *C. trachyphloia* woodland on hills and ranges at low to moderate altitudes in drier areas
8.12.5	Least concern	C / R	*Eucalyptus portuensis* and/or *Lophostemon confertus* and/or *E. exserta* and/or *Corymbia trachyphloia* and/or *E. fibrosa* open forest on Mesozoic to Proterozoic igneous rocks
8.2.1	Of concern	B / R	*Casuarina equisetifolia* low woodland and/or sparse herbland to open scrub on foredunes and beaches
8.2.6	Of concern	B / R	*Corymbia tessellaris* +/- *Acacia leptocarpa* +/- *Allocasuarina littoralis* +/- *Banksia integrifolia* +/- rainforest species open forest on parallel dunes
8.2.11	Of concern	B / R	*Melaleuca spp*. Open forest in parallel dune swales
8.3.5	Of concern	R	*Eucalyptus platyphylla* and/or *Lophostemon suaveolens* and/or *Corymbia clarksoniana* woodland on alluvial plains

*The Vegetation Management Act 1999 (VMA)

6.6 Plane Creek Catchment

The Plane Creek catchment is located in the southern section of the Mackay Whitsunday region and covers an area of approximately 2,540km^2. It borders the Connors Range in the west and encompasses a number of small sub-catchments that flow to the coast, including the:

- Sandy sub-catchment
- Plane sub-catchment

- Rocky Dam sub catchment
- Cape sub-catchment
- Marion and West Hill sub-catchments
- Carmila, Flaggy Rock and Oaky sub-catchments

Each sub-catchment is characterised by its own land use, geology and vegetation. Daintry Creek and Cape Creek are the two main creeks in the Cape sub-catchment, whereof Knobler Creek falls within Cape Creek. Cape Creek has steep slopes, resulting in fast run off (Plane Catchment Story). The land use dominates by grazing, with some areas used for sugarcane production or natural land (Reef 2050 WQIP and QLD Globe).

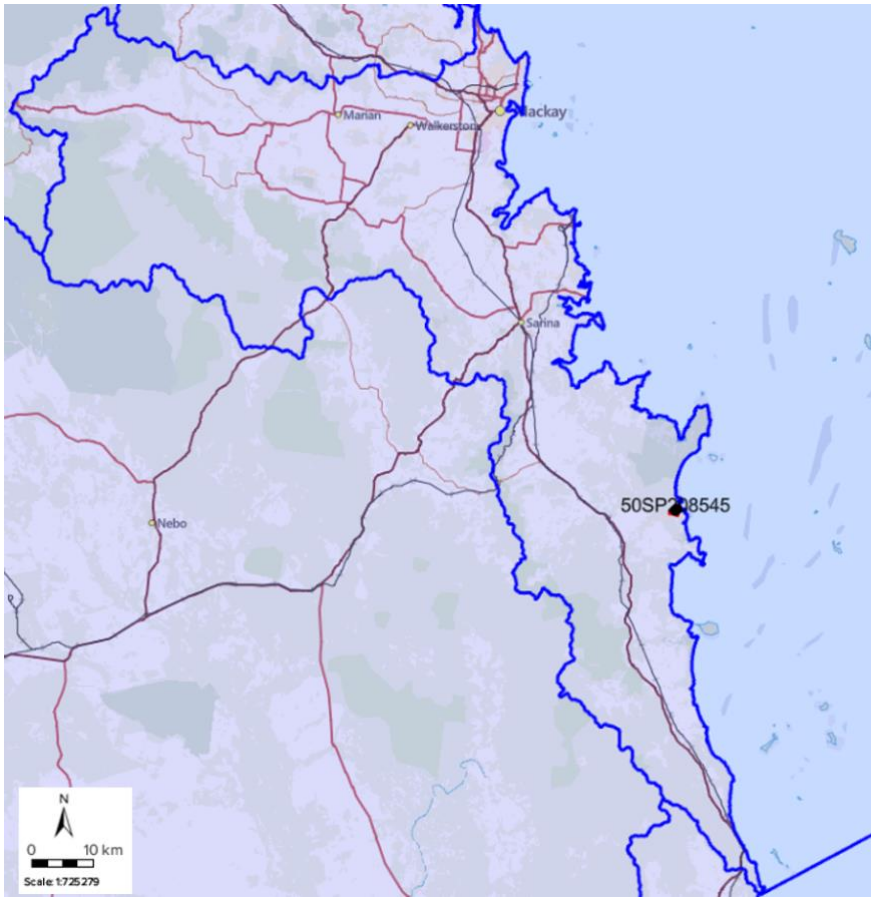


Figure 17. Farm's location in the Plane River catchment (Environmental Protection Policy schedule outline, QLD Globe)

6.7 Reef 2050 Water Quality Improvement Plan

The Reef 2050 Water Quality Improvement Plan (Reef 2050 WQIP) is a joint commitment between the Australian and Queensland governments to improve the quality of water flowing to the Great Barrier Reef.

Water quality targets have been developed for each catchment that drains to the Great Barrier Reef, for the five main pollutants that impact the reef i.e. sediment (especially fine sediment), dissolved inorganic nitrogen (DIN), particulate nitrogen (PN), particulate phosphorus (PP) and pesticides. In catchments receiving minimal anthropogenic pollutant loads, the aim is to maintain current water quality. Each target for sediments and nutrients is expressed as:

(a) the percentage load reduction required compared with the 2013 estimated load of each pollutant from the catchment; and
(b) the load reductions required in tonnes.
(c) The water quality relative priority

The "water quality relative priority" for the Plane Creek catchment has been identified as "very high" for pesticides, "high" for dissolved inorganic nitrogen (DIN), and "low" for fine sediments and all other nutrient loads (i.e. PP and PN).

Under the plan, the end-of-catchment DIN loads are to be reduced by 70% (260 tonnes) from the 2013 baseline, while fine sediments and all other nutrient loads (i.e. PP and PN) are to be maintained. For pesticides, the target aims to ensure that the concentrations at the end-of-catchment are low enough that 99% of aquatic species are protected. It should also be noted that a review of the Reef 2050 Water Quality Improvement Plan is currently underway (Reef 2050 WQIP).

6.8 Environmental Values and Water Quality Objectives – Plane Basin

Environmental values (EVs) are the qualities that make water suitable for supporting aquatic ecosystems and human uses, while water quality objectives (WQOs) are the quantitative measures established to support and protect the EVs of waters.

EVs and WQOs have been established for the Plane Creek Basin (Basin 126) under Schedule 1 of the *Environmental Protection (Water and Wetland Biodiversity) Policy 2019* (EPP (Water and Wetland Biodiversity)). Schedule 1 EPP (Water and Wetland Biodiversity) mapping layer available on QLD Globe has been used to identify information relevant to site (Figure 18). The lower reaches of Knobler Creek, relevant to farm, have been identified as "moderately disturbed", "mid estuarine" waters situated within the Plane Creek Basin (Cape Creek) (Figure 18). EVs and WQOs for protecting aquatic ecosystem EVs relevant to site are presented in Table 6 and Table **7**.

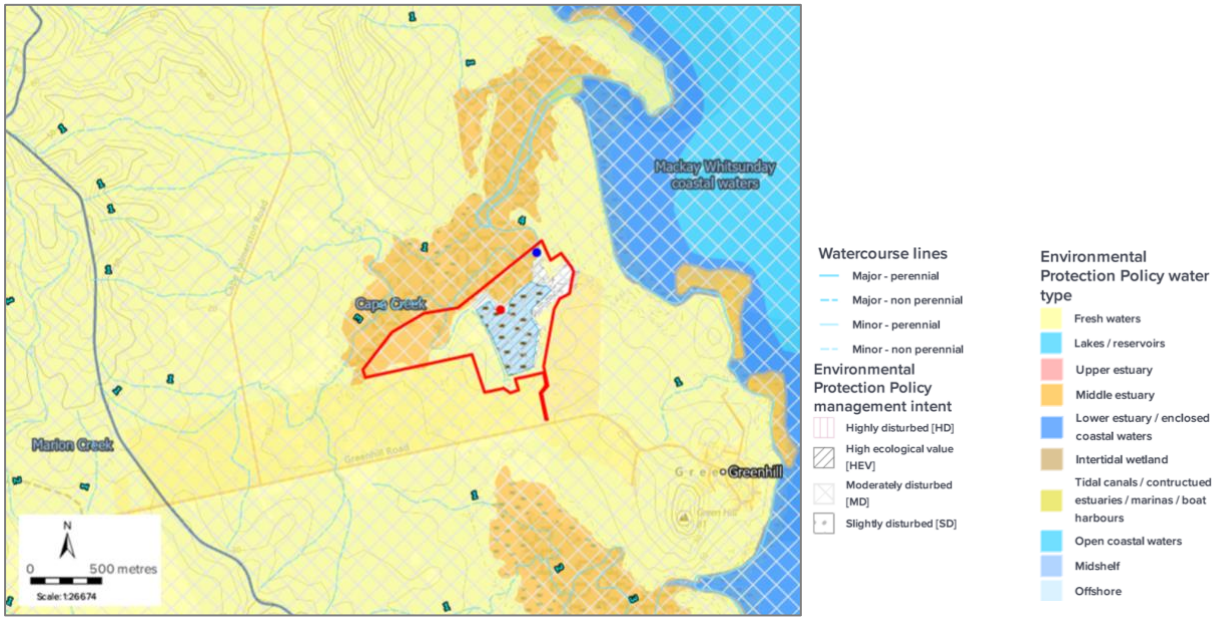


Figure 18. Schedule 1 EPP (Water and Wetland Biodiversity) and waterways (QLD Globe)

Table 6. Environmental values for Cape Creek estuarine waters outside ports (derived from table 1, p8, Basin 125 &126 WQO&EV)

Environmental values	Definition of environmental value	Estuarine waters
Aquatic ecosystems	The intrinsic value of aquatic ecosystems, habitat and wildlife in waterways and riparian areas, for example, biodiversity, ecological interactions, plants, animals, key species (such as turtles, platypus, seagrass and dugongs) and their habitat, food and drinking water. Waterways include perennial and intermittent surface waters, groundwaters, tidal and non-tidal waters, lakes, storages, reservoirs, dams, wetlands, swamps, marshes, lagoons, canals, natural and artificial channels and the bed and banks of waterways.	✓
Aquaculture	Health of aquaculture species and humans consuming aquatic foods (such as fish, molluscs and crustaceans) from commercial ventures.	✓
Human consumption	The suitability of the water for producing aquatic foods for human consumption such as fish, crustaceans and shellfish from natural waterways as well as oystering.	✓
Secondary recreation	Means a use that involves the following types of contact with the water—contact in which only the limbs are regularly wet, and other contact, including the swallowing of water, is unusual (examples—boating, fishing, wading) or occasional inadvertent immersion resulting from slipping or being swept into the water by a wave.	✓
Visual Appreciation	Means a use that does not ordinarily involve any contact with the water—for example angling from the shore, sunbathing near water.	✓
Cultural and spiritual	Means scientific, social or other significance to the present generation or past or future generations, including Aboriginal people or Torres Strait Islanders, for example: • Custodial, spiritual, cultural and traditional heritage, hunting, gathering and ritual responsibilities; • Symbols, landmarks and icons (such as waterways, turtles and frogs); and • Lifestyles (such as agriculture and fishing).	✓

Table 7. Water quality objectives developed to protect aquatic ecosystem EVs for moderately disturbed mid-estuary waters outside ports in the Plane Creek Basin (derived from table 2, p 4, Basin 125 &126 WQO&EV)

Indicator Type	Indicator	WQOs for Moderate, Mid-estuarine waters
Physicochemical	Dissolved oxygen (% Sat)	70-105
	pH	7-8.4
	Oxidised N (µg/L)	30
Nutrients	Ammonia N (µg/L)	10
	Oxidised N (µg/L)	30
	Total N (µg/L)	400
	Filterable reactive phosphorus (µg/L)	60
	Total P (µg/L)	130
Algal growth	Chl-a (µg/L)	5
Water clarity	TSS (mg/L)	NA. insufficient data.
	Turbidity (NTU)	NA. Too variable to derive guideline
	Secchi (m)	NA. Too variable to derive guideline

Note: WQOs for indicators are shown as a range of 20th ,50th and 80th percentiles to be maintained or achieved (e.g. 3–4–5), lower and upper limits (e.g. pH: 7.2–8.2), or as a single value (e.g. 15). For single value WQOs, medians (or means where specified) of test data should be less than or equal to the WQO, unless otherwise indicated. Except where otherwise stated, MD WQOs are an annual median (refer note 7 after table for more details on comparing test data with WQOs).

Note 7, for MD and HD waters:

- The median value (e.g. concentration) of preferably five or more independent samples at a monitoring (test) site should be compared with, and should be less than or equal to, the corresponding aquatic ecosystem WQO (except where otherwise indicated).
- For DO and pH, the median value of preferably five or more independent samples at a monitoring (test) site is compared with, and should fall within, the specified percentile range.

7 MONITORING PROGRAM DESIGN

7.1 Monitoring program components

This monitoring program consists of water quality monitoring, where a range of indicators have been selected to quantify and assess the potential impact from farm on the receiving environment (Table 10). The indicators were selected based on the following criteria:

- The characteristics of the wastewater release and the receiving water
- Environmental values
- Measurable indicators, i.e. an indicator that has an associated guideline value or water quality objective for benchmarking

7.2 Water Quality Monitoring

Water quality monitoring is typically the primary form of monitoring undertaken as part of a REMP and is needed to assess the potential contribution of any release of contaminants to changes in receiving water quality (ESR/2016/2399). The sections below provide further details to the components included in this REMP.

7.2.1 Sampling Sites

According to Queensland's Monitoring and Sampling Manual (2018), control sites can be described as "monitoring sites that are identical in all respects to the test site, except for the disturbance. They are usually upstream, off-stream or in another location in the vicinity of the proposed activity or wastewater release, and therefore, not impacted by the activity or wastewater release". For tidal areas, such as the lower reaches of Knobler Creek, test sites are generally located both upstream and downstream of the activity due to the potential influence of tidal mixing (ESR/2016/2399 and QLD Globe). As a result, the control site selected in this REMP is located on a separate stream (Greenhill Creek) from Knobler Creek to avoid any potential disturbance caused by farm. The water type at this site, differs slightly to the impact sites selected on Knobler Creek and will therefore be reviewed once adequate data has been collected.

A total of three REMP monitoring sites have been selected, consisting of one control site (CC1) and two impact sites (IM1 and IM2) (Table 8 and Figure 19). These sites were chosen based on:

- Site access
- Its location in relation to the release point and the tidal mixing zone
- EPP (Water and Wetland Biodiversity) water type

Where possible, monitoring of the release from the activity (end-of-pipe) and flow monitoring will coincide with the time of REMP monitoring to help interpret the REMP results.

Table 8. Description of REMP monitoring sites and EPP (Water and Wetland Biodiversity) water type

Site	Type	Description	Stream	Latitude (GDA2020)	Longitude (GDA2020)	Water Type
CC1	Control	Near mouth of Greenhill Creek	Greenhill Creek	-21.688916	149.450042	Enclosed coastal waters
RP	Release Point	Release point on Knobler Creek	Knobler Creek	-21.67334	149.43780	Middle estuary
IM1	Impact	Downstream of release in Knobler Creek	Knobler Creek	-21.66698	149.43772	Middle estuary
IM2	Impact	Near mouth of Knobler Creek	Knobler Creek	-21.661399	149.441158	Lower / Middle estuary

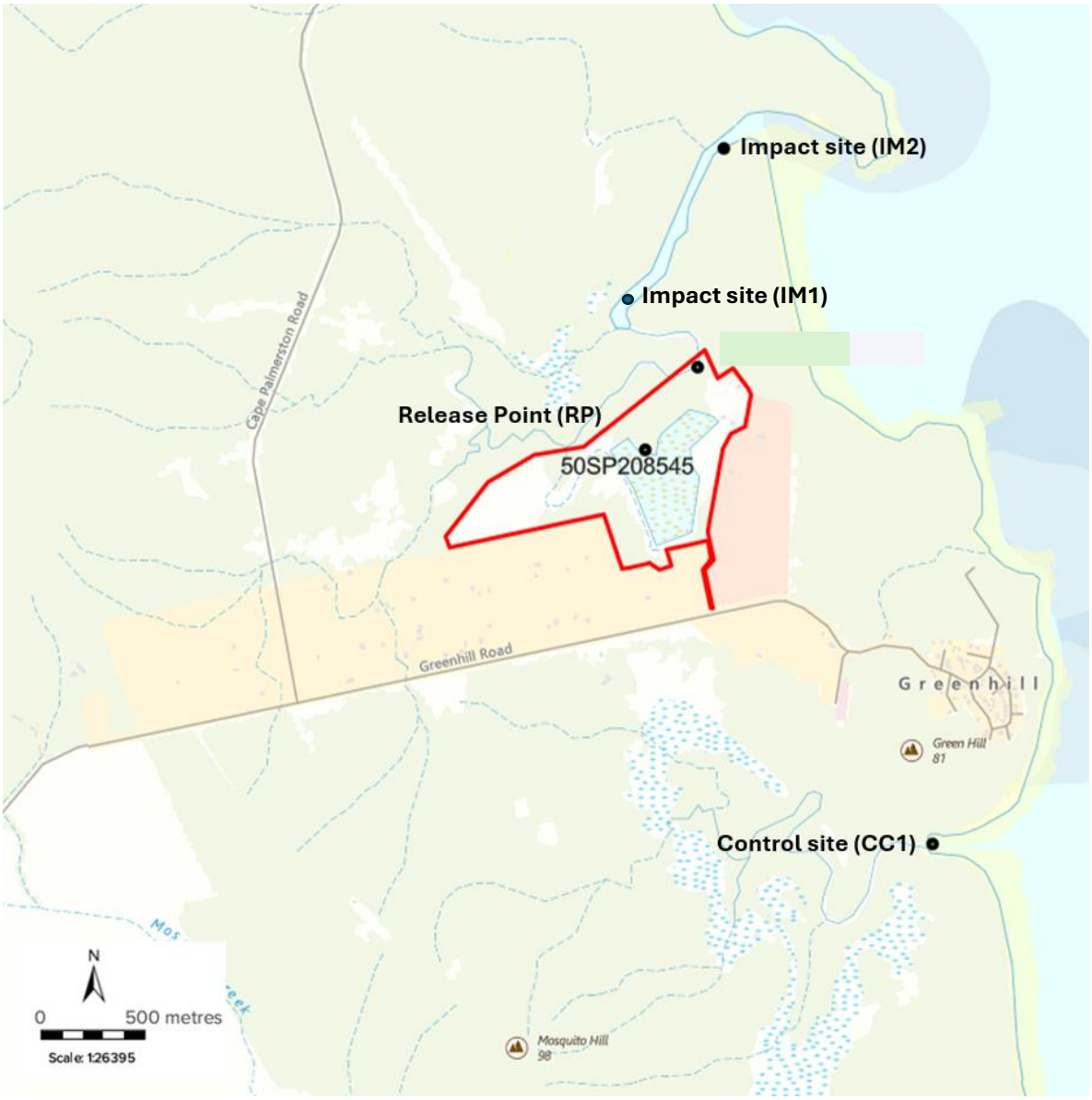


Figure 19. Monitoring sites



Figure 20. Picture of impact site on Knobler Creek (IM1)



Figure 21. Picture of impact site on Knobler Creek (IM2), facing towards the creek



Figure 22. Picture of impact site on Knobler Creek (IM2), facing towards the sea



Figure 23. Picture of control site on Greenhill Creek (CC1), facing towards the sea

7.2.2 Sampling Protocol

Water sampling will be undertaken in accordance with methods specified in the EA (EA0001769), Australian Standard for water quality sampling (AS/NZS 5667.1:1998) and Queensland's Monitoring and Sampling Manual (2018), or subsequent newer versions.

7.2.3 Physicochemical Parameters and Frequency

Monitoring will be carried out monthly during the farm operating period (roughly between October to May but may vary from year to year, minimum 8 sampling occasions). Samples will be collected on an outgoing tide (ebb), and consist of two (2) components;

(a) in situ measurements obtained using field instruments to monitor indicators such as dissolved oxygen and pH, and
(b) manual collection of discrete water samples submitted to a NATA accredited laboratory for analysis of a range of water quality parameters (Table 9).

In case of an emergency or unplanned event that results in accidental release of chemicals or contaminants to the receiving environment, additional environmental water quality monitoring is to be completed in response to the event outside the regular monitoring schedule. Based on the situation, additional sampling sites and indicators may be incorporated to ensure a complete assessment of the event and the potential environmental impact(s).

Table 9. Physicochemical parameters to be measured monthly

Indicator Type	Indicator	Frequency
Physicochemical	DO (% Sat)	Monthly during farm operating period (minimum 8 sampling occasions)
	pH	
	Electrical conductivity	
Nutrients	Ammonia N (µg/L)	
	Oxidised N (µg/L)	
	Organic N (µg/L)	
	Total N (µg/L)	
	Filterable reactive phosphorus (µg/L)	
	Total P (µg/L)	
Algal growth	Chl-a (µg/L)	
Water clarity	Turbidity (NTU)	
	TSS (mg/L)	

7.2.3.1 In Situ Sampling

In-situ water quality measurements will be collected in a scientifically robust manner by using a hand-held multi-parameter water quality meter. Users must be familiar with the equipment and the calibration methods for each meter. Calibration of water quality meters shall be recorded and conducted in accordance with best practice and

manufacturers instruction. Meters will be checked, maintained and calibrated before deployment for sampling.

In-situ water will be collected by using the following methodology derived from Queensland's Monitoring and Sampling Manual (2018) (section B, 2.7.2.2):

1. If sampling from a boat, switch off the engine and allow the boat to drift forward and clear of possible contamination caused by the motor or propeller.
2. Turn the meter on and place the sonde in the water to a depth of 0.2m (to reduce impact surface slicks).
3. Follow the manufacturer's direction for taking the readings.
4. Allow the readings to stabilise.
5. Record the measured values in a notebook and save the reading if a memory function is available.
6. Repeat steps 5-7 at 2m intervals in estuarine water (1m intervals in freshwater) until the 0.5m off bottom is reached (to provide a depth profile). It is usually possible to take an extra reading between the deepest two meter interval and the bottom. This is taken at the closest 0.5m interval from the bottom.
7. Record the following details:
    - site details (e.g. site code, site name, waterway, GPS co-ordinates)
    - date and time of measurement
    - all measured values
    - any factor that may have affected the measurement (e.g. presence of an algal bloom, recent rainfall etc.).

Note: Generally, if sampling in a tidal area, sampling is to be conducted on the ebbing (outgoing) tide.

7.2.3.2 Discrete Grab Sampling

Manual grab samples will be taken by using a suitable sampling container and extendable sampling pole in accordance with methodology derived from Queensland's Monitoring and Sampling Manual (2018) (section B, 4.7.4):

1. Collect in situ water quality measurements before collecting water samples for chemical analysis. Measurement of temperature, dissolved oxygen and conductivity can indicate the presence of stratification in the water, and may dictate where in the water column samples should be collected. See Water quality sampling using in situ water quality instruments document.
2. Clean extendable pole and adjustable bottle holder thoroughly prior to the collection of samples. Equipment should be cleaned with phosphate-free laboratory grade detergent and rinsed with clean water.
3. Extend the sampling pole to the required length and check that all surfaces have been cleaned.
4. Place the sample container into the adjustable bottle holder.

5. Remove the lid of the sample container ensuring your fingers do not come into contact with the internal surfaces of the sample container or lid. Do not place the sample lid on the ground.
6. Move to the edge of the water and invert the sample container and submerge to a depth of 0.3m below the water surface. Avoid surface scums and debris in the water. Avoid sampling over macrophyte beds.
7. Rotate the sample container into the direction of flow and fill the sample container.
8. If rinsing the bottle, allow the sample container to fill at least one third of the container volume. Remove from the water and recap.
9. Shake the sample container gently and pour the water downstream of the sample collection point.
10. Complete the rinse procedure three times.
11. To fill the sample container, repeat steps 4 to 7 and then allow bottle to fill completely, turn the bottle upright and remove it from the water.
12. Nutrient samples should be filtered in the field and transferred to sample bottle
13. Replace the lid on the bottle.
14. Check that details on the sample container are correct.
15. Place the sample container in a cooler box (with ice or ice bricks) or refrigerator and chill. Double bag samples if ice is to be used.
16. Freeze samples to below -20°C prior to transport to laboratory
17. Fill out the chain of custody form.

A photograph should be taken at each sample location and stored with reference location, date and time as a visual assessment for each sampling event.

Typical preservation, filtration and holding times for the laboratory determined analytes are detailed in Table 10.

Table 10. Typical preservation, filtration and holding times for the laboratory determined analytes

Analyte	Field Filtered	Storage and Holding Time
Ammonia N	Yes	28 days - freeze
Oxidised N	Yes	28 days - freeze
Organic N	Yes	28 days - freeze
Total N	Yes	28 days - freeze
Filterable reactive phosphorus	Yes	2 days -freeze
Total P	Yes	28 days - freeze
TSS (total suspended solids)	No	7 days -freeze
Chl-a	No	2 days freeze and store in dark

7.2.4 Quality Assurance and Quality Control

Quality assurance and quality control procedures are necessary to ensure that samples and monitoring data are collected in a scientifically robust manner.

7.2.4.1 Field QA / QC

The following specific methods, derived from Queensland's Monitoring and Sampling Manual (2018) and Australian Standard for water quality sampling (AS/NZS 5667.1:1998), will be employed during field sampling to ensure quality assurance and quality control (QA/QC) measures are correctly implemented:

1. sampling will be conducted by suitably qualified and experienced environmental staff who are competent in sampling and making field measurements (e.g. experience undertaking field tests);
2. prior to sampling, sample containers (if reused) and equipment will be cleaned;
3. all equipment and field instruments will be appropriately maintained, with calibrations and preventative maintenance recorded;
4. samples will be collected in appropriately clean, pre-treated (if required), and labelled sample containers that are provided by the analytical laboratory;
5. during field sampling, the following information will be recorded:
    - sample number;
    - sample site;
    - sample technique;
    - time;
    - weather;
    - any issues with sample;
    - any potential contamination;
    - sample date; and
    - technician.
8. transportation of samples will occur under a chain of custody (COC) documentation procedure;
9. COC forms that list all sample numbers and locations will accompany each sample to the laboratory. Samples are to be checked against the COC forms at each stage of handling;
10. Where sample holding times are breached, these instances will be documented.

Quality Control Samples

Replicates and quality control samples will be collected in accordance with the Australian Standard for water quality sampling – AS/NZS 5667.1:1998.

Table 11. Collection of quality control samples

Quality Control Sample	Number of quality control samples to be collected	How to obtain/collect sample
Field Blank	One per trip.	Field blanks are prepared in the field in the same manner as the sample. A bottle is filled in the field with ultra-pure MilliQ water, preservative is added (if required), and for example, if a sample is field filtered, the field blank will also be filtered.

Field replicate (duplicate)	Minimum one for every 10 samples.	A field duplicate is obtained by collecting two samples across a site at the same time.

Field replicate

A field replicate will be collected for a minimum of one for every 10 samples per field collection. These samples assist in the determination of sample variability, which includes environmental heterogeneity, sampling error and/or contamination and laboratory analytical errors (Monitoring and Sampling Manual 2018). 10% of field replicates will be sent to different laboratories to account for variability in testing capabilities.

Blanks

Field blanks will be collected with each sampling round to assess sample contamination, which may occur during the collection, transportation, or storage of the sample. These samples consist of pure or ultrapure water (e.g. rinsate or Milli-Q) added to each sampling container during field sampling (field blank) (Monitoring and Sampling Manual 2018).

7.2.4.2 Laboratory QA / QC

Samples will be submitted to a NATA accredited laboratory or a laboratory of equivalent qualification for analysis. All samples will be analysed in accordance with relevant the NATA (or equivalent) standards, and the laboratory's internal QA/QC procedures (Monitoring and Sampling Manual 2018).

7.3 Macroalgal monitoring

Historical EMP monitoring demonstrated the presence of various macroalgal beds in these systems. Whilst scientifically robust assessment of extent and condition is beyond the scope of this REMP an aerial photographic record will be taken on each sampling occasion to provide visual records. This will be conducted via drone photography with consistent location and height at each sampling event in both impact and control creek systems.

8 DATA ANALYSIS METHODOLOGY

Raw data collected as part of this REMP will be recorded and kept on site for at least five years. In preparation for further analysis, data will be entered into spreadsheets and depicted in plots for basic statistical analysis. At least 12-months of data will be required to allow sufficient time to gather data for statistical analysis (e.g. SDs, medians and percentiles) over various flows (base flow and high flow) to account for seasonal variations. As a minimum, data deemed suitable for analysis will be compared against:

(a) relevant water quality objectives; and
(b) water quality data collected at the control site (ESR/2016/2399).

8.1 Comparison with Guideline Values

In accordance with *Queensland water quality guidelines 2009,* median water quality value (e.g. concentration) will be calculated from data collected at a particular monitoring site (including the control site) and compared against the WQO of the same indicator. WQOs relevant to farm are shown in Table **7**, and will be used to compare data collected under this REMP.

The direct comparison of data collected at the control locations will also be used to verify the suitability of the water quality guidelines for the REMP monitoring. If control parameters consistently exceed guideline values, new guidelines may need to be determined through the collected field data, as an assessment against WQOs alone will have limited value. Generally, control site data collected in a REMP cannot be used to derive local WQGs according to *Queensland water quality guidelines 2009,* as these sites are unlikely to meet the criteria of a "reference sites". Nonetheless, the data quality and quantity requirements and methodologies described can still be applied to derive background conditions (for example, 20th, 50th and 80th percentile values) from control sites.

Triggers that might spark further investigations to be undertaken to reduce the likelihood of environmental harm, are shown in Table 12.

Table 12. Default approaches for assessing compliance for physico-chemical stressors in "moderate" waters (QWQG, appendix D)

Level of protection	Stressor type	Level of protection – 'Moderate'
Long /Medium-term	Physico-chemical stressors	'A trigger for further investigation will be deemed to have occurred when the median concentration of n independent samples taken at a test site exceeds the 80th percentile of the same indicator at a suitably chosen reference site'.
Short term	Toxicants	'It is recommended that action is triggered if the 95th percentile of the test distribution exceeds the default value'.

9 REVIEWING AND REPORTING

A copy of this REMP design report will be kept in a place on site, where it can easily be accessed. The design, including the sampling sites selected, will be reviewed on an annual basis.

Data collected as part of this REMP will regularly be reviewed, submitted and reported to the Wastewater Tracking and Electronic Reporting Systems (WaTERS). A more detailed review will be conducted annually by following the methodology described in section 8. The results will be presented in an “Annual REMP result report”.

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Appendix A – EA (EPPR00204313)

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

Chin Lung Chen Family Trust, Y C Lin Family Trust
David Lin & Catherine Chen Family Trust
Licence No. NM0359
ERA 1(d) aquaculture

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

(1) 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.

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

(3) 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.

(4) 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.

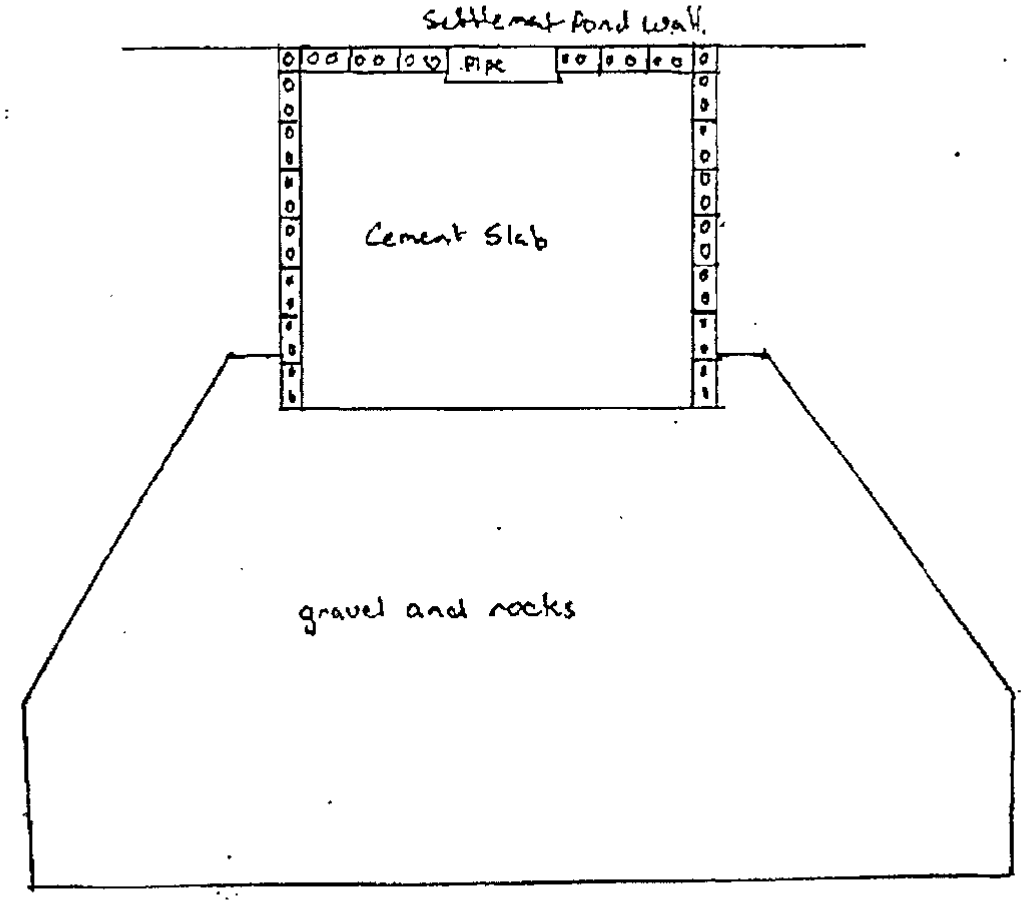
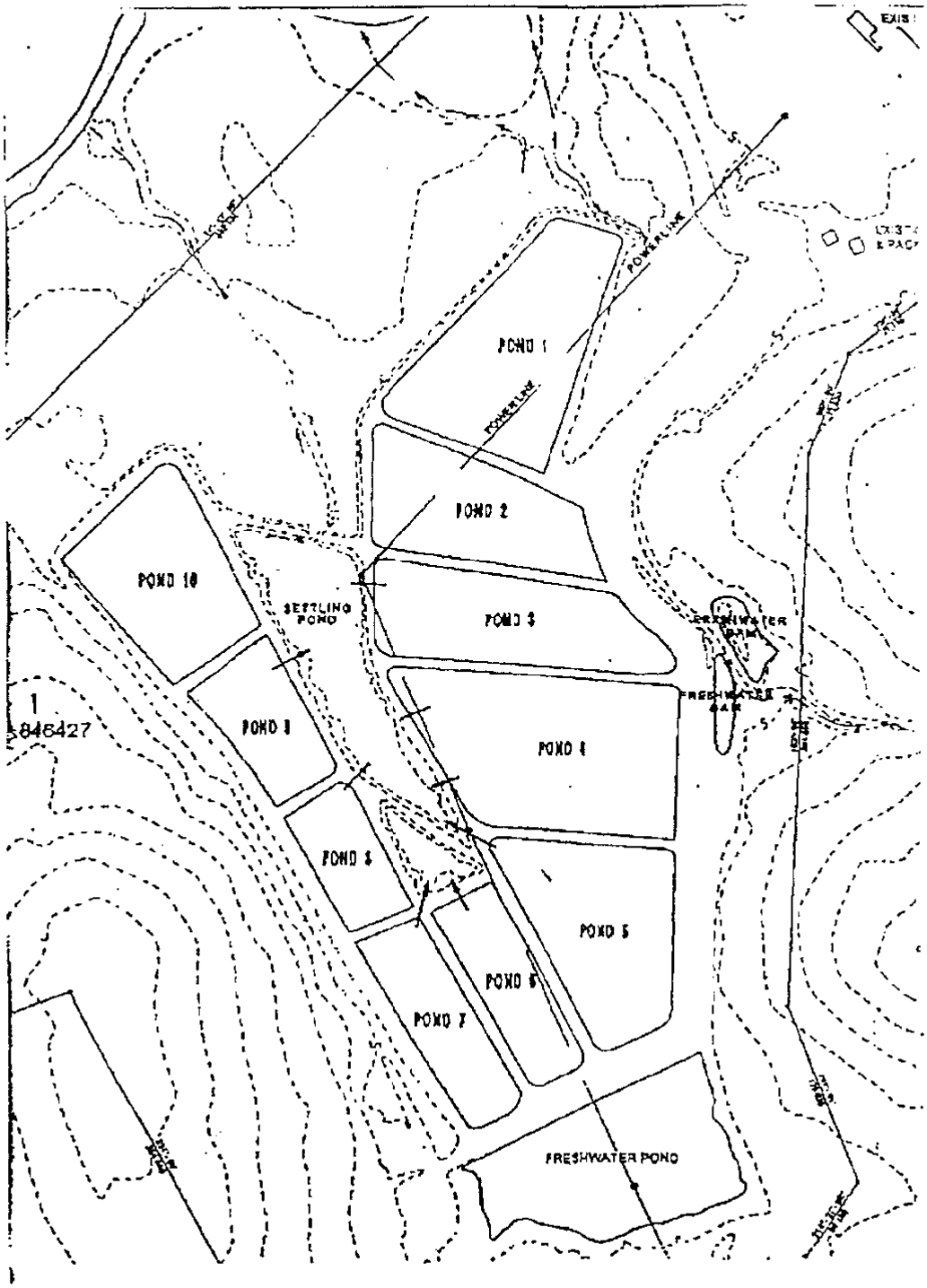


Diagram 1. Discharge Structure

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

Chin Lung Chen Family Trust, Y C Lin Family Trust
David Lin & Catherine Chen Family Trust
Licence No. NM0359
ERA 1(d) aquaculture

(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.

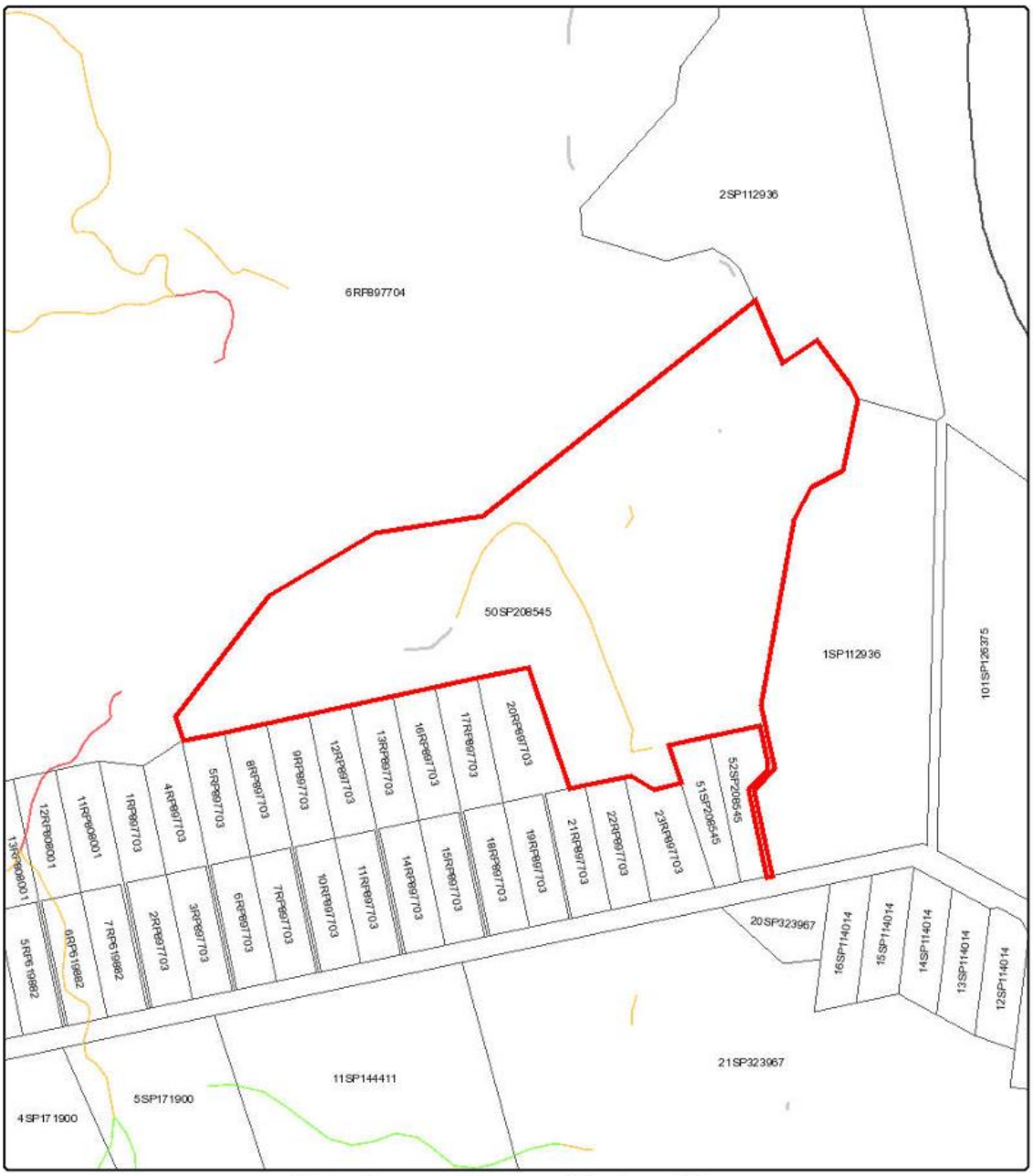
(K3) "Authorised Person" means a person holding office as an authorised person under an appointment under this Act by the chief executive of the Department of Environment and Heritage.

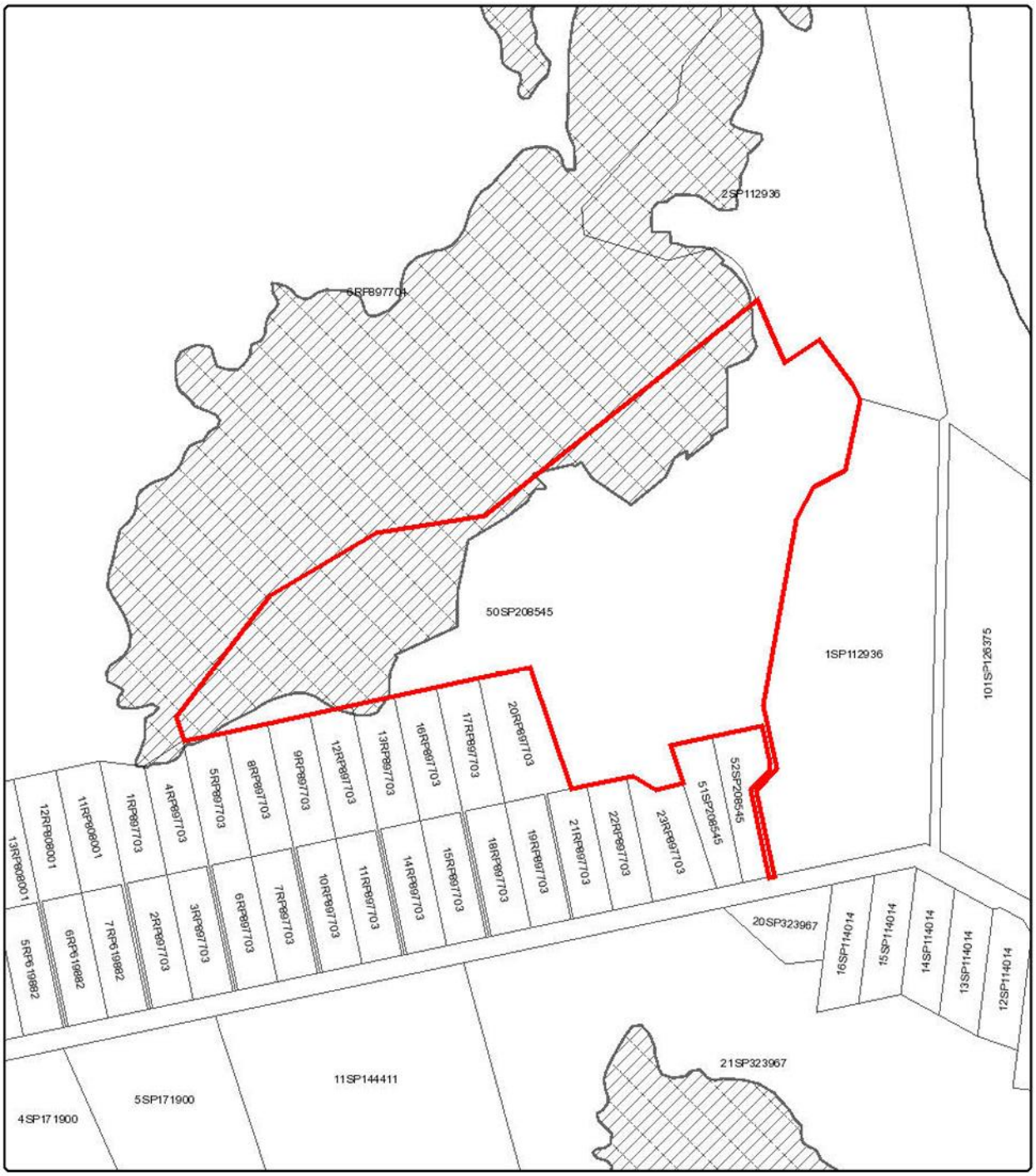
END OF CONDITIONS FOR SCHEDULE K

END OF ENVIRONMENTAL AUTHORITY

Appendix B – DAMS Mapping

Figure 24. Tidal mapping relevant for lot 50 on plan SP208545 (DAMS)





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Legend

Major (tidal)

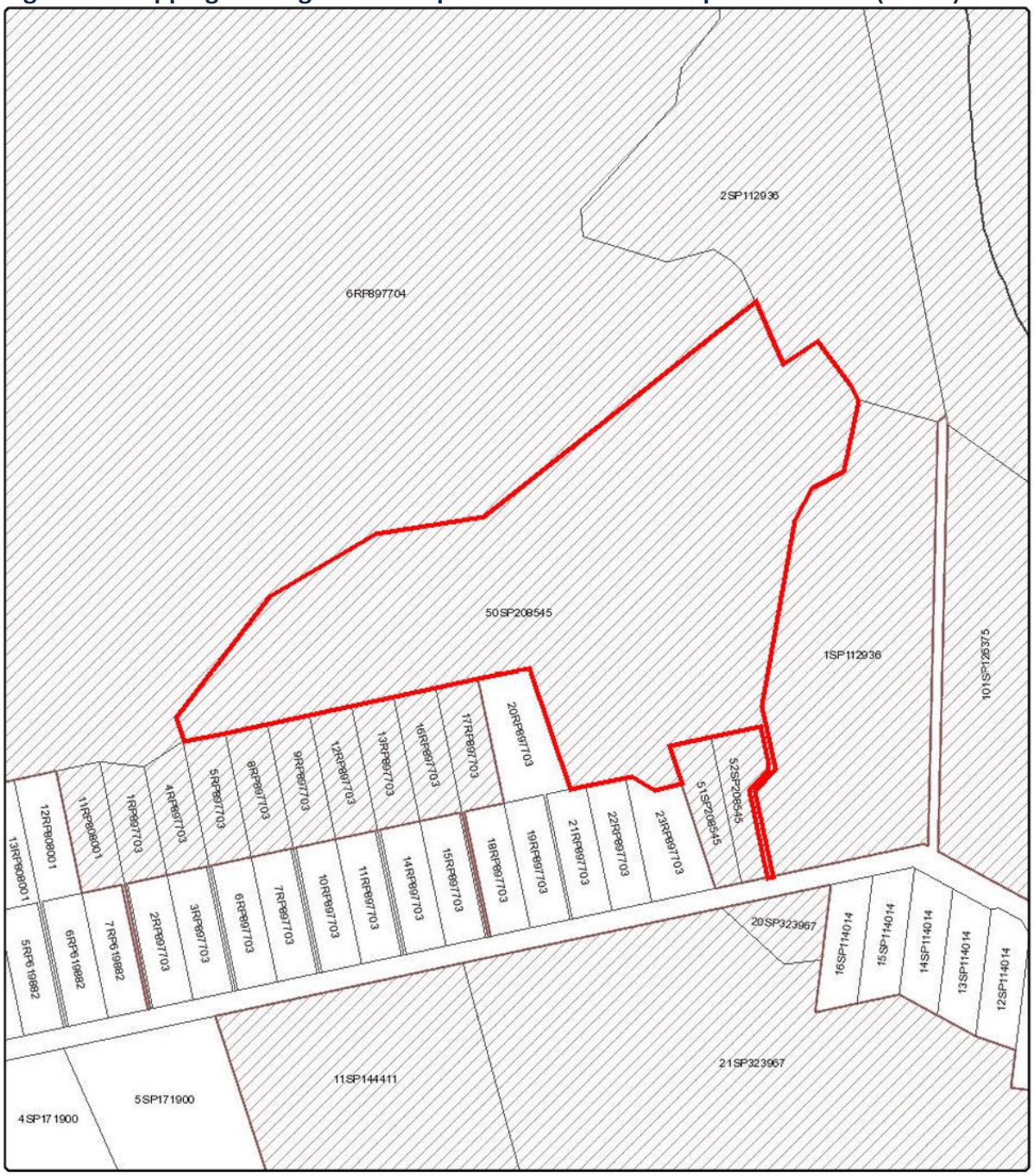
Major (tidal)

0 200 400 600 800

Metres

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Figure 25. Mapping relating to coastal protection for lot 50 on plan SP208545 (DAMS)



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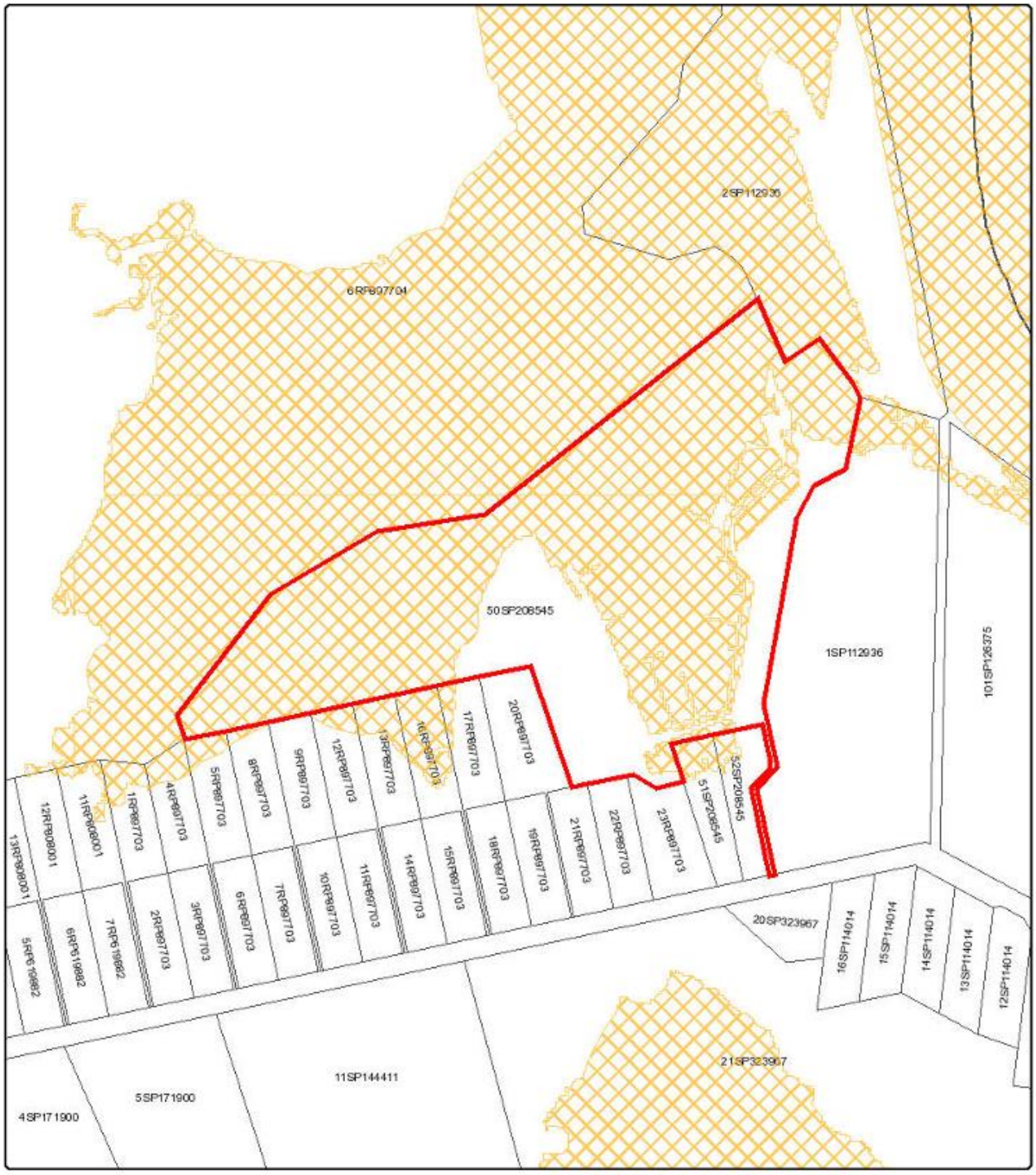
Coastal management district

Coastal management district

0 200 400 600 800

Metres

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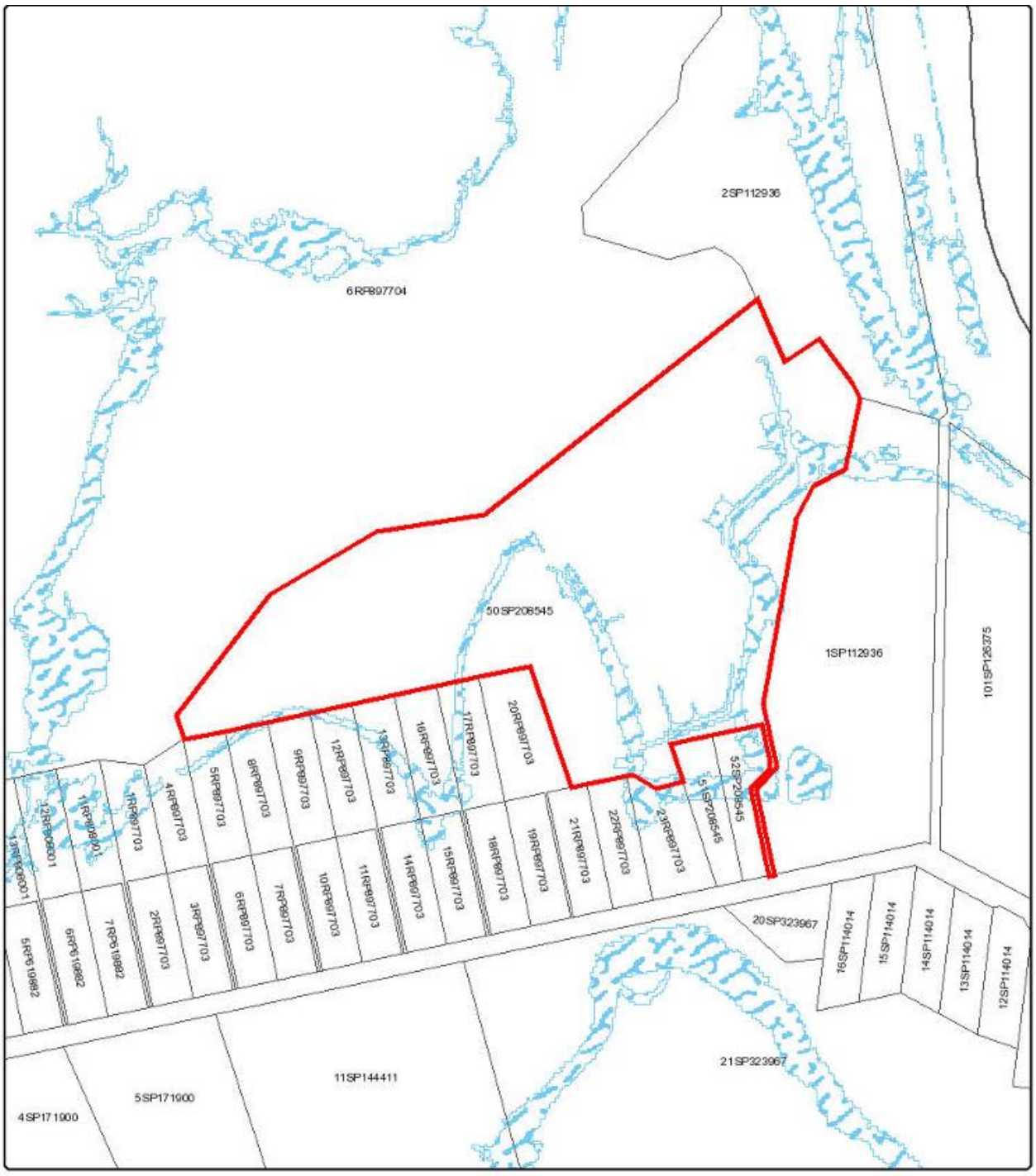
Coastal area - erosion prone area

Coastal area - erosion prone area

0 200 400 600 800

Metres

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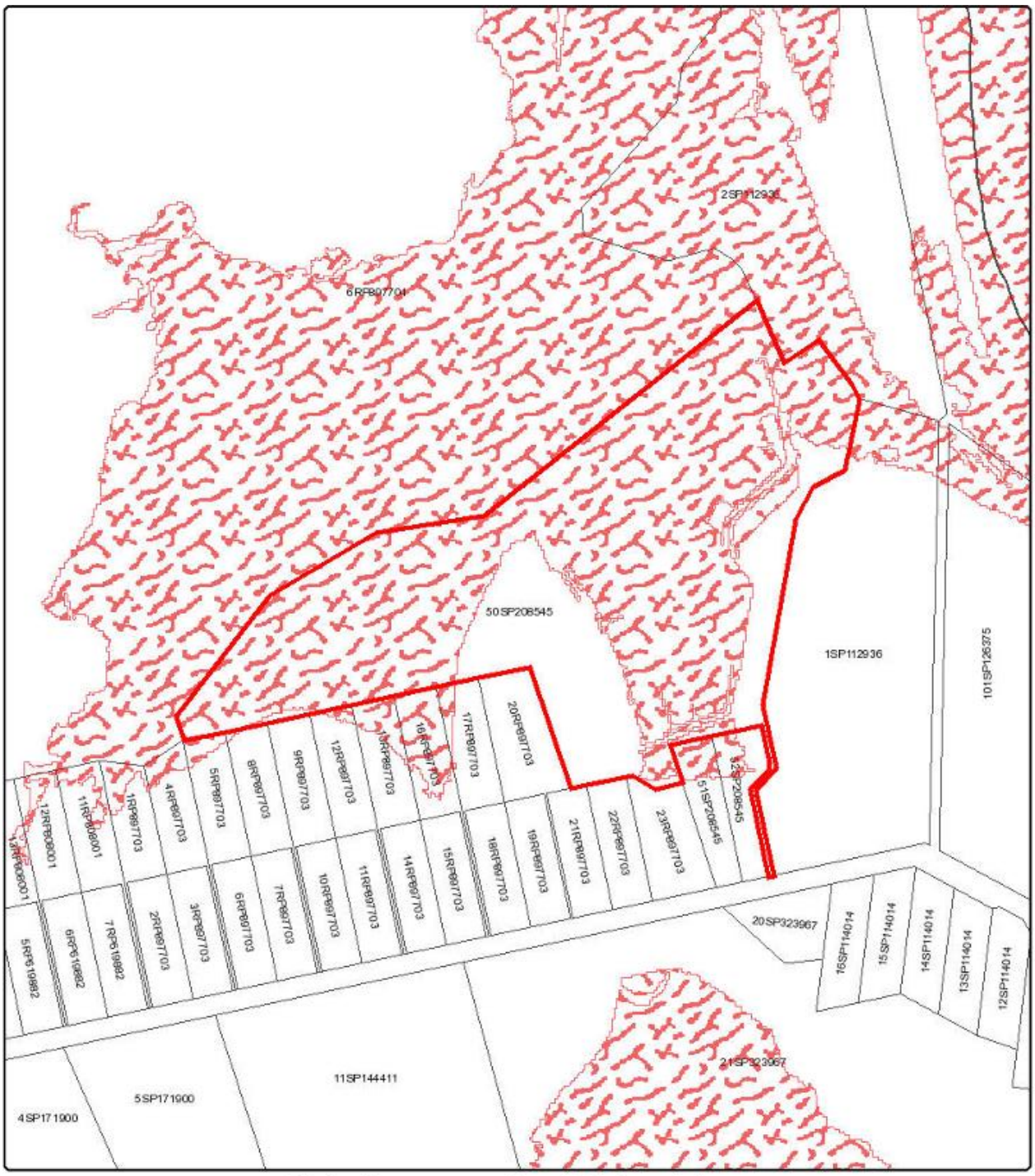
Coastal area - medium storm tide inundation area

Coastal area - medium storm tide inundation area

0 200 400 600 800

Metres

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Coastal area - high storm tide inundation area

Coastal area - high storm tide inundation area

0 200 400 600 800

Metres

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Appendix C - MSES

Table 13. Threatened (endangered or vulnerable) wildlife habitat suitability models relevant to site (MSES report)

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	Core

*For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.

Appendix D - MNES

Table 14. Listed Threatened Species (MNES report Excel)

Common Name	Scientific Name	Class	Presence	Threatened Category	Migratory Status
Scalloped Hammerhead	*Sphyrna lewini*	Shark	Likely	Conservation Dependent	
Eastern Curlew, Far Eastern Curlew	*Numenius madagascariensis*	Bird	Known	Critically Endangered	Migratory
Curlew Sandpiper	*Calidris ferruginea*	Bird	May	Critically Endangered	Migratory
Southern Black-throated Finch	*Poephila cincta cincta*	Bird	May	Endangered	
Australian Painted Snipe	*Rostratula australis*	Bird	Likely	Endangered	
Southern Giant-Petrel, Southern Giant Petrel	*Macronectes giganteus*	Bird	May	Endangered	Migratory
Lesser Sand Plover, Mongolian Plover	*Charadrius mongolus*	Bird	Likely	Endangered	Migratory
Red Goshawk	*Erythrotriorchis radiatus*	Bird	Likely	Endangered	
Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	*Limosa lapponica baueri*	Bird	May	Endangered	
Leatherback Turtle, Leathery Turtle, Luth	*Dermochelys coriacea*	Reptile	Likely	Endangered	Migratory
Loggerhead Turtle	*Caretta caretta*	Reptile	Known	Endangered	Migratory
Greater Glider (southern and central)	*Petauroides volans*	Mammal	May	Endangered	
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	*Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)*	Mammal	Likely	Endangered	
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu]	*Dasyurus hallucatus*	Mammal	Likely	Endangered	
Olive Ridley Turtle, Pacific Ridley Turtle	*Lepidochelys olivacea*	Reptile	Likely	Endangered	Migratory
Lesser Swamp-orchid	*Phaius australis*	Plant	May	Endangered	
Star Finch (eastern), Star Finch (southern)	*Neochmia ruficauda ruficauda*	Bird	Likely	Endangered	
Blue Whale	*Balaenoptera musculus*	Mammal	May	Endangered	Migratory
Squatter Pigeon (southern)	*Geophaps scripta scripta*	Bird	May	Vulnerable	
Terek Sandpiper	*Xenus cinereus*	Bird	Likely	Vulnerable	Migratory
Yakka Skink	*Egernia rugosa*	Reptile	May	Vulnerable	
Sharp-tailed Sandpiper	*Calidris acuminata*	Bird	May	Vulnerable	Migratory
White Shark, Great White Shark	*Carcharodon carcharias*	Shark	Likely	Vulnerable	Migratory
Flatback Turtle	*Natator depressus*	Reptile	Known	Vulnerable	Migratory
Grey Falcon	*Falco hypoleucos*	Bird	Likely	Vulnerable	
Ornamental Snake	*Denisonia maculata*	Reptile	May	Vulnerable	
Greater Sand Plover, Large Sand Plover	*Charadrius leschenaultii*	Bird	Likely	Vulnerable	Migratory
Kermadec Petrel (western)	*Pterodroma neglecta neglecta*	Bird	May	Vulnerable	
bluegrass	*Dichanthium setosum*	Plant	May	Vulnerable	
Great Knot	*Calidris tenuirostris*	Bird	Likely	Vulnerable	Migratory
Green Sawfish, Dindagubba, Narrowsnout Sawfish	*Pristis zijsron*	Shark	May	Vulnerable	Migratory
Grey-headed Flying-fox	*Pteropus poliocephalus*	Mammal	May	Vulnerable	
Ruddy Turnstone	*Arenaria interpres*	Bird	Likely	Vulnerable	Migratory
Whale Shark	*Rhincodon typus*	Shark	May	Vulnerable	Migratory
Latham's Snipe, Japanese Snipe	*Gallinago hardwickii*	Bird	Likely	Vulnerable	Migratory
Black Ironbox	*Eucalyptus raveretiana*	Plant	May	Vulnerable	
Water Mouse, False Water Rat, Yirrkoo	*Xeromys myoides*	Mammal	Known	Vulnerable	
Ghost Bat	*Macroderma gigas*	Mammal	Likely	Vulnerable	
White-throated Needletail	*Hirundapus caudacutus*	Bird	Likely	Vulnerable	Migratory
Hawksbill Turtle	*Eretmochelys imbricata*	Reptile	Likely	Vulnerable	Migratory
Red Knot, Knot	*Calidris canutus*	Bird	Known	Vulnerable	Migratory
White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)	*Fregetta grallaria grallaria*	Bird	Likely	Vulnerable	
Green Turtle	*Chelonia mydas*	Reptile	Known	Vulnerable	Migratory
Asian Dowitcher	*Limnodromus semipalmatus*	Bird	May	Vulnerable	Migratory

Table 15. Listed Migratory Species (MNES report Excel)

Common Name	Scientific Name	Class	Presence	Threatened Category	Migratory Category
White-tailed Tropicbird	*Phaethon lepturus*	Bird	May		Migratory Marine Birds
Terek Sandpiper	*Xenus cinereus*	Bird	Likely	Vulnerable	Migratory Wetlands Species
Lesser Frigatebird, Least Frigatebird	*Fregata ariel*	Bird	Likely		Migratory Marine Birds
Great Frigatebird, Greater Frigatebird	*Fregata minor*	Bird	Likely		Migratory Marine Birds
Humpback Whale	*Megaptera novaeangliae*	Mammal	Known		Migratory Marine Species
Australian Snubfin Dolphin	*Orcaella heinsohni*	Mammal	Likely		Migratory Marine Species
Sharp-tailed Sandpiper	*Calidris acuminata*	Bird	May	Vulnerable	Migratory Wetlands Species
Common Sandpiper	*Actitis hypoleucos*	Bird	May		Migratory Wetlands Species
White Shark, Great White Shark	*Carcharodon carcharias*	Shark	Likely	Vulnerable	Migratory Marine Species
Oriental Cuckoo, Horsfield's Cuckoo	*Cuculus optatus*	Bird	May		Migratory Terrestrial Species
Dugong	*Dugong dugon*	Mammal	Known		Migratory Marine Species
Salt-water Crocodile, Estuarine Crocodile	*Crocodylus porosus*	Reptile	Likely		Migratory Marine Species
Little Tern	*Sternula albifrons*	Bird	May		Migratory Marine Birds
Flatback Turtle	*Natator depressus*	Reptile	Known	Vulnerable	Migratory Marine Species
Southern Giant-Petrel, Southern Giant Petrel	*Macronectes giganteus*	Bird	May	Endangered	Migratory Marine Birds
Fork-tailed Swift	*Apus pacificus*	Bird	Likely		Migratory Marine Birds
Reef Manta Ray, Coastal Manta Ray	*Mobula alfredi*	Shark	Likely		Migratory Marine Species
Common Noddy	*Anous stolidus*	Bird	Likely		Migratory Marine Birds
Greater Sand Plover, Large Sand Plover	*Charadrius leschenaultii*	Bird	Likely	Vulnerable	Migratory Wetlands Species
Killer Whale, Orca	*Orcinus orca*	Mammal	May		Migratory Marine Species
Lesser Sand Plover, Mongolian Plover	*Charadrius mongolus*	Bird	Likely	Endangered	Migratory Wetlands Species
Giant Manta Ray	*Mobula birostris*	Shark	Likely		Migratory Marine Species
Great Knot	*Calidris tenuirostris*	Bird	Likely	Vulnerable	Migratory Wetlands Species
Australian Humpback Dolphin	*Sousa sahulensis*	Mammal	Likely		Migratory Marine Species
Green Sawfish, Dindagubba, Narrowsnout Sawfish	*Pristis zijsron*	Shark	May	Vulnerable	Migratory Marine Species
Narrow Sawfish, Knifetooth Sawfish	*Anoxypristis cuspidata*	Shark	Likely		Migratory Marine Species
Osprey	*Pandion haliaetus*	Bird	Likely		Migratory Wetlands Species
Ruddy Turnstone	*Arenaria interpres*	Bird	Likely	Vulnerable	Migratory Wetlands Species
Grey Nurse Shark	*Carcharias taurus*	Shark	May		Migratory Marine Species
Whale Shark	*Rhincodon typus*	Shark	May	Vulnerable	Migratory Marine Species
Eastern Curlew, Far Eastern Curlew	*Numenius madagascariensis*	Bird	Known	Critically Endangered	Migratory Wetlands Species
Oceanic Whitetip Shark	*Carcharhinus longimanus*	Shark	May		Migratory Marine Species
Latham's Snipe, Japanese Snipe	*Gallinago hardwickii*	Bird	Likely	Vulnerable	Migratory Wetlands Species
Bar-tailed Godwit	*Limosa lapponica*	Bird	Known		Migratory Wetlands Species
Leatherback Turtle, Leathery Turtle, Luth	*Dermochelys coriacea*	Reptile	Likely	Endangered	Migratory Marine Species
Loggerhead Turtle	*Caretta caretta*	Reptile	Known	Endangered	Migratory Marine Species
White-throated Needletail	*Hirundapus caudacutus*	Bird	Likely	Vulnerable	Migratory Terrestrial Species
Hawksbill Turtle	*Eretmochelys imbricata*	Reptile	Likely	Vulnerable	Migratory Marine Species
Porbeagle, Mackerel Shark	*Lamna nasus*	Shark	May		Migratory Marine Species
Red Knot, Knot	*Calidris canutus*	Bird	Known	Vulnerable	Migratory Wetlands Species
Curlew Sandpiper	*Calidris ferruginea*	Bird	May	Critically Endangered	Migratory Wetlands Species
Pectoral Sandpiper	*Calidris melanotos*	Bird	May		Migratory Wetlands Species
Green Turtle	*Chelonia mydas*	Reptile	Known	Vulnerable	Migratory Marine Species
Olive Ridley Turtle, Pacific Ridley Turtle	*Lepidochelys olivacea*	Reptile	Likely	Endangered	Migratory Marine Species
Asian Dowitcher	*Limnodromus semipalmatus*	Bird	May	Vulnerable	Migratory Wetlands Species
Bryde's Whale	*Balaenoptera edeni*	Mammal	May		Migratory Marine Species
Blue Whale	*Balaenoptera musculus*	Mammal	May	Endangered	Migratory Marine Species

Aqua Pharma Australia Pty Ltd
Prawn Farm

Amendment to Environmental Authority
Supporting information Sept 2025

Executive summary

Aqua Pharma Australia Pty Ltd Pty Ltd (Aqua Pharma) purchased the prawn farm located on Knobler Ck in 2024 and the EA was transferred in April 2024. The site was previously owned and managed by David Lin & Catherine Chen Family Trust from May 2004 and under original applicant Twelve Stones Prawn Farm from 1996. The site has been operational for almost 30 years, commencing operations in 1996.

The current Environmental Authority (EPPR00204313) permits the operation of 9.7ha of aquaculture ponds, plus 1ha of treatment pond. The environmentally relevant activity is situated on Lot 1, Plan 846427, County of Murchison, Parish of Long Hill located at 947 Greenhills Road, Ilbilbie (a map of the farm and main structures is provided in Figure 1).

The current Environmental Authority (EA) is outdated (conditions based on information provided in application over 30 years ago), overly complex, and does not align with DETSI marine prawn operational policy (revised Feb 2024). Specifically, Schedule J incorporates several prescriptive requirements that reference documentation submitted by the original applicant. This includes:

- Waste water treatment methodology (J3), including use of oysters and *Gracilaria*. Significant research work was conducted on these options between 1999-2002, however has not yet been demonstrated as commercially viable.
- Environmental Management Plan (J4)- specified management plan is not to required modern standards and does not allow for on-going review of practices. It is proposed a stand-alone Environmental Management Plan be developed and updated as required.
- Stormwater Management Plan (J5)- this should form part of the overarching Environmental Management Plan
- Waste Management Plan (J6)- this should form part of the overarching Environmental Management Plan
- Wastewater Quality Monitoring (J7), Receiving Waters Monitoring (J8) and Environmental Impact Monitoring (J10). It is proposed these be incorporated into a Receiving Environment Monitoring Program (REMP).

This proposal aims to update these references with conditions that better reflect current EA standards.

The following changes are proposed:

1. Remove reference to Schedule J in condition B14. A stand-alone Environmental Management Plan with review processes to be referenced.
2. Remove reference to Schedule J in condition D2
3. Remove references to Schedule J in condition D3
4. Remove reference to Schedule J in condition D4 and provide release point description in D4
5. Remove reference to Schedule J in condition D9
6. Remove reference to Schedule J in condition E1 and reference Environmental Management Plan
7. Remove reference to Schedule J in condition H1 and reference Environmental Management Plan
8. Remove reference to Schedule J in condition I15
9. Remove conditions I21-I24 and integrate with conditions I28-I31
10. Remove reference to Schedule J in condition I28 and replace with reference to approved REMP. A proposed REMP has been drafted by Nautilus Collaboration and updated to include DETSI pre-lodgement advice recommendations, and is provided in the attached documentation
11. Remove schedule J. If any other references required (such as farm map) to be included as Appendices

It is proposed these amendments should be considered minor as they will not result in a change to the relevant activity and does not increase the scale or intensity of the relevant activity.

Aqua Pharma is committed to implementing industry best practice in order to meet compliance limits. This will include:

- Installation of automated feeding system on all ponds prior to recommencement of operations for 2025-26 season. This has been demonstrated to improve feed conversion efficiency by 15%
- Reduction in production pond exchange regime to encourage biofloc development and maximise retention time
- Treatment pond exchange managed in order to meet compliance limits
- Majority of harvest using in-pond trap nets – final drain only to be completed once ponds meet compliance limits

- Monitoring industry/government developments for aquaculture management improvements and implementing demonstrated effective measures
- Annual Receiving Environment Monitoring Program (REMP) implementation, review and continuous improvement approach. The recommendations proposed by DETSI in pre-lodgement advice have been incorporated into version 2.0.

Aqua Pharma has no plans for farm expansion and seeks only to revise outdated licence conditions related to Schedule J to streamline the EA in line with model operating conditions.

The following documents are supplied for reference:

Appendix A- Current EA (EPPR00204313)

Appendix B- Twelve Stones Prawn Farm Environmental Monitoring Program (1995-1998)

Appendix C- Aqua Parma Australia Pty Ltd REMP design Version 2.0 (DETSI recommendations incorporated into Nautilus Collaboration version 1, 8 July 2025)

Figure 1: Map of farm and main structures

