Pacific Highway Upgrade:

Warrell Creek to Nambucca Heads

Pollution Incident Response Management Plan

WC2NH-EN-CS-MPL-0001 PIRMP Rev 3

Rev	Description	Originator	Reviewed	Approved	Date
A	Draft for internal review	RP	CS	NR	10/03/15
0	Issued for Construction	NR	JS	GR	19/03/15
1	Internal Review	JH	NR	NR	17/08/16
2	Internal Review	AD	AD	AD	07/09/17
3	Internal Review	JH	JH	JH	22/02/19

Details of Revision Amendments

Plan Control

The latest approved version of this Plan will be available for all Project personnel on the Electronic Document Management System - TeamBinder. The functional manager will maintain, review and update this Plan at least annually.

Amendments

Each new revision to the Plan will be distributed to all required personnel for review and approval.

The revision number is included at the end of the document number, which is noted in the footer of each page. The document will be allocated a new revision number each time a change is made to the document.

When a new revision to the document is available, a notification email will be distributed to all project personnel by the Document Control Team advising of the update.

The functional Manager is responsible for the implementation and review of the Plan. The Project Director will approve new revisions of the Plan via the review and approval process as detailed in the Document Control Procedure.

Functional Manager Authorisation	Distribution List	
Name: Jason Haslett Date: 22/02/2019 Position: Environment Manager Signature: Comments:	Project Director	
	Design Manager	
	Quality Manager	
	Procurement Manager	
	Construction Manager	
	Safety Manager	
	Commercial Manager	
	Environmental Manager	
Project Director Authorisation	Finance Manager	
Name: Manuel Gil Date: 22/02/2019 Signature: Comments:	Engineer Manager	
	Area Manager	
	Human Resources Manager	
	Site Superintendents	
	Roads and Maritime Services	
	IMS Manager	
	Other:	

Contents

Terms and Abbreviations

AADJV	Arup and Aurecon Design Joint Venture
ACCIONA	ACCIONA Infrastructure Australia Pty Ltd
ALARP	As low as reasonably practical
AFJV	ACCIONA and Ferrovial Joint Venture (Pacifico)
AS/NZS	Australian and New Zealand Standard
BAU	Business As Usual
CEMP	Construction Environmental Management Plan
D&C	Design and Construction
EDMS	Electronic Document Management System (TeamBinder)
EPA	NSW Environmental Protection Authority
EPL	Environmental Protection Licence
ER	Environmental Representative for the Department of Planning and Environment
Ferrovial	Ferrovial Agroman (Australia) Pty Ltd
IMS	Integrated Management System
ISO	International Standards Organisation
KPI	Key Performance Indicator
NSW	New South Wales
O&M	Operations and Maintenance
Pacifico	Acciona Ferrovial Joint Venture
PIRMP	Pollution Incident Response Management Plan
POEO Act	*Protection of the Environment Operations Act 1997*
PCBU	Person Conducting a Business or Undertaking
PMT	Project Management Team
PV	Project Verifier
RMS	Roads and Maritime Services

SWMS	Safe Work Method Statement
WC2NH	Warrell Creek to Nambucca Heads (the Project)

1. Introduction

The Pacific Highway Warrell Creek to Nambucca Heads Upgrade project (the Project) is being designed and constructed in a joint venture consisting of ACCIONA Infrastructures Pty Ltd (ACCIONA) and Ferrovial Agroman (Australia) Pty Ltd (Ferrovial), known as Pacifico (herein known as AFJV).

This Pollution Incident Response Management Plan (PIRMP) has been prepared to comply with requirements set out in part 5.7A of the *Protection of the Environment Operations Act 1997* (the POEO Act), stating that holders of an Environment Protection Licence (EPL) must prepare, implement and test a Pollution Incident Response Management Plan (PIRMP) in relation to the activity to which that licence relates.

The EPL (no. 20533) for the Project is held by ACCIONA.

1.1. Project Background

The Project consists of the detailed design and construction of 19.6 km of new dual carriageway road on the Pacific Highway between the northern end of the existing Allgomera Deviation south of Warrell Creek and the southern end of the Nambucca Heads to Urunga Pacific Highway upgrade project west of Nambucca Heads. The Project includes:

- 19.6 km of new divided dual carriageway;
- two grade separated interchanges at Warrell Creek and Bald Hill Road south of Macksville;
- the provision of north facing ramps at North Macksville;
- longitudinal bridges across Upper Warrell Creek (including North Coast Railway Line), Williamson Creek, Warrell Creek, Nambucca River floodplain (2 of) and Nambucca River;
- overbridges on Rosewood Road, Albert Drive, Scotts Heads Quarry access road, Bald Hill Road, Old Coast Road South, Mattick Road and Old Coast Road North;
- an underpass of the ARTC rail line near Cockburns Lane;
- local roads and drainage and fauna crossing structures; and
- associated infrastructure.

The construction of the Project is subject to the licensing provisions of the POEO Act, as a 'Scheduled activity-premises based', due to the following activities:

- crushing, grinding or separating;
- railway systems activities;
- land-based extractive activities; and
- road construction.

1.2. Purpose

This PIRMP has been prepared in accordance with the EPA's Environmental guidelines: Preparation of pollution incident response management plans (EPA, 2012).

To comply with the POEO Act, this PIRMP identifies:

- pollution risks and measures that would prevent an incident from occurring;
- further contingency measures that may be applied to minimise the risk of an incident from causing environmental harm;
- protocols for notifying a pollution incident, to the relevant authorities and stakeholders (including the community); and
- requirements for training of staff, in relation to the plan and its implementation, and ensure the plan is regularly reviewed and tested for accuracy, currency and suitability.

This PIRMP is to be implemented in the event that material harm to the environment is caused or threatened.

1.3. Scope

This PIRMP applies to the (the Project), which is being constructed by the Pacifico - Acciona Ferrovial Joint Venture (AFJV), and relates to those activities of the Project premises as defined by the EPL and under the control of the AFJV.

This PIRMP excludes any activities that occur off the premises, for example the transportation of bulk fuel or hazardous waste by a contractor licensed by the EPA, unless the transportation activity is being undertaken on the premises under the control of the AFJV.

1.4. Meaning of material harm to the environment

For the purposes of this PIRMP, harm to the environment is material if:

- it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or
- it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations)

Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or remediate harm to the environment. For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.

The Environment Manager will determine if an incident is likely to cause or threaten material harm to the environment and if the PIRMP is to be activated. This decision shall be made in consultation with the Project Director.

1.5. Legislation and Other Requirements

Subject to Part 5.7A of the POEO Act, AFJV is required to prepare and implement a pollution and incident response plan. Accordingly, all relevant provisions of the POEO Act in regards to pollution incident management have been reviewed in the preparation of this PIRMP, to comply with the relevant legislative requirements. A compliance matrix has been established illustrating AFJV compliance to the legislative requirements, and is provided in Appendix 1.

2. Key Responsibilities and Accountabilities

2.1. Key Staff

The organisational chart and details of key personnel will be maintained on site and displayed in relevant locations. The roles and responsibilities of the Project Management Team (PMT) and other workers are as described below in relation to this PIRMP.

All staff will be aware of their responsibilities through specific position descriptions, and shall follow the processes

and procedures as outlined in this PIRMP.

All personnel involved in the Project are responsible for protecting the environment and preventing incidents. Further responsibilities and accountabilities for key Project staff include:

2.1.1.Project Director

- Responsible for the Project and responsible to ensure that the measures of this PIRMP are followed;
- Responsible for the Project compliance with the POEO Act;
- Responsible for directing works during or immediately after an incident.

2.1.2.Construction Manager/Area Managers/General Superintendent/Project Engineers

- Ensure all environmental incidents are notified to the Environment Manager immediately and without delay;
- Provide appropriate support and resources to incident response in terms of labour, materials and resources;
- Assist Project Director and Environment Manager in directing works during or immediately after an incident;

2.1.3.Safety Manager

- Implement notification protocol for relevant agencies;
- Point of contact with Emergency Services and Workcover in the event of an incident;
- Ensure Emergency Response Plan is consistent with the PIRMP;
- Provide advice in relation to any incident where there is safety risk.

2.1.4.Environment Manager

- Ensure PIRMP is prepared, maintained and tested;
- Ensure environmental monitoring data is collected and displayed on company website;
- First point of contact in relation to an Environmental Incident;
- Assist the Project Director in directing works during or immediately after an incident;
- Activate the PIRMP in the event of an incident which causes or threatens environmental harm;
- Point of contact with EPA and other environmental authorities in the event of an incident;
- Undertake additional risk assessments for high risk activities requiring an EWMS.

2.1.5.Community Relations Manager

- Implementation of (community) notification protocol in the event of an incident;

2.1.6. Traffic Manager

- Provide traffic control if incident has occurred on the highway or local road;
- Provide assistance to direct works if incident occurs on highway or local road.

2.1.7.Supervisory Personnel (Area Superintendents, Foremen, Site Engineers)

- Ensure all environmental incidents are notified to the Environment Manager immediately and without delay;
- Assist Project Director in directing on site response to incidents (implementation of preventative and remedial measures) including allocation of appropriate resources.

2.1.8.Workers

- Immediately notify Superintendent or Environment Manager in the event of any pollution incident
- Assist with the incident response on site at the direction of their supervisor.

Further details of roles and responsibilities is provided in the Environmental Management Plan.

The contact details for those key staff members responsible for this PIRMP are identified in Table 1.

Table 1 Contact Details of Key Personnel Associated with the PIRMP

Role	Name	Deputy
Project Director	Manuel Gil 0418757639	Luis Prieto0412638266
Environment Manager	Jason Haslett 0401006099	
Safety Manager	Ian Gadsden 0424163982	
Environmental Representative	David Bone 0407461092	
Project Superintendent	Craig Scaysbrook 0478311412	
Community Relations Manager	Bruce Miller 0401845374	
Traffic Manager	Craig Nethery 0412009558	

3. Hazard identification and risk assessment

3.1. Risk assessment methodology

A risk assessment was undertaken for the various construction phases to:

- Identify the activities and related equipment and plant that may cause a 'Pollution Incident' for the various stages of construction
- Assess the risk of an incident occurring (likelihood and severity)
- Identify existing 'Business as Usual' (BAU) controls
- Identify any additional controls/ contingency measures required to further mitigate the impacts arising from any pollution incident.

Risk Criteria applied in the risk assessment is provided in Appendix 2. The results of the risk assessment are provided in Appendix 3.

Further Risk Assessments will be undertaken for specific work packages during the detailed construction planning phases and when there is a significant change in project activities. Risk assessments will also be undertaken in the preparation of Environmental Work Method Statements (EWMS's) for activities that pose a potential risk to the environment.

3.2. Environmentally Sensitive Areas

Environmentally Sensitive areas identified by the Risk Assessment include:

- Major waterways including the Nambucca River (including oyster farms) and Warrell Creek;
- Other Class 1 and 2 waterways;
- Giant Barred Frog Habitat (GBF) in upper Warrell Creek and potential GBF in Butchers Creek;
- SEPP 14 Wetlands;
- Koala and Quoll Habitat;
- Ecologically Endangered vegetation Communities;
- Threatened flora species no-go zones;
- Heritage significant sites;
- Residential areas including Macksville and Macksville Hospital; and
- Greyheaded Flying Fox habitat.

Further details are provided in the Environmentally Sensitive Area Plans, provided in Appendix A6 of the CEMP.

Specific EWMS for high risk activities will identify local sensitive environments relevant to the specific activity.

3.3. Environmental Hazards

Potential Environmental Hazards identified by the Risk Assessment include:

- Sediment laden run-off into waterways;
- Mulch – tannin leachate contamination of the waterways;
- Acid Sulfate Soils, Rock and contaminated material including low pH leachate run-off into waterways and acidification of groundwater/soil;
- Fuel – which may be stored in bulk, in small containers or minitankers for use on site;
- Bulk chemicals such as bitumen seal and priming agents;
- Hazardous Storage Containers associated with Bridge Construction;
- Chemical storage associated with the Asphalt Batch Plant;

- Miscellaneous Chemicals such as pesticides, sealants, paints, lubricants, oil and grease; and
- Cement dust.

4. Preventative measures

Pre-emptive measures (Environmental Controls) to minimise the risk of an incident occurring that were identified as part of the Risk Assessment include:

- Erosion and Sediment Controls (sediment basins/drainage etc);
- Mulch Management Protocol;
- Oil Containment booms, spill kits and absorbent materials;
- Double skinned bunding of bulk fuel storage facilities;
- Fire Fighting equipment kept on site at appropriate locations;
- Storage of chemicals/fuels in bunded and covered areas;
- Vehicle re-fuelling procedure;
- Triple interceptor and containment measures at the Asphalt Batch Plant;
- Neutralising agents (for pollutants with High or Low pH); and
- Additional materials such as pumps, hoses, geofabric etc to be deployed if required.

5. PIRMP implementation and notification

5.1. PIRMP Activation

The Environment Manager will be responsible for the activation of the PIRMP if they are satisfied that the incident has caused or threatened environmental harm.

The PIRMP activation flow chart is provided in Appendix 4. Pollution notification protocols for notification to Community Stakeholders and to Authorities are provided in Appendix 5.

5.2. Actions to be taken during or immediately after a pollution incident

Actions to be taken immediately in the event of an incident that causes or threatens material harm to the environment will depend on the incident type and severity. These are summarised in Table 2.

Table 2 List of actions in response to a pollution incident

Action	Responsibility	Timing
Site actions		
Assess the situation, stop work, shut down equipment and evacuate the work area if required	All	Immediately
ONLY IF SAFE TO DO SO: take immediate actions to prevent adverse impact to the environment or community (refer below)	All	Immediately
Ensure the cleanup of the incident as appropriate. Specialist contractors may be engaged if required.	Site Supervisor	As soon as safe to do so

Action	Responsibility	Timing
Undertake appropriate environmental monitoring in environmentally sensitive areas to monitor the impact of the incident and effectiveness of cleanup measures so that further mitigative measures can be identified and implemented as appropriate	Environment Manager	As required
Notifications		
In each work area the relevant Supervisor and Superintendent are to be notified of the incident (immediately and without delay)	Any witness to the incident	Immediately and without delay
Notify the Environment Manager (refer to table 1) for contact details	Supervisor of Work Area	Immediately and without delay
Notify Project Director, Safety Manager and Community Relations Manager	Environment Manager	Immediately and without delay
Implement Authorities Notification Protocol (refer to Appendices 1 and 2)	Environment Manger/Safety Manager	Immediately and without delay
Implement Community Notification Protocol (refer to Appendices 1 and 2)	Community Relations Manager	Immediately and without delay

Note: Immediately and without delay means as soon as AFJV are aware of the incident, not following an initial investigation to determine the causes etc. EPA have taken regulatory action against projects who do not comply with this requirement (even when the incident is notified to them within 3-4 hours of the incident occurring).

5.3. Detailed actions to prevent adverse impact to the environment

Detailed Actions to prevent adverse impact to the environment as caused by a pollution incident are described below:

- If the Pollution Incident cannot be SAFELY controlled or mitigated with the available resources on site the emergency authorities (Fire Brigade etc) will attend to the incident and implement any necessary measures. The emergency authorities will control the site.
- If the Pollution Incident can be SAFELY controlled or mitigated with the available resources on site. The following detailed actions shall be undertaken under the direction of the relevant site supervisor [CORRECT PPE SHALL BE WORN IN ACCORDANCE WITH RELEVANT SDS].
  - Isolate the source of pollution: e.g by shutting off valves, relocating oil drums to bunded area, re-directing discharge points away from sensitive environmental areas;
  - Contain the pollution using available resources on site including spill kits, oil containment booms, sand bags, mulch material, geofabric;
  - Protect any environmentally sensitive area from pollution using available resources. These may include known areas of critically endangered habitat or the Nambucca River oyster leases;
  - Clean up the pollution (both on site and off site) using available resources such as sand, flocculants,

spill kits, oil booms, mulch. Materials to be used will depend on the scale and nature of the incident;
- If additional resources are required such as sucker trucks, these shall be ordered to site as soon as it is safe to do so; and
- Dispose of any contamination and materials in accordance with EPA waste classification and disposal requirements.

- When the pollution incident has been effectively cleaned up, a visual inspection shall be undertaken of the environment downstream from where the incident occurred. The inspection shall be undertaken by the Environment Manager to determine whether the mitigation and cleanup actions have been effective. The Environment Manager shall determine whether or not additional investigations shall be undertaken. This will depend on the nature of the pollution incident and may include but not be limited to:
  - Additional water testing for relevant contaminants such as suspended solids and hydrocarbons;
  - Ecological monitoring to determine the effects of the pollution incident on flora and/or fauna;
  - Groundwater or Soil contamination testing; and
  - Monitoring of airborne contaminants such as fumes, asbestos.

Further details are provided in the Emergency Response Plan.

5.4. Additional Resources

Additional resources and/or expertise may be required in the event of an incident. Some relevant resources are provided in Table 3.

Table 3 Suppliers and Specialists Contact List

Specialist area	Contact
Project Ecologist	David Havilah (Geolink)
Soil contamination	Coffey Geosciences
Groundwater quality	Geolink
Sucker truck	Cable and Pipe Relocations
Occupational hygienist	Banksia
Spill Kits/Oil Booms etc	Global Spill
Arborist	Arbpro
Project Archaeologist	Jacobs Consulting
Project Soil Conservationist	Soil Conservation Service

6. Documentation

6.1. Sensitive Area Maps

The Sensitive Area Plans of the CEMP (Appendix A6) will be kept in a visible location on site. The Plans will be kept up to date.

6.2. Inventory of pollutants

An inventory of pollutants kept or used for the Project has been prepared. The pollutant inventory includes details of chemicals and fuels stored or used on the premises, the approximate volume and location of storage.

6.3. Availability of PIRMP

This PIRMP will be available to all Project personnel and will be available at the premises in written and electronic form. The PIRMP will be made available to an EPA officer on request.

Specific sections of this PIRMP will be made publically available on the ACCIONA website. A hardcopy will be forwarded to any person making a written request for a copy. The summary statement of the PIRMP will:

- Include procedures for contacting relevant authorities; and
- Include procedures for communication with the community.

7. Continual improvement

7.1. Training and testing

To ensure that the PIRMP is implemented effectively in the event of an incident, the following training and testing programme shown in Table 4 will be implemented.

Table 4 Training and testing programme

Focus	Timing	Key personnel
PIRMP key requirements: • onsite incident response (actions) • notifications protocol • key safety requirements	• Within 3 months of the commencement of construction	• Project Director • Environment Manager • Construction Manager • Project Superintendent • Safety Manager • Community Relations Manager
• PIRMP desktop test/Emergency Drill	• Annually • Within 1 month of a major incident	• Project Director • Environment Manager • Construction Manager • Project Superintendent • Safety Manager • Community Relations Manager

Note: All relevant workers and subcontractors will be inducted into the requirements of the PIRMP through the site induction and toolbox training as required, while a targeted training session will be held for those persons with specific responses relating to PIRMP activation and implementation.

Records of Training will be held by the AFJV Training Manager.

APPENDICES

Appendix 1: Compliance Matrix

The below table illustrates compliance with the project documents, statutory and legislative requirements.

Legislation	Section / Clause	Requirements	AFJV comments
POEO Act	Part 5.7A	Duty to prepare and implement pollution incident response management plans	
POEO Act	153A	153A Duty of licence holder to prepare pollution incident response management plan The holder of an environment protection licence must prepare a pollution incident response management plan that complies with this Part in relation to the activity to which the licence relates. Maximum penalty: a) in the case of a corporation—$1,000,000 and, in the case of a continuing offence, a further penalty of $120,000 for each day the offence continues, or b) in the case of an individual—$250,000 and, in the case of a continuing offence, a further penalty of $60,000 for each day the offence continues. Note. An offence against this section committed by a corporation is an executive liability offence attracting executive liability for a director or other person involved in the management of the corporation—see section 169A.	ACCIONA holds an environmental protection licence. This PIRMP has been prepared by AFJV to comply with this requirement.
POEO Act	153B	153B EPA may direct other persons to prepare pollution incident response management plan (1) The EPA may, in accordance with the regulations, require the occupier of premises at which industry is carried out to prepare a pollution incident response management plan that complies with this Part in relation to activities at the premises. (2) A person must not fail to comply with such a requirement. Maximum penalty: (a) in the case of a corporation—$1,000,000 and, in the case of a continuing offence, a further penalty of $120,000 for each day the	ACCIONA holds an environmental protection licence. This PIRMP has been prepared by AFJV to comply with this requirement.

Legislation	Section / Clause	Requirements	AFJV comments
		offence continues, or (b) in the case of an individual—$250,000 and, in the case of a continuing offence, a further penalty of $60,000 for each day the offence continues. Note. An offence against subsection (2) committed by a corporation is an executive liability offence attracting executive liability for a director or other person involved in the management of the corporation—see section 169A. (3) The regulations may make provision for or with respect to: (a) the class or classes of premises, or industries carried out at premises, that may be the subject of a requirement to prepare a pollution incident response management plan, and (b) the circumstances in which some or all premises within those classes may be the subject of a requirement to prepare a pollution incident response management plan.	
POEO Act	153C	153C Information to be included in plan A pollution incident response management plan must be in the form required by the regulations and must include the following: a) the procedures to be followed by the holder of the relevant environment protection licence, or the occupier of the relevant premises, in notifying a pollution incident to: i. the owners or occupiers of premises in the vicinity of the premises to which the environment protection licence or the direction under section 153B relates, and ii. the local authority for the area in which the premises to which the environment protection licence or the direction under section 153B relates are located and any area affected, or potentially affected, by the pollution, and iii. any persons or authorities required to be notified by Part 5.7, b) a detailed description of the action to be	(a) Section 5, Appendices 4&5

Legislation	Section / Clause	Requirements	AFJV comments
		taken, immediately after a pollution incident, by the holder of the relevant environment protection licence, or the occupier of the relevant premises, to reduce or control any pollution, c) the procedures to be followed for co-ordinating, with the authorities or persons that have been notified, any action taken in combating the pollution caused by the incident and, in particular, the persons through whom all communications are to be made,	(b) Sections 5.3 and 5.4 c) Section 2 and Emergency Response Plan
POEO Act	153D	153D Keeping of plan A person who is required to prepare a pollution incident response management plan under this Part must ensure that it is kept at the premises to which the relevant environment protection licence relates, or where the relevant activity takes place, and is made available in accordance with the regulations. Maximum penalty: a) in the case of a corporation—$1,000,000 and, in the case of a continuing offence, a further penalty of $120,000 for each day the offence continues, or b) in the case of an individual—$250,000 and, in the case of a continuing offence, a further penalty of $60,000 for each day the offence continues. Note. An offence against this section committed by a corporation is an executive liability offence attracting executive liability for a director or other person involved in the management of the corporation—see section 169A.	Section 6.3
POEO Act	153E	153E Testing of plan A person who is required to prepare a pollution incident response management plan under this Part must ensure that it is tested in accordance with the regulations. Maximum penalty: a) in the case of a corporation—$1,000,000 and, in the case of a continuing offence, a further penalty of $120,000 for each day the offence continues, or	Section 7.1

Legislation	Section / Clause	Requirements	AFJV comments
		b) in the case of an individual—$250,000 and, in the case of a continuing offence, a further penalty of $60,000 for each day the offence continues. Note. An offence against this section committed by a corporation is an executive liability offence attracting executive liability for a director or other person involved in the management of the corporation—see section 169A.	
POEO Act	153F	153F Implementation of plan If a pollution incident occurs in the course of an activity so that material harm to the environment (within the meaning of section 147) is caused or threatened, the person carrying on the activity must immediately implement any pollution incident response management plan in relation to the activity required by this Part. Penalties apply	Section 5
POEO(G) Regulation	98C	98C Additional matters to be included in plan Note. See also section 153C (a)–(c) of the Act. (1) General The matters required under section 153C (d) of the Act to be included in a plan are as follows: (a) a description of the hazards to human health or the environment associated with the activity to which the licence relates (the relevant activity), (b) the likelihood of any such hazards occurring, including details of any conditions or events that could, or would, increase that likelihood, (c) details of the pre-emptive action to be taken to minimise or prevent any risk of harm to human health or the environment arising out of the relevant activity, (d) an inventory of potential pollutants on the premises or used in carrying out the relevant activity, (e) the maximum quantity of any pollutant that is likely to be stored or held at particular locations (including underground tanks) at or on the premises to which the licence relates,	Section3 3, 4 and 5, and Appendix 2 and 3.

Legislation	Section / Clause	Requirements	AFJV comments
		(f) a description of the safety equipment or other devices that are used to minimise the risks to human health or the environment and to contain or control a pollution incident, (g) the names, positions and 24-hour contact details of those key individuals who: i. are responsible for activating the plan, and ii. are authorised to notify relevant authorities under section 148 of the Act, and iii. are responsible for managing the response to a pollution incident, (h) the contact details of each relevant authority referred to in section 148 of the Act, (i) details of the mechanisms for providing early warnings and regular updates to the owners and occupiers of premises in the vicinity of the premises to which the licence relates or where the scheduled activity is carried on, (j) the arrangements for minimising the risk of harm to any persons who are on the premises or who are present where the scheduled activity is being carried on, (k) a detailed map (or set of maps) showing the location of the premises to which the licence relates, the surrounding area that is likely to be affected by a pollution incident, the location of potential pollutants on the premises and the location of any stormwater drains on the premises, (l) a detailed description of how any identified risk of harm to human health will be reduced, including (as a minimum) by means of early warnings, updates and the action to be taken during or immediately after a pollution incident to reduce that risk, (m) the nature and objectives of any staff training program in relation to the plan, (n) the dates on which the plan has been tested and the name of the person who	

Legislation	Section / Clause	Requirements	AFJV comments
		carried out the test, (o) the dates on which the plan is updated, (p) the manner in which the plan is to be tested and maintained. (2) Trackable waste transporters This section is not applicable to AFJV works.	
POEO(G) Regulation	98D	(1) A plan is to be made readily available: (a) to an authorised officer on request, and (b) at the premises to which the relevant licence relates, or where the relevant activity takes place, to any person who is responsible for implementing the plan. (2) A plan is also to be made publicly available in the following manner within 14 days after it is prepared: (a) in a prominent position on a publicly accessible website of the person who is required to prepare the plan, (b) if the person does not have such a website—by providing a copy of the plan, without charge, to any person who makes a written request for a copy. (3) Subclause (2) applies only in relation to that part of a plan that includes the information required under: (a) section 153C (a) of the Act, and (b) clause 98C (1) (h) and (i) or (2) (b) and (c) (as the case requires). (4) Any personal information within the meaning of the Privacy and Personal Information Protection Act 1998 is not required to be included in a plan that is made available to any person other than a person referred to in subclause (1).	Section 6.3
POEO(G) Regulation	98E	98E Testing of plan (5) The testing of a plan is to be carried out in such a manner as to ensure that the information included in the plan is accurate and up to date and the plan is capable of being implemented in a workable and effective manner.	Section 7.1

Legislation	Section / Clause	Requirements	AFJV comments
		(6) Any such test is to be carried out: (a) routinely at least once every 12 months, and (b) within 1 month of any pollution incident occurring in the course of an activity to which the licence relates so as to assess, in the light of that incident, whether the information included in the plan is accurate and up to date and the plan is still capable of being implemented in a workable and effective manner.	

Appendix 2: Risk matrix criteria (consequence and likelihood)

Risk Quantification (Likelihood X Severity)		Minor This is a Reportable Incident* No breach of legislation Low impact – can be easily rectified without residual impact to the environment or heritage values. Requires only minor changes to improve procedural controls	Moderate This is a Category 2 Incident* Could cause potential breach of legislation Impact to environment or heritage values requiring further investigation and or standard environmental controls to rectify No residual impact to environment or heritage value	High This is a Category 1 Incident* Breach of legislation Requires major investigation and engineering controls to rectify Impact to environment or heritage values with irreparable damage or long term restoration (>1 year)
		SEVERITY		
LIKELIHOOD		1	2	3
Unlikely (Has occurred once on a similar project in past 5 years)	1	L(1)	L(2)	M(3)
Likely (Has occurred more than once on a similar project in past 5 years)	2	L(2)	M(4)	H(6)
Almost Certain (Has occurred in all similar projects in the past 5 years)	3	M(3)	H(6)	H(9)

Low Residual Risk	Medium Residual Risk	High Residual Risk
Risk is TOLERABLE. No further preventative action required, consider cost effective solutions or improvements that impose no additional cost.	Work may only start if the risk has been reduced to As Low as Reasonably Practicable (ALARP). Consider additional control measures that reduce the risk without significantly increasing cost**.	Risk is INTOLERABLE. Do not start work or continue until risk level is reduced using suitable control measures to a reasonably practicable level**.

* Incident – Refer to RMS Environmental Incident Classification and Reporting Procedure (CEMP Appendix A7)

** Control measures are to ensure that residual risks are reduced to as low as reasonably practicable. Where controls fail to reduce to a TOLERABLE or ALARP level the assessment must be referred to the AFJV Project Manager.

Appendix 3: Results of preliminary risk assessment

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
Site Establishment	• Amenities • Site buildings • Services • Compound access • Paving • Fencing • Survey • Fuel storage • Drainage / erosion and sediment control installation	• Mobile plant • Excavators • Moxies • Rollers • Light vehicles • Minitanker	• Minor Fuel Spill (re-fuelling)	• Re-fuelling procedure • Spill kits • EWMS for Site Compound establishment	2	2	Medium (4)	• Oil absorbent materials • Hydrocarbon booms • Fire fighting equipment
			• Major Fuel Spill (catastrophic Failure of bulk fuel storage)	• Double skinned tanks • EWMS for Site Compound establishment	1	3	Medium (3)	• Oil absorbent materials • Hydrocarbon booms • Sucker trucks • Fire fighting equipment
			• Sediment release	• ERSED Plan • Sedimentation Basin Management and Discharge Procedure (SWMP Appendix H) • Pacific Highway Practice Note for Dewatering (SWMP Appendix G) • EWMS for Site Compound establishment	2	2	Medium (4)	• Flocculants • Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
			• Acid sulfate soil release	• Acid Sulfate Materials Management Procedure (SWMP Appendix C) • EWMS for Site Compound Establishment	1	2	Low (2)	• Neutralising agent (lime)
			• Contaminated soil release	• Unexpected Discovery of Contaminated land procedure (SWMP Appendix F) • EWMS for Site Compound Establishment	1	3	Medium (3)	• Flocculants • Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses
			• Minor Chemical Spill	• Bunding of chemicals and fuels • Pre-start equipment checks maintenance • EWMS for Site Compound establishment	2	2	Medium (4)	• Oil absorbent materials • Hydrocarbon booms • Pumps and hoses • Fire fighting equipment
Clearing and grubbing	• Excavation • Ripping • Material Haulage • Mulching	• Tree loppers • Excavators • Mulchers • Mobile fuel tank	• Tannin release	• Environmental Direction – Management of Tannin from Vegetation Mulch (SWMP Appendix D) • EWMS for Clearing and Grubbing	2	2	Medium (4)	• Sandbags, geofabric, sediment fence etc • Pumps and hoses

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
			• Sediment release	• ERSED Plan • Sedimentation Basin Management and Discharge Procedure (SWMP Appendix H) • Pacific Highway Practice Note for Dewatering (SWMP Appendix G) • EWMS for Clearing and Grubbing	2	2	Medium (4)	• Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses
			• Pollution from unidentified waste and/or drums	• Unexpected Discovery of Contaminated land procedure (SWMP Appendix F) • EWMS for Clearing and Grubbing	1	2	Low (2)	• Oil absorbent materials • Hydrocarbon booms • Pumps and hoses • Fire fighting equipment
Bulk earthworks	• Haul Road Construction • Batter excavation • Cut / fill activities • Blasting • Stockpiling • Material Haulage	• Haulage trucks • Excavators • Explosives • Rippers • Graders • Rollers • Rock breakers	• Sediment release	• ERSED Plan • Sedimentation Basin Management and Discharge Procedure (SWMP Appendix H)	2	2	Medium (4)	• Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses
			• Acid sulfate material release	• Acid Sulfate Materials Management Procedure (SWMP Appendix C)	1	3	Medium	• Neutralising agent (lime)

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
			• Acidic Rock, Low pH water release	• Blasting Plan • ERSED Plan for containment of low pH water • Additional bunding of Acidic rock material and liming of bunded area			(3)	
			• Excessive dust emissions	• Air Quality Management Plan • Water cart use	2	2	Medium (4)	• Chemical suppressants
			• Contaminated soil runoff/release	• Erosion and sediment controls • Soil and Water Management Plan	1	2	Low (2)	• Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses
Creek / river crossings Construction	• Piling in waterway • Batter preparation • Concreting works • Grouting operations	• Piling rig • Cranes • Concrete pump • Grout pump • Slurry machine • Bentonite injection equipment	• Fuel /Chemical spill	• Bunding of chemicals and fuels • EWMS for Temporary Jetties and working platforms • EWMS for temporary waterway crossings, barge operations • PIRMP detailing location of hazardous storage containers	2	3	High (6)	• Oil absorbent materials • Hydrocarbon booms • Pumps and hoses • Sucker trucks • Fire fighting equipment

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
				• EWMS for Piling Operations • EWMS for Bridge Superstructures				
			• Acid sulfate material release	• EWMS for Temporary Jetties and working platforms • EWMS for temporary waterway crossings • EWMS for Piling operations • EWMS for Bridge Superstructures	2	3	High (6)	• Neutralising agent (lime)
			• Sediment release	• ERSED Plan • Sedimentation Basin Management and Discharge Procedure (SWMP Appendix H) • EWMS for Temporary Jetties and working platforms • EWMS for temporary waterway crossings • EWMS for Piling operations • EWMS for Bridge Superstructures	2	2	Medium (4)	• Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses

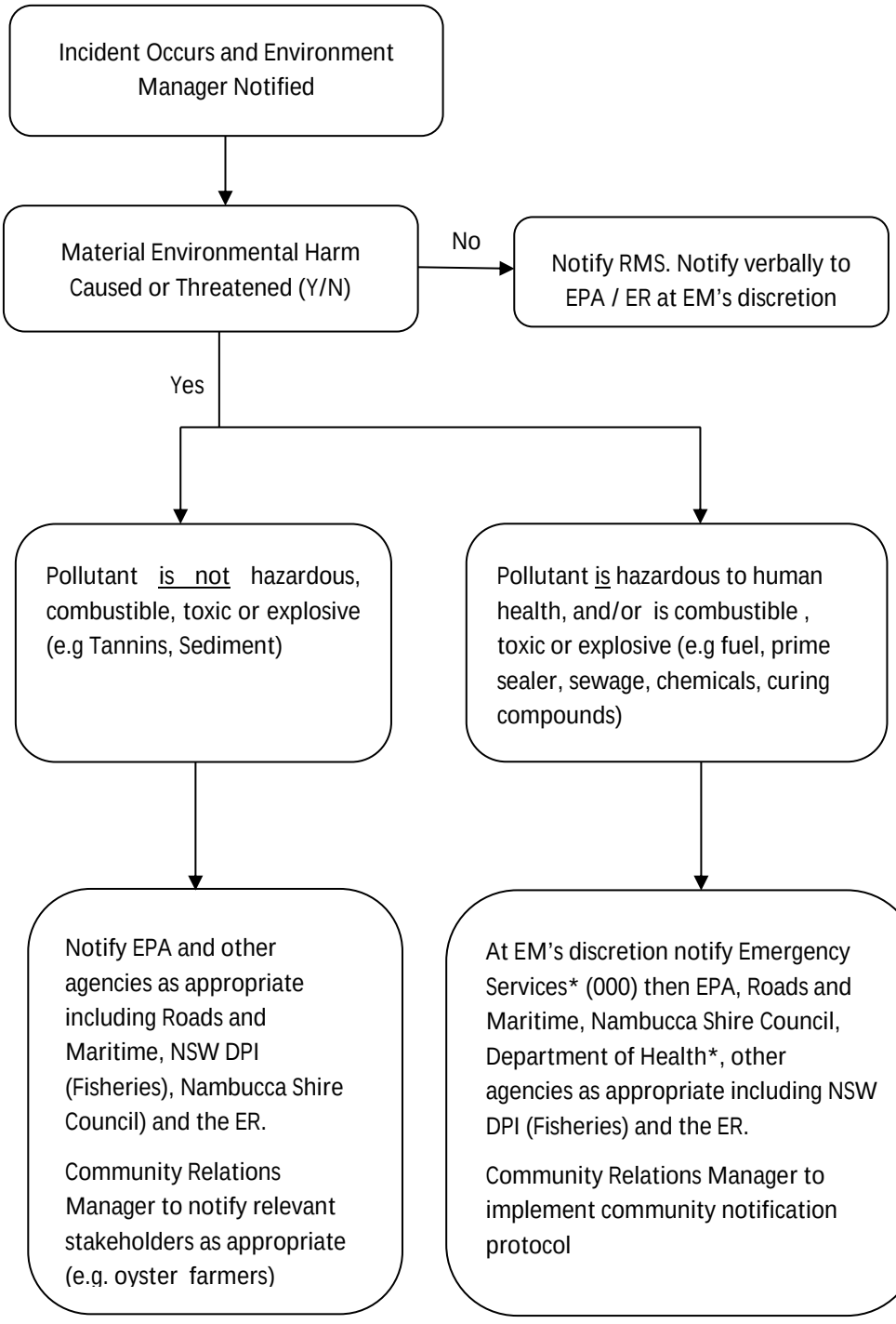
Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
			• Contaminated soil runoff/release	• ERSED Plan • EWMS for Temporary Jetties and working platforms • EWMS for temporary waterway crossings • EWMS for Piling operations EWMS for Bridge Superstructures	2	2	Medium (3)	• Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses
			• High pH water release	• ERSED Plan • EWMS for Temporary Jetties and working platforms • EWMS for temporary waterway crossings • EWMS for Piling operations EWMS for Bridge Superstructures	2	2	Medium (4)	• Neutralising agent • Containment systems for run-off
Concrete Batching plant Operation	• Lime cement storage • Water management • Concrete Production	• Batching plant • Concrete trucks • Crushing and screening	• High pH water release	• EWMS for Batch Plant establishment and operation	2	2	Medium (4)	• Neutralising agent • Installation of first flush pit and additional water storage facility

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
		• equipment • Wastewater / washout containment	• Chemical release	• EWMS for Batch Plant establishment and operation	2	2	Medium (4)	• Oil absorbent materials • Hydrocarbon booms • Pumps and hoses • Sucker trucks • Fire fighting equipment • Appropriate bunding of storage areas
			• Release of cement dust	• Air Quality Management Plan • EWMS for Batch Plant establishment and operation	2	2	Medium (4)	• Water trucks • Filter systems on silo's
Asphalt Batch Plant Operation and Asphalt paving on site	• Chemical storage • Bitumen heating and storage • Water Management • Lime storage • Aggregate storage • Diesel storage	• Asphalt batching plant • Front end loaders • Trucks	• Potential release of chemicals including hydrocarbons to land/waters	• EWMS for Asphalt Plant • EWMS for Asphalting • Bunding of chemicals stored on site • Appropriate spill containment measures available	2	1	Low (2)	• Triple interceptor to be installed as "first flush" • Bitumen tank has additional controls and is temperature regulated

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
			• Odour Release	• Air Quality and Odour Assessment	1	2	Low (2)	• Nil
			• Sediment laden run-off	• ERSED Plan • Sediment basin in place	1	2	Low (2)	• Hardstand to be used to cover surface under Plant • Use of sediment basin in accordance with the EPL requirements
			• Dust emissions	• Water Sprays	2	1	Low (2)	• Additional monitoring • Chemical suppressants
Pavement construction	• Concrete pours	• Concrete trucks	• Release of high pH water • Uncontrolled release of concrete or washout to soil or water.	• EWMS Concrete Paving	2	3	High (6)	• Neutralising agent

Construction phase	Sub-activities	Plant involved	Pollution Incident description	BAU Controls (Pre-Emptive Measures)	Likelihood	Severity	Risk	Additional contingency measures
Pavement Finishing	• Application of bitumen prime seal or other curing compound	• Spray Sealer • Bitumen/chemical trucks	• Uncontrolled release of bitumen prime seal or other curing compound	• Spill containment booms and bunding • ERSED Plan • Bunded storage of chemicals • EWMS Concrete paving	2	3	High (6)	• Oil absorbent materials • Hydrocarbon booms • Pumps and hoses • Sucker trucks • Fire fighting equipment
Road Finishes	• Linemarking • Installation of road furniture and signage • landscaping	• linemarker • small hand tools • Mobile plant	• Paint/fuel spill	• Spill containment booms and bunding • Bunded storage of chemicals	2	1	Low (2)	• Oil absorbent materials • Hydrocarbon booms • Pumps and hoses • Sucker trucks • Fire fighting equipment
			• Sediment release	• ERSED Plan • Sedimentation Basin Management and Discharge Procedure (SWMP Appendix H)	2	1	Low (2)	• Sandbags, geofabric, mulch, sediment fence etc • Pumps and hoses

Appendix 4 – Pollution Incident Notification Flow Chart



Notes:

The Environment Manager will advise whether or not material environmental harm is caused or threatened and will decide if the PIRMP should be activated. In doing so, the following factors should be considered:

- Proximity to sensitive receivers (e.g residents, schools, fisheries, aquaculture
- Nature of receiving environment (disturbed vs/pristine)
- Potential for impacts to human health (through dermal contact, respiration, fire or explosion)
- Whether the is pollutant is likely to leave the project boundary
- Cost of cleanup

*All pollution incidents (causing or threatening environmental harm) are technically required to be reported to all authorities. However, it is not the best use of resources to report incidents with zero health or safety risk to Emergency Services and Health Authorities.

Appendix 5: Pollution Notification Protocol

Pollution Notification to Community Stakeholders Protocol

Whether or not the local community stakeholders are notified of a pollution incident will depend on the incident type and severity, and the potential to impact on the community. Community stakeholder notification is required for events that will result in an unacceptable health risk to community stakeholders. This could be during an incident (e.g immediate risk of harm to health) or following an incident (e.g. due to the presence of harmful contaminant in soil or potential impacts to fisheries) in this circumstance, stakeholders will be notified in a manner that is appropriate for the type and severity of the incident. The Community Relations Manager, in consultation with the Environment Manager and the Project Director shall determine if community notification is required, the mechanisms by which the notification is made and the extent of the notification.

The notification measures will be directed by the Community Relations Manager and may include one or more of the following:

- Publication of incident related notification on Project website
- Distribution of Letter Box Drops
- Individual briefings of affected residents

Mechanisms for early warnings and ongoing regular updates to the community may include

- Doorknock of residents, businesses and others (e.g schools) potentially impacted by the incident
- Phone contact/messages
- Media notification
- Use of technology such as Variable Message / Motorway signage and radio communications.

In extreme cases, where the emergency services are required to attend site and control the incident, community notification will be undertaken by the relevant emergency service. For instance, if the incident results in a fire off site, that threatens the safety of local residents, the local fire brigade will control external communications and will co-ordinate the necessary evacuations.

Authority Notification Protocol

Notification to the Authorities must be undertaken in the order as listed in Table 1 Below.

Authority	Name	24 Hour Contact No	Other Phone Number	AFJV notification accountability
Emergency Services	Fire and Rescue NSW NSW Police NSW Ambulance Service	000 000 000	1300 729 579	Safety Manager
Only ring 000 if the incident presents an immediate threat to human health or to property and requires emergency services. If the incident does not require an initial combat agency, or once the 000 call has been made, notify as listed below.				
EPA	Environment Line Stan Viney	131 555 0429 215 388	(02) 9995 5555	Environment Manager
Ministry of Health	(North Coast Public Health Unit)	0428 882 805 (after hours, Environmental Health)	1300 066 055	Environment Manager
WorkCover Authority	Information Line	13 10 50	N/A	Safety Manager
Nambucca Shire Council	General SES Water Sewerage Roads, Bridges	(02) 6658 2555 6598 8022 0417 285 269 0417 287 397 0417 488 565	13 25 00	Environment Manager
Department of Primary Industries	Fisheries Fisheries Watch	0419185378 (James Sakker) 1800 043 536	(02) 6650 3111	Environmental Manager

Authority	Name	24 Hour Contact No	Other Phone Number	AFJV notification accountability
Department of Planning and Environment (DPE)	David Bone (Environmental Representative)	0407 461 092	1300 305 695	Environmental Manager

Other relevant stakeholders (non-authorities)

The AFJV Community Manager will contact the following stakeholders if they are potentially affected:

- Nambucca Oyster Company Pty Ltd (0434 402 761)
- Prime Water Oysters (0402435656)

The relevant information to be provided to the authorities in the event of a pollution incident consists of the following:

- The time, date, nature, duration and location of the incident
- The location of the place where the pollution is occurring or is likely to occur, the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known
- The circumstances in which the incident occurred (including the cause of incident, if known)
- The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened (if known)

Appendix 6: Sensitive Area Plans – Location of Chemical Storage Facilities

Appendix 7: Chemical Manifest

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SDS #No	Substance or Goods Name	Current SDS supplied Yes/No	Hazard Substance Yes/No	Dangerous Goods Yes/No	Risk Assessment Yes/No	SWMS Yes/No	Amount Typically Stored (Litres/kg etc)	Date of SDS	Workplace Monitoring or Health Surveillance Required Y/N	Contract using & Location	Supplier Details
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SDS #No	Substance or Goods Name	Current SDS supplied Yes/No	Hazard Substance Yes/No	Dangerous Goods Yes/No	Risk Assessment Yes/No	SWMS Yes/No	Amount Typically Stored (Litres/kg etc)	Date of SDS	Workplace Monitoring or Health Surveillance Required Y/N	Contract using & Location	Supplier Details
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#'	F=K :\UhYcUQ\ Db_ DbY] Ub 6QcU	MUc	MUc	B_	MUc	B_	.(@YdbUc	)('+'*()-	B_		F=K @Y] YdUT
#)	FeWQc_\ A<	MUc	MUc	MUc	MUc	B_	H65	*1'1'*(),	B_		GY[Q 5ecd Ddi @dT
$	GY[QTeb% +* !6"	MUc	MUc	MUc	MUc	B_	3?Wc	+)'-'*(),	B_		GY[Q 5ecd Ddi @dT
$	GY[QTeb% +*%B 7_] ` 5	MUc	MUc	MUc	MUc	B_	)-?Wc	*1'-'*()*	B_		GY[Q 5ecd Ddi @dT
$	GY[Q HYdU 69	MUc	B_	B_	MUc	B_	*(\YdbUc	*.'-'*(),	B_		GY[Q 5ecd Ddi @dT
$!	9`\bUj 7b,Q[ FU`QYbb 9`_hi GUQ\Ub !)*+"	MUc	MUc	MUc	MUc	B_	)&- @YdbUc	)')'*()+	B_	DQSYWS_% BdX Gd_bUc	=HK D_\i] Ubc Q^T :\eYTc
$"	9`\bUj 7b,Q[ FU`QYbb 9`_hi GUQ\Ub !)*+" <QbTU^Ub	MUc	MUc	MUc	MUc	B_	-(( ]\	)')'*()+	B_	DQSYWS_% BdX Gd_bUc	=HK D_\i] Ubc Q^T :\eYTc
$#	5JG .((A Db_dUSdYd	MUc	B_	B_	MUc	B_	*(\YdbUc	)+')*'*()*	B_	B_bdX N_^U	6_cdY[5ecdbQ\YQ Ddi @dT
$$	GY[Q HYdU 69	MUc	B_	B_	MUc	B_	*(((@YdbUc	*.'-'*(),	B_	DQSYWS_% BdX Gd_bUc	GY[Q 5ecd Ddi @dT
$&	Hb Y`\U GdbY[U	MUc	MUc	B_	MUc	B_	- @YdbUc	)',*()-	B_	DQSYWS_% BdX Gd_bUc	I\dY] QdU =^TecdbYQ\
$'	:QcdTbi F_QT] Qb[Y^W KQdUbRQcUT	MUc	B_	B_	MUc	B_	H65	)-'+'*(),	B_	DbUSQcd MQbT% 5\\ GdQdU @Y^U] Qb[Y^W	5`S_7_QdY^Wc
$)											
&											
&	9bQbY^W :\iQcX	MUc	MUc	B_	MUc	B_	H65	)1')*'*()+	B_	6_bQ\ 6QdSX`\Q^d	:\iQcX 5ecdbQ\YQ Ddi @dT
&	G_edXUb^ KXYdU 7U] U^d	MUc	MUc	B_	MUc	B_	H65	*('1'*()*	B_	6_bQ\ 6QdSX`\Q^d	6_bQ\ 7U] U^d
&!	GY[QA_^_H_` ,)*B:;	MUc	B_	MUc	MUc	B_	)(([W	*3','*(),	B_	6_bQ\ 6QdSX`\Q^d	GY[Q 5ecd Ddi @dT
&"	DU^Q`QdSX GdbeSdebQ\ <61(	MUc	MUc	B_	MUc	B_	)(([W	-'.'*()*	B_		=H@G%HK5 5ecdbQ\YQ Ddi @dT
&#	GY[Q A_^_H_` 0*+B	MUc	MUc	MUc	MUc	B_	*,([W	*1','*(),	B_		GY[Q 5ecd Ddi @dT
&$	?_^cdbe[d 7_^cdbeSdY_^ 5TXUcYfU	MUc	MUc	MUc	MUc	B_	, h))(W	)*'-'*()*	B_		<6 :e\\Ub 7_] `Q^i
&&	?_^cdbe[d F__V %HbQ^c\eSU^d ;bUi G\YS_^U	MUc	B_	B_	MUc	B_	* h))(W	))')*'*()*	B_		Gi^UbWi 7_^cdbeSdY_^ =^TecdbYQ\
&'	F,(K8 :_b] e\Q	MUc	MUc	MUc	MUc	B_	H65	)'3'*(),	B_		7XU] d__\c Ddi @dT
&)	GY[QTeb -* DQbd 5	MUc	MUc	MUc	MUc	B_	+.(]\	)3'-'*(),	B_		GY[Q 5ecd Ddi @dT
'	GY[QTeb -* DQbd 6	MUc	MUc	MUc	MUc	B_	)1(]\	)3'-'*(),	B_		GY[Q 5ecd Ddi @dT

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'	6¥dedXU^U G_\fU^d Db¥] Ub	MUc	MUc	MUc	MUc	B_	H65	)'1'*()+	B_		;bQSU 7_^cdbeSd¥_^ Db_TeSdc
'	D__ <Qe\QWU 87	MUc	MUc	B_	MUc	B_	H65	)',*()+	B_	KQdUbSQbd C`c	D__ 7¥dbec 5ecdbQ\¥Q Ddi @dT
'!	)3,%1-00+ H¥\dgQcX	MUc	MUc	B_	MUc	B_	H65	)'0'*()+	B_		8e\eh 5ecdbQ\¥Q
'"	D\e] RUbc AQdU `b¥] ¥^W ¥\e¥T	MUc	MUc	MUc	MUc	B_	, \¥dbUc	*+'0'*(),	B_	JQb¥_ec	6_cd¥[5ecd Ddi @H8
'#	6_cd¥[DJ7 D¥`U 7U] U^d R\eU	MUc	MUc	MUc	MUc	B_	, \¥dbUc	)-')('*(),	B_	JQb¥_ec	6_cd¥[5ecd Ddi @H8
'$	<iTb_SX_b¥S 5S¥T	MUc	MUc	MUc	MUc	B_	H65	)*'))'*()-	B_	DQS¥¥S_ 9^f¥b_	FUS_SXU] =^S
'&	I\dbQ ;b¥` 7_^cdbeSd¥_^ 5TUX¥c¥fU	MUc	MUc	MUc	MUc	B_	,(L))(W	)'+'*()*	B_		<6 :e\\Ub 7_] `Q^i
''	), 7@5 *(DQdSX AQcdUb 7_\T @Qi	MUc	B_	B_	MUc	B_	H65	1')('*()-	B_		>QiRb_ 7¥f¥\ GQ¥Udi Db_TeSdc
')	6_bQ\ 9] e\c¥_^ GUQ\Q^d	MUc	B_	B_	MUc	B_	*(@¥dbU	*3')('*()+	B_		6_bQ\ 5c`XQ\d
)	A_bdU¥^ ?¥\\Q Db_dUSd GebWQSU G`bQi	MUc	i	MUc	MUc	B_	H65	))')*'*()-	B_		FUS[¥dd 6U^S[¥cUb
)	FQ¥T _^U cX_d ¥^cUSd [¥\\Ub	MUc	B_	MUc	MUc	B_	H65	)'0'*()+	B_		G7 >_X^c_^ G_^c DHM @H8
)	GU`d_^U Q\\ `eb`_cU dX¥^^Ubc	MUc	i	MUc	MUc	B_	H65	)')'*()+	B_		GU`d_^U 5ecdbQ\¥Q
)!	8e\eh Db_¥Ucc¥_^Q\ H_dQ\ DbU`	MUc	B_	B_	MUc	B_	)(@¥dbUc	*.'*'*().	B_		8e\eh 5ecdbQ DHM
)"	8e\eh KUQdXUbcX¥U\T L)(;_cc	MUc	B_	B_	MUc	B_	)* \¥dbUc	)*'))'*()-	B_		8e\eh 5ecdbQ\¥Q
)#	DQbSXU] 5f¥cdQa GUQ\Ub Gdb¥``Ub	MUc	MUc	B_	MUc	B_	H65	*,'*'*()-	B_		DQbSXU]
)$	:_cb_S B¥d_`b¥] U N¥^Sb¥SX	MUc	MUc	MUc	MUc	B_	H65	)'))'*()*	B_		DQbSXU]
)&	6\eU <UU\Ub HbeS[KQcX	MUc	B_	B_	MUc	B_	H65	)'.'*()+	B_		GU`d_^U
)'	8UdQSX I\dbQ 6¥_%FU\UQcU 5WU^d	MUc	MUc	B_	MUc	B_	H65	)+')('*(),	B_		T
))	8__] ¥dU	MUc	MUc	B_	MUc	B_	H65	)'0'*()-	B_		AeTWUU 8__] ¥dU @¥] U DHM @dT
	9] e\c¥_^ 7bQS[GUQ\Q^d	iUc	B_	B_	MUc	B_	H65	*3')('*()+	B_		6_bQ\
	7_\T] ¥h	MUc	B_	B_	MUc	B_	H65	*3')('*()+	B_		6_bQ\
	Db_6_S Ge^cSbUU^ -(#	MUc	B_	B_	MUc	B_	H65	)3'3'*()+	B_		Db_GQ¥Udi ;UQb
!	Db_6_S Ge^cSbUU^ +(#	MUc	B_	B_	MUc	B_	H65	)0'3'*()+	B_		Db_GQ¥Udi ;UQb
"	5¥dU[<¥¥X 6e¥\T FU`Q¥b A_bdQb	MUc	MUc	B_	MUc	B_	H65	*,','*().	B_		¥d\c
#	KQdUb c_\ed¥_^_¥D_dQcc¥e] <iTb_WU^ DXdXQ\QdU	MUc	B_	B_	MUc	B_	H65	)')('*()+	B_		5ecdbQ\¥Q^ GS¥U^d¥¥S
$	6e¥¥Ub c_\ed¥_^``<0&(	MUc	B_	B_	MUc	B_	H65	))'0'*()*	B_		5¥b AUd GS¥U^d¥¥S
&	FQ] RU_g Wb_e^T DUdb_\Qde] HQ`U	MUc	B_	B_	MUc	B_	H65	).'*'*().			5=K7
'	Hg_cdb_[U_¥\	MUc	MUc	MUc	MUc	B_	H65	)-'0'*()+	B_		AQ[¥dQ
)	?=A75F9 ;U^d\U _d¥_^G[¥^7\UQ^cUb	MUc	B_	B_	MUc	B_	8=G7CBH=BI9	)*','*())	B_	5\\7b¥Rc Q^T H_¥\Udc BdX GdX	?¥] RUb\i 7\Qb[
	FQ¥T 7_]] UbS¥Q\ =^cUSd¥S¥TU FUc¥TeQ\ Geb¥QSU	MUc	B_	MUc	MUc	B_	H65	*,'0'*()-	B_	GdX 7_] `_e^T	8¥fUbcUi
	5b] _b 5\\ Ae\d¥ `eb`_cU S\UQ^Ub	MUc	B_	B_	MUc	B_	H65	)'0'*()+	B_	GdX @QiT_g^ QbUQ	5b] _bUT 5ed_;b_e`
	5ZQh G`bQi B K¥`U	MUc	B_	B_	MUc	B_	H65	)'3'*()*	B_	GdX 7_] `_e^T \QiT_g^ 5bUQ	5ZQh
!	DbQ¥b¥U b_cU QdX] _c`XUbU c`bQi	MUc	B_	MUc	MUc	B_	H65	)')'*()-	B_	7\UQ^Ubc	DUUb\Ucc >Q\ Ddi @dT
"	6\UQSX @¥ae¥T	MUc	MUc	B_	MUc	B_	H65	)')*'*()*	B_	7\UQ^Ubc	6b¥WXd_^ Db_¥Ucc¥_^Q\
#	:__b 7\UQ^Ub g¥dX 5]] _^¥Q	MUc	B_	B_	MUc	B_	H65	)')*'*()*	B_	7\UQ^Ubc	6b¥WXd_^ Db_¥Ucc¥_^Q\
$	=^cdQ^d <Q^T GQ^¥d¥c¥^W ;U\	MUc	MUc	MUc	MUc	B_	H65	)')*'*()*	B_		6b¥WXd_^ Db_¥Ucc¥_^Q\
&	HbeS[KQcX	MUc	B_	B_	MUc	B_	H65	)')*'*()*	B_	GdX @QiT_g^ 5bUQ	6b¥WXd_^ Db_¥Ucc¥_^Q\
'	K¥^T_g 7\UQ^Ub	MUc	B_	B_	MUc	B_	H65	)')*'*()*	B_	GdX 7_] `_e^T$ \QiT_g^ QbUQ$ S\UQ^Ubc	6b¥WXd_^ Db_¥Ucc¥_^Q\
)	8¥cXgQcX¥^W 8UdUbWU^d	MUc	B_	B_	MUc	B_	H65	)')*'*()*	B_	7\UQ^Ubc	6b¥WXd_^ Db_¥Ucc¥_^Q\
	:\Uh¥ GUQ\ Db¥] Ub	MUc	MUc	MUc	MUc	B_	H65	.'+'*()-	B_		5=K7

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	:\Uh\ GUQ\ <8	MUc	B_	B_	MUc	B_	H65	*-')'*().			5=K7
	7FG%F 7Qd_^\S 9] e\c_^	MUc	MUc	B_	MUc	B_	H65	)'-'*().	B_	G_edX S_] `_e^T	GQ] \ 6\de] U^ HUSX^__W\Uc
!	5SUd i\U^U	MUc	MUc	MUc	MUc	B_	H65	*('+'*()-	B_	`bUSQcd MQbT% G] \dXRb\TWU	6C7
"	FQ] cUd 7XU] cUd 1) (	MUc	MUc	MUc	MUc	B_	H65	*('+'*()-	B_	6_bQ\ 6QdSX D\Q^d	FQ] cUd :QcdU^Ubc
#	9D ; bUQcU	MUc	B_	MUc	MUc	B_	H65	)3'+'*()-	B_	6_bQ\ 6QdSX D\Q^d	7Q\dUh 5ecdbQ\\Q
$	<i TbQe\\S C\'\ 5K .1	MUc	B_	B_	MUc	B_	H65	*,','*()*	B_	G_edX @QiT_g^ 5bUQ$ 6_bQ\ 6QdSX D\Q^d	7Q\dUh 5ecdbQ\\Q
&	; UQb C\'\ G59) , (	MUc	B_	MUc	MUc	B_	H65	*.','*()*	B_	6_bQ\ 6QdSX D\Q^d	7Q\dUh 5ecdbQ\\Q
'	7F7 -&- . 5Ub_c_\	MUc	MUc	MUc	MUc	B_	H65	.'.'*(),	B_	6_bQ\ 6QdSX D\Q^d	7F7 =^TecdbYUc
)	G\[Q J\cS_SbUdU D7 <F:%*	MUc	B_	B_	MUc	B_	H65	*-'0'*(),	B_	6_bQ\ 6QdSX D\Q^d	G\[Q 5ecd Ddi @dT
!	G\[Q FUdQbTQb B	MUc	B_	B_	MUc	B_	H65	)3'0'*()*	B_	6_bQ\ 6QdSX D\Q^d DbUSQcd MQbT	G\[Q 5ecd Ddi @dT
!	G\[Q D\Qcd\ ] U^d *(	MUc	B_	B_	MUc	B_	H65	-'1'*()+	B_	6_bQ\ 6QdSX D\Q^d	G\[Q 5ecd Ddi @dT
!	G\[Q 5\b	MUc	B_	B_	MUc	B_	H65	)3'3'*()+	B_	6_bQ\ 6QdSX D\Q^d	G\[Q 5ecd Ddi @dT
! !	; U^UbQ\ Deb`_cU 7U] U^d	MUc	MUc	MUc	MUc	B_	H65	*)')'*()-	B_	6_bQ\ 6QdSX D\Q^d	6_bQ\ 7_^cdbeSd_^c AQdUb\Q\c
!"	7_^SbUdU !gUd] \h"	MUc	MUc	B_	MUc	B_	H65	)(''))'*(),	B_	6_bQ\ 6QdSX D\Q^d	6_bQ\ 7_^SbUdU
!#	G\[Q ; b_ed *)*'*)-'*)* <D	MUc	MUc	B_	MUc	B_	H65	)*'.'*()+	B_	6_bQ\ 6QdSX D\Q^d	G\[Q !BN" @dT
!$	6QbbU\\ ?\UU^ GQ\U	MUc	MUc	MUc	MUc	B_	H65	)+')*'*().	B_	6_bQ\ 6QdSX D\Q^d	7XU] dQ\\ !5ecdbQ\Qc\Q Ddi @dT"
!&	7ebU 7bUdU	MUc	B_	B_	MUc	B_	H65	)'0'*()*	B_	DbUSQcd MQbT	G\[Q
! '	Ee\S[@\ ] U	MUc	B_	MUc	MUc	B_	H65	*)')'*()-	B_	GD5	6_bQ\ 7U] Q^d
!)	J\dQ\ 6_^%AQdd D , O%JF) !=; 8"	MUc	B_	B_	MUc	B_	H65	),'))'*()+	B_	8ecd Ub_c_^ S_^db_\ QWU^d	J\dQ\ 7XU] \SQ\ DHM @dT
"	DQcdUeb\jUT ; QbTU^ CbWQ^\Sc Q^T 7_ebcU Ae\SX	MUc	B_	B_	MUc	B_	H65	*'-'*().	B_	DQS\V\S_	DQS\V\S_
"	A_bdU\^ \ebU ^ [\\ S_S[b_QSXU RQ\dc				MUc		H65	)1')*'*()-			
"	:Qcd QSd_^ bQdcQ[gQh R_S[c	MUc	B_	MUc	MUc	B_	H65	+'-'*().	B_	G_edX @QiT_g^ 5bUQ	MQdUc
"!	5^d\RQSdUb\Q\ GebWQSU G`bQi 7\UQ^Ub	MUc	B_	B_	MUc	B_	H65	)'3'*()-	B_	G_edX @QiT_g^ 5bUQ	6b\WXd_^
""	K_b[cX_` 8UWbUQcUb	MUc	MUc	B_	MUc	B_	H65	)')*'*()*	B_	G_edX @QiT_g^ 5bUQ	6b\WXd_^
"#	9] e\c_^ 6\de] U^	MUc	B_	B_	MUc	B_	H65	*3')('*()+	B_	G_edX @QiT_g^ 5bUQ	6_bQ\
"$	I \dbQSbUdU =^cdQ^d F_QT FU`Q\b	MUc	MUc	MUc	MUc	B_	H65	))')*'*()*	B_	G_edX @QiT_g^ 5bUQ	=^cdQb] QS
"&	@\WXd\^\^W :bUcX <Q^T 7\UQ^Ub	MUc	MUc	B_	MUc	B_	H65	)3')*'*().	B_	G_edX @QiT_g^ 5bUQ	@\WXd\^\^W
"'	\Qcd 5Sd_^ KUUT ?\\ 7_^SU^dbQdU	MUc	MUc	MUc	MUc	B_	H65	)'.'*(),	B_	G_edX @QiT_g^ 5bUQ	6be^^\^Wc
")	5^d\ :bUUjU 5^\d R_\ DbU] \h MU_g	MUc	MUc	B_	MUc	B_	H65	+)'0'*()+	B_	G_edX @QiT_g^ 5bUQ	DU^b\dU C\'\ 7_] `Q^i
#	FU^_\\d 9D *	MUc	B_	B_	MUc	B_	H65	*-'))'*().	B_	B& 7_] `_e^T	:eSXc @eRb\SQ^dc
#	7_^cdbeSd_b GQ\U G\dU AQb[Ub DQ\^d	MUc	MUc	MUc	MUc	B_	H65	-'1'*()+	B_	B& 7_] `_e^T	7_^cdbeSd_b GQ\U
#	; i`ce] : ;	MUc	B_	B_	MUc	B_	H65	*'*'*().	B_	HXb_eWX_ed `b_ZUSd	G\RU\S_ 5ecdbQ\\Q @dT
#!	:_cb_S FU^TUb_S <60(	MUc	MUc	B_	MUc	B_	H65	*1'0'*()-	B_	DQS\V\S_ B& 7_] `_e^T	DQbSXU]
#"	:_cb_S FU^TUb_S :7	MUc	MUc	B_	MUc	B_	H65	*1'0'*()-	B_	DQS\V\S_ B& 7_] `_e^T	DQbSXU]
##	:_cb_S B\d_R_^T <5F	MUc	B_	B_	MUc	B_	H65	)'3'*()+	B_	DQS\V\S_ B& 7_] `_e^T	DQbSXU]
#$	:_cb_S B\d_R_^T 5F	MUc	B_	B_	MUc	B_	H65	)'3'*()-	B_	DQS\V\S_ B& 7_] `_e^T	DQbSXU]
#&	5TXUc\fU 7XQ\^ @eRb\SQ^d	MUc	MUc	MUc	MUc	B_	H65	,')('*()-	B_	DQS\V\S_ B& 7_] `_e^T	7F7 =^TecdbYUc & IG5
#'	7edRQS[6\de] U^ Db\ ] Ubc 5A7CC$5A7C 5A7)	MUc	MUc	MUc	MUc	B_	H65	)'+'*(),	B_	DQS\V\S_ B& 7_] `_e^T	GQ] \ 6\de] U^ HUSX^__W\Uc
#)	7edRQS[6\de] U^ Db\ ] Ubc 5A7-$5A7.$5A70	MUc	MUc	MUc	MUc	B_	H65	)'+'*(),	B_	DQS\V\S_ B& 7_] `_e^T	GQ] \ 6\de] U^ HUSX^__W\Uc
$	5^d\c_\ <F	MUc	MUc	MUc	MUc	B_	H65	*('-'*().	B_	DQS\V\S_ B& 7_] `_e^T	G\[Q

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$	G\Y`gQi c\Y`QWU^d	MUc	B_	B_	MUc	B_	H65	)-')('*(),	B_	G_edX @QiT_g^ 5bUQ	JYSd_bY\Q 7XU]YSQ\ 7_&DHM @H8
$	6Yde] U^ 7\Qcc 5F,-(	MUc	B_	MUc	MUc	B_	H65	)')*'*()*	B_	G_edX @QiT_g^ 5bUQ	GQ]Y 6Yde] U^ HUSX^__W\Uc
$!	G\Y`gQi <UQfi 8edi	MUc	MUc	B_	MUc	B_	H65	)-')('*(),	B_	G_edX @QiT_g^ 5bUQ	JYSd_bY\Q 7XU]YSQ\ 7_&DHM @H8
$"	7Qd_^YS FQ`YT GUd 9] e\c_^	MUc	MUc	B_	MUc	B_	H65	)'1'*().	B_	HXb_eWX_ed `b_ZUSd	GQ]Y 6Yde] U^ HUSX^__W\Uc
$#	G5A=\Q\d !5)(9$5)-9$5*(9$5*-9"	MUc	B_	MUc	MUc	B_	H65	)'*'*()+	B_	HXb_eWX_ed `b_ZUSd	GQ]Y 6Yde] U^ HUSX^__W\Uc
$$	@QR_bQd_bi 9dXQ^_\ 8U^QdebUT !] UdXi\QdUT c`Yb\dc"	MUc	MUc	MUc	MUc	B_	H65	)'.'*()+	B_	G_edX @QiT_g^ 5bUQ	@QRdUSX cUbfYSUc Q^T ce``\Uc
$&	<iTbQdUT @Y] U	MUc	MUc	B_	MUc	B_	H65	,'))'*(),	B_	G_edX @QiT_g^ 5bUQ	GYRU\S_ 5ecdbQ\Q @dT
$'	?\U^Qc_\BD6	MUc	MUc	B_	MUc	B_	H65	)')'*()-	B_	G_edX @QiT_g^ 5bUQ	G_\fU^dc 5ecdbQ\Q DHM& @H8
$)	9] Ub%cUQ\F_QTcUQ\	MUc	B_	B_	MUc	B_	H65	),'3'*()-	B_	HXb_eWX_ed c\dU	DQbSXU]
&	GY[QTeb +)',) DQbd 6	MUc	MUc	iUc	MUc	B_	H65	+)'-'*(),	B_	HXb_eWX_ed c\dU	GY[QTeb
&	GY[QTeb +)',) DQbd 5	MUc	MUc	MUc	MUc	B_	H65	+)'-'*(),	B_	HXb_eWX_ed c\dU	GY[QTeb
&	Li`Uh S_^SU^dbQdU$ Li`Uh DQdSX B D\eW	MUc	MUc	B_	MUc	B_	H65	)'*'*(),	B_	HXb_eWX_ed c\dU	LMD9L
&!	LMD9L ;5AA57IF9	MUc	B_	B_	MUc	B_	H65	)'*'*(),	B_	HXb_eWX_ed c\dU	LMD9L
&"	)03%@Y^U 5SSU^d 9hdUb_b @_g GXUU^ 5Sbi\YS	MUc	B_	B_	MUc	B_	H65	.')'*()-	B_	G_edX cUSd_^	8e\eh
&#	DU^Udb_^H_`YSQ\ 7bicdQ\\Y^U Db_TeSdc	MUc	B_	B_	MUc	B_	H65	*+')('*()-	B_	G_edX cUSd_^	DU^Udb_^
&$	=^dUbSbUdU ,1,(DQbd 5	MUc	MUc	B_	MUc	B_	H65	).'.'*(),	B_	G_edX cUSd_^	=^dUb^Qd_^Q\ 5[j_6_RU\Ddi @dT
&&	=^dUbSbUdU ,1,(DQbd 6	MUc	MUc	B_	MUc	B_	H65	).'+'*().	B_	G_edX cUSd_^	=^dUb^Qd_^Q\ 5[j_6_RU\Ddi @dT
&'	:_cb_S7_^SebU L3(	MUc	B_	B_	MUc	B_	H65	)',*()*	B_	HXb_eWX_ed c\dU	DQbSXU] 7_^cdbeSd_^ Ge``\Uc
&)	:_cb_S7_^SebU K+(	MUc	B_	B_	MUc	B_	H65	*+'3'*()-	B_	HXb_eWX_ed c\dU	DQbSXU] 7_^cdbeSd_^ Ge``\Uc
'	:_cb_S7_^SebU 6 3(	MUc	B_	B_	MUc	B_	H65	)+'.'*()0	B_	HXb_eWX_ed c\dU	DQbSXU] 7_^cdbeSd_^ Ge``\Uc
'	:_cb_S7_^SebU 5 33	MUc	B_	B_	MUc	B_	H65	**'3'*()-	B_	HXb_eWX_ed c\dU	DQbSXU] 7_^cdbeSd_^ Ge``\Uc
'	58%H9? De] ` !5aeU_ec c_\ed_^"	MUc	MUc	B_	MUc	B_	H65	0'-'*()*	B_	HXb_eWX_ed c\dU	5T%HU[Ddi @dT
'!	JYdQ\R_]%] Qdd F8G !G0*"	MUc	B_	B_	MUc	B_	H65	+('0'*()+	B_	HXb_eWX_ed c\dU	JYdQ\7XU]YSQ\ DHM @dT
'"	JYdQ\R_^%] Qdd <F	MUc	B_	B_	MUc	B_	H65	)*'+'*(),	B_	HXb_eWX_ed c\dU	JYdQ\7XU]YSQ\ DHM @dT
'#	6QddUbi 5S\T	MUc	MUc	MUc	MUc	B_	H65	+(')('*()-	B_	5\\ D\Q^d ' fUXYS\Uc dXb_eWX_ed c\dU	JQb_ec
'$	7YdbQ%:_bSU <UQfi Tedi TUWbUQcUb	MUc	MUc	B_	MUc	B_	)-@	+)')*'*()-	B_	7\UQ^Y^W `\Q^d	@QRdUSX cUbfYSUc Q^T ce``\Uc
'&	K8%,(D^Ue] QdYf d___Y\	MUc	B_	B_	MUc	B_	) \YdbU	+)'0'*(),	B_	HbQ^Uh	K8%,(7_]`Q^i 5ecdbQ\Q
''	Be_^:e\\i Gi^dXUd\S-K+(8YUcU\U^W\^U_Y\	MUc		MUc	MUc	B_	H65	1'*'*()+	B_	HXb_eWX_ed c\dU	Be_^
')	6YdedXU^U \Yae\T AU] RbQ^U DQbd 5	MUc	MUc	MUc	MUc	B_	*(\YdbU L.	*-'+'*()-	B_	HXb_eWX_ed c\dU	;bQSU 7_
)	6YdedXU^U \Yae\T AU] RbQ^U DQbd 6	MUc	MUc	MUc	MUc	B_	H65	3'+'*()-	B_	HXb_eWX_ed c\dU	;bQSU 7_
)	JQ^TUh 9\QcdY\S\jUb D? 0-	MUc	B_	B_	MUc	B_	H65	)'3'*()+	B_	HXb_eWX_ed c\dU	DQbSXU]
)	9fU^SebU L8G	MUc	MUc	B_	MUc	B_	H65	,'1'*()-	B_	HXb_eWX_ed c\dU	9fU^FQ^WU 7_^SbUdU c_\ed_^c
)!	GXU\\G`YbQh <8 1(K%3(dbQ^c]Ycc_^_Y\	MUc	B_	B_	MUc	B_	H65	*1'1'*()-	B_	HXb_eWX_ed c\dU	GXU_Y\ `b_TeSdc
)"	G_\fYd 7Ydbec 7\UQ^	MUc	MUc	MUc	MUc	B_	H65	-',*().	B_	G_edX @QiT_g^ 5bUQ	@WXdY^Y^W `b_TeSdc
)#	AY^UbQ\ Heb`U^dY^U	MUc	MUc	MUc	MUc	B_	H65	).'-'*().	B_	G_edX @QiT_g^ 5bUQ	FUS_SXU] =^S
)$	6eY\Ub c_\ed_^`<, S__eb S_TUT bUT	MUc	B_	B_	MUc	B_	H65	)'-'*(),	B_	G_edX @QiT_g^ 5bUQ	=_^_TU Ddi @dT
)&	@Q^_dUS FU\UQcU QWU^d	MUc	B_	B_	MUc	B_	H65	)'3'*().	B_	HXb_eWX_ed c\dU	@Q^_dUS
)'	Li`Uh AUWQ]Yh))	MUc	MUc	B_	MUc	B_	H65	*+'))'*().	B_	HXb_eWX_ed c\dU	Li`Uh 5ecdbQ\Q
))	5ddQS[5^ CT_eb%=^T__b	MUc	MUc	MUc	MUc	B_	)(@YdbUc	)')('*().	B_	HXb_eWX_ed c\dU	DUUb\Ucc >Q\Ddi @dT
	;e]`d_^Ae\dY Deb`_cU 7\UQ^Ub	MUc	B_	B_	MUc	B_	H65	)'))'*()+	B_	HXb_eWX_ed c\dU	7_b_h 5ecdbQ\Q

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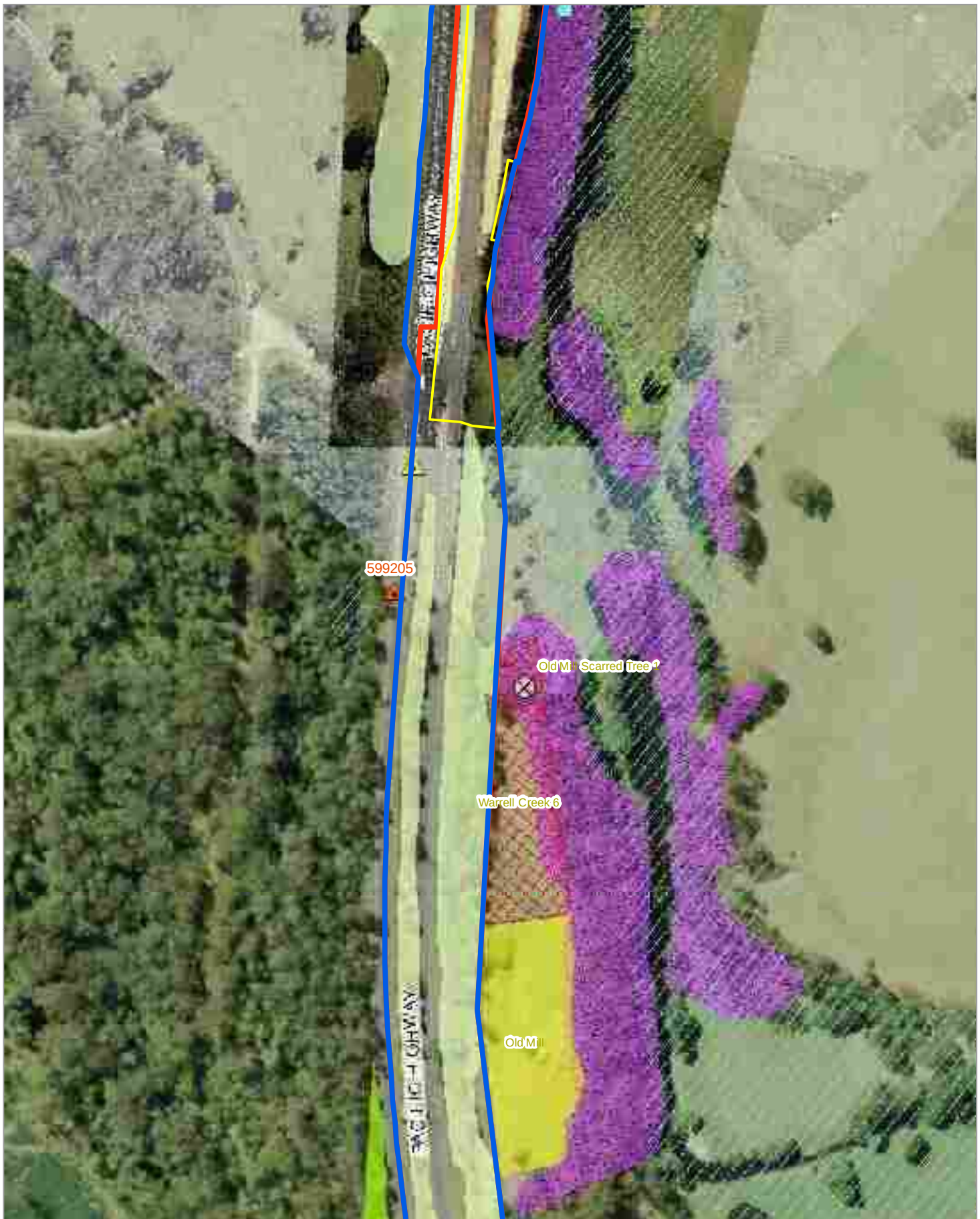
Project:WC2NH Pacific Highway Upgrade

Last Up Date: ,'(,'*()0

SDS #No	Substance or Goods Name	Current SDS supplied Yes/No	Hazard Substance Yes/No	Dangerous Goods Yes/No	Risk Assessment Yes/No	SWMS Yes/No	Amount Typically Stored (Litres/kg etc)	Date of SDS	Workplace Monitoring or Health Surveillance Required Y/N	Contract using & Location	Supplier Details
	BUg 5WU 6Qbb\Ub 7bUQ]	MUc	B_	B_	MUc	B_	H65	)')('*().	B_	HXb_eWX_ed c\dU	@\WXd^Y^W Db_TeSdc
	@U] _^ T\c\^\USdQ^d < _c ` \dQ\ ; bQTU	iUc	B_	B_	MUc	B_	+(@\dbU	)'-'*().	B_	HXb_eWX_ed c\dU	6b\WXd_^ Db_\Ucc_^Q\
!	AQSX\^U F\^SU 5\T T\cXgQcXUb	MUc	B_	B_	MUc	B_	+(@\dbU	)')*'*()*	B_	HXb_eWX_ed c\dU	6b\WXd_^ Db_\Ucc_^Q\
"	<Qb ` \S 6\eU :bUcX : _Q] \^W 6\eU :bUcXU^Ub	MUc	MUc	B_	MUc	B_	H65	3'3'*()-	B_	HXb_eWX_ed c\dU	FUS[\dd 6U^S[\cUb
#	JQ\eU @\ae\T <Q^TgQcX	MUc	B_	B_	MUc	B_	H65	)')'*(),	B_	HXb_eWX_ed c\dU	6b\WXd_^ Db_\Ucc_^Q\
$	7__\Q^d FQT\Qd_b :\e\T	MUc	MUc	B_	MUc	B_	) @\dbU	)')*'*()*	B_	G_edX @QiT_g^ 5bUQ	Ee\S[G] Qbd
&	7H*(KQc^ B KQh	MUc	B_	B_	MUc	B_	) \\dbU	)')'*()+	B_	G_edX @QiT_g^ 5bUQ	=HK 55A HUSX
'	7XeRR 569 8FM 7XU] \SQ\ ` _gTUb : \bU 9hd	MUc	MUc	MUc	MUc	B_	H65	)'0'*()+	B_	HXb_eWX_ed c\dU	7XeRR \\bU Q^T cUSeb\di
)	6\de] U^ 9] e\c_^c	MUc	B_	B_	MUc	B_	H65	)'.'*()+	B_	HXb_eWX_ed c\dU	6\deSXU] 6e\\T\^W Db_TeSdc @dT
	:_cb_S 7_^SebU K6+(KX\dU	MUc	B_	B_	MUc	B_	H65	1'3'*)(-	B_	HXb_eWX_ed c\dU	DQbSXU]

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- ? Identified archaeological location
- Non-Aboriginal heritage site
- Microbat roost site/habitat
- Microbat roost site/habitat - GeoLINK
- (Parsonia dorrigoensis
- Moist Open Forest - Flooded Gum
- Moist Open Forest - White Mahogany - Grey Gum
- Open Forest - Blackbutt
- Mixed Floodplain Forest

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Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 1 of 27

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- ? Identified archaeological location
- Non-Aboriginal heritage site
- Facade treatments to noise receivers
-) Sensitive noise receiver
- 0 Microbat roost site/habitat - GeoLINK
- (Parsonia dorrigoensis
- (Niemeyera whitei - GeoLINK
- R Habitat trees
- Giant Barred frog habitat - Environmental Management Plan
- Giant Barred frog habitat -GeoLINK
- Mixed Floodplain Forest (EEC)
- Moist Open Forest - Flooded Gum
- Mixed Floodplain Forest

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Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 2 of 27

Information shown is for illustrative purposes only

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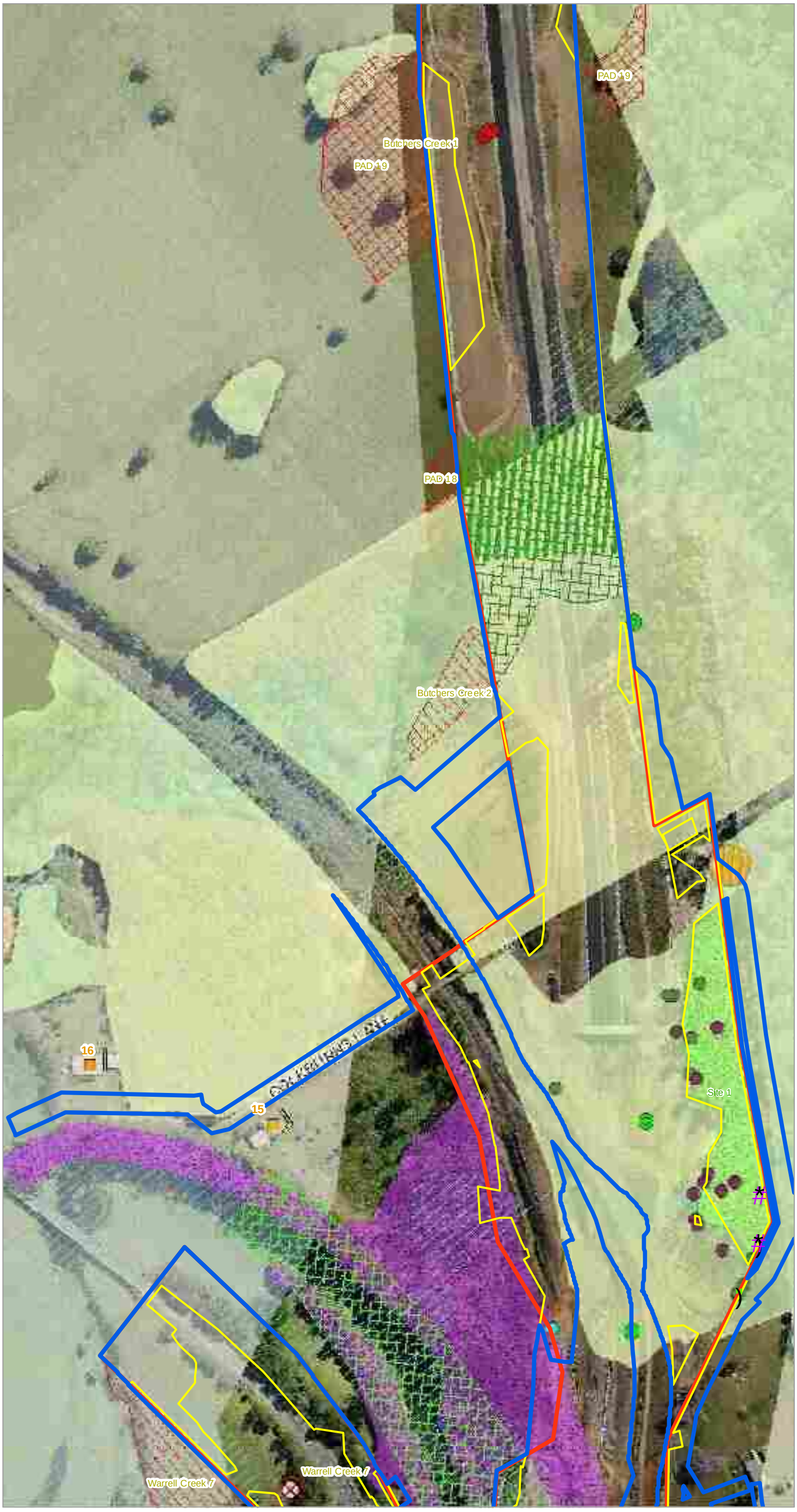
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- ? Identified archaeological location
- Potential contaminated site
- Facade treatments to noise receivers
-) Sensitive noise receiver
- (Marsdenia longiloba
- (Niemeyera whitei
-) Habitat tree
- # Rusty Plum
- (Niemeyera whitei - GeoLINK
- R Habitat trees - GeoLINK
- R Habitat trees
- Translocation receival site
- Giant Barred frog habitat - Environmental Management Plan
- Giant Barred frog habitat -GeoLINK
- Likely Giant Barred frog habitat
- Potential Giant Barred frog habitat - GeoLINK
- Mixed Floodplain Forest (EEC)
- Moist Open Forest - Flooded Gum
- Hardwood Plantation - mostly cleared
- Mixed Floodplain Forest

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Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 3 of 27

Information shown is for illustrative purposes only

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Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Habitat trees
- Moist Open Forest - Flooded Gum
- Open Forest - Blackbutt
- Lowland Rainforest

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Sensitive Area Plans

Information shown is for illustrative purposes only

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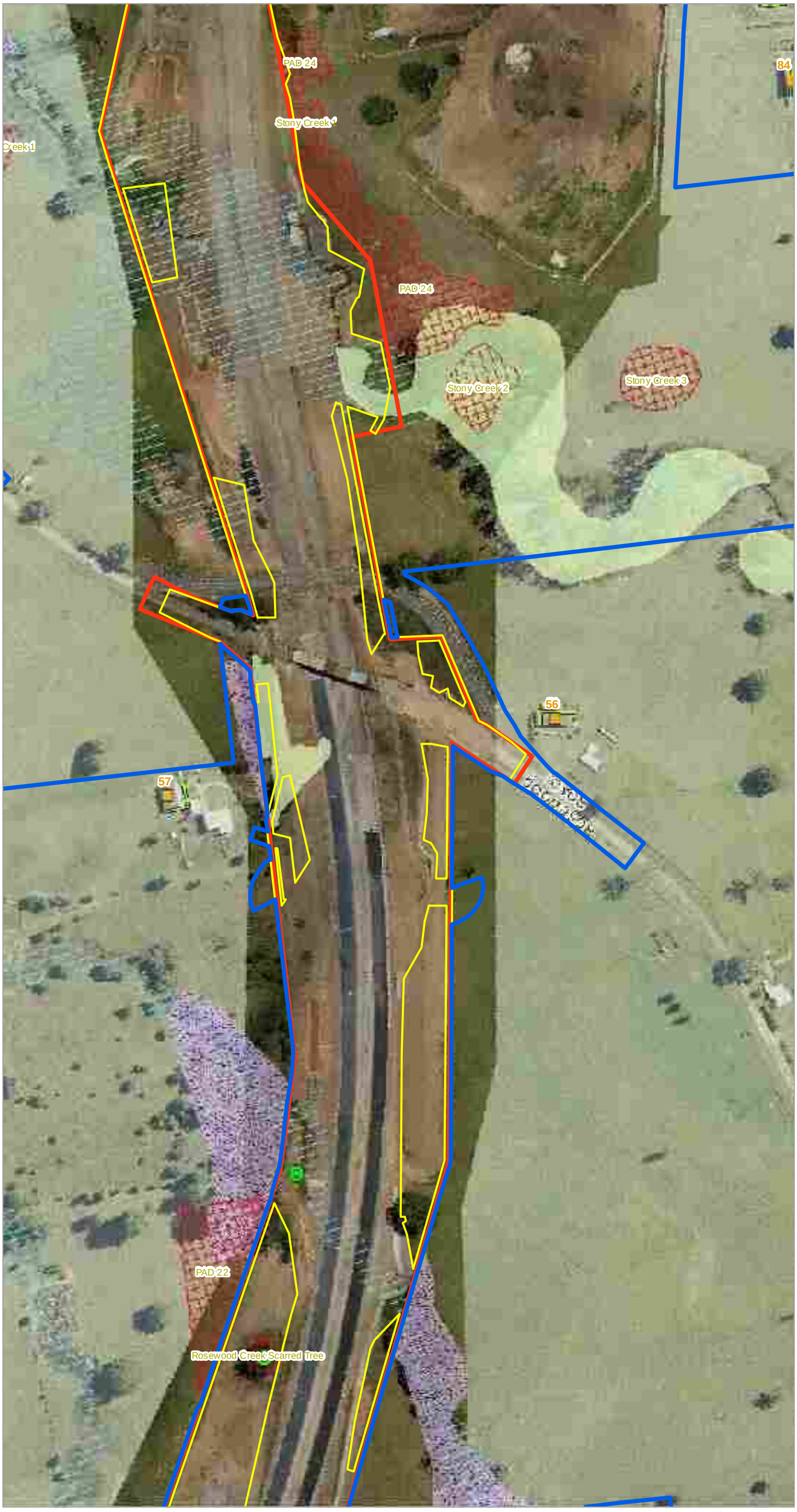
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Habitat trees
- Moist Open Forest - Flooded Gum
- Lowland Rainforest

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Sensitive Area Plans

Information shown is for illustrative purposes only

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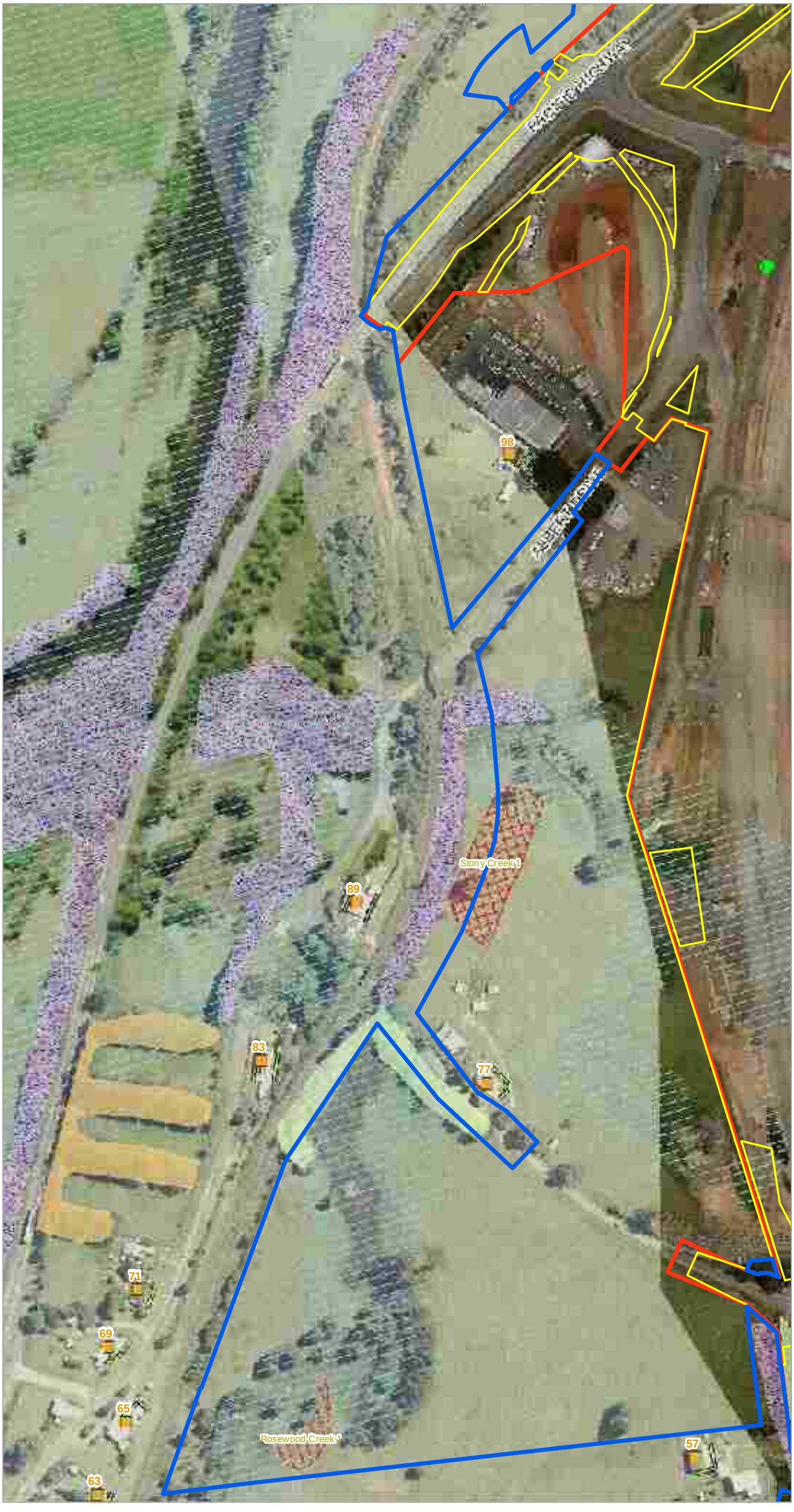
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Habitat trees
- Moist Open Forest - Flooded Gum
- Lowland Rainforest

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Sensitive Area Plans

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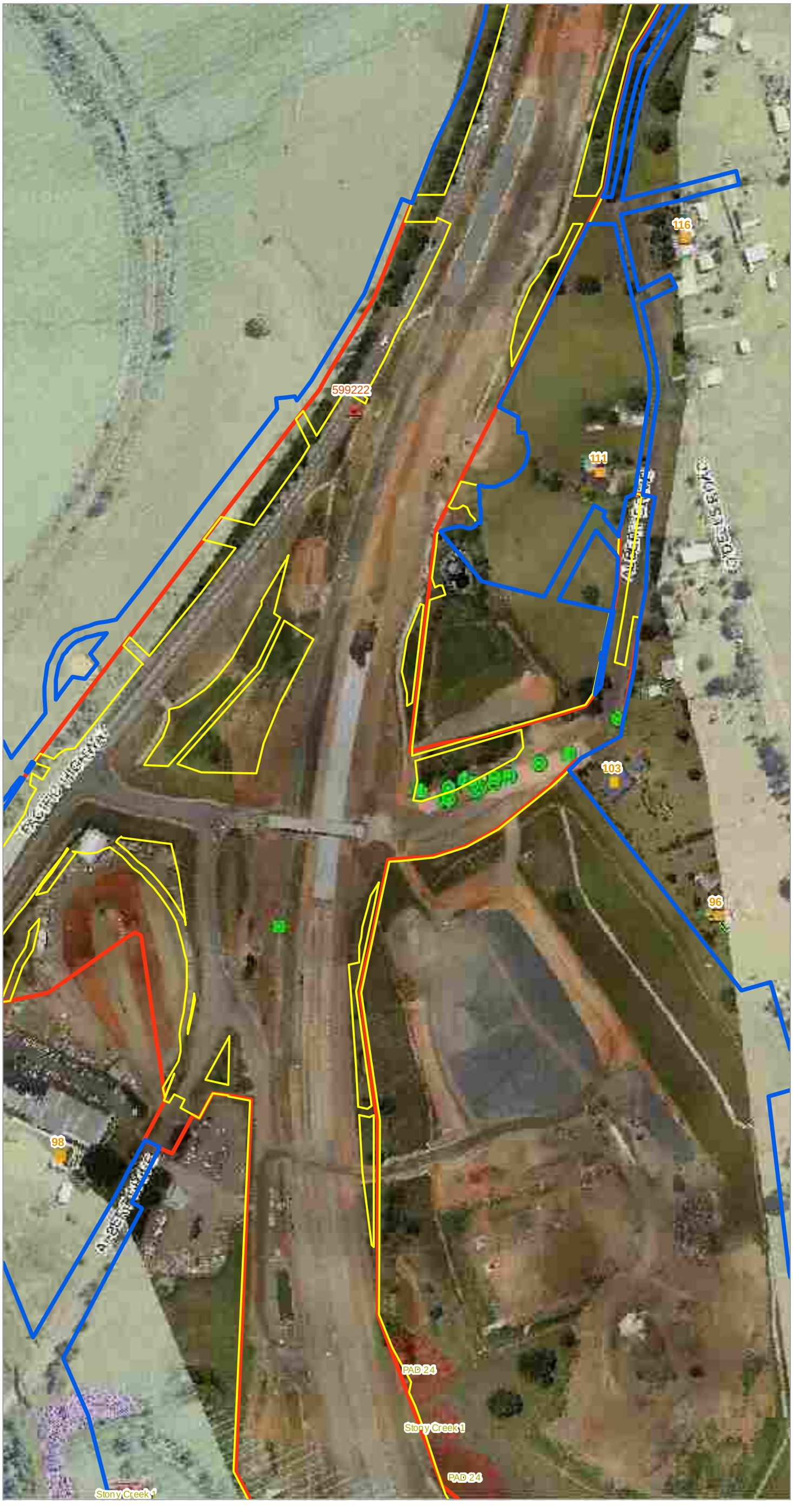
Source of base data: Roads and Maritime Services and AFJV



LEGEND
- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Microbat roost site/habitat
- Habitat trees
- Open Forest - Blackbutt
- Lowland Rainforest

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Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 7 of 27

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Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- ? Identified archaeological location
- Facade treatments to noise receivers
-) Sensitive noise receiver
- (Maundia triglochinoides
- Microbat roost site/habitat
- R Hollow-bearing tree/Habitat tree
- Location of Maundia
- Moist Open Forest - White Mahogany - Grey Gum
- Lowland Rainforest

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Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 8 of 27

Information shown is for illustrative purposes only

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Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Facade treatments to noise receivers
- Sensitive noise receiver
- Alexfloydia repens
- Microbat roost site/habitat
- Habitat tree GeoLINK 15/05/2015
- Floyd's Grass habitat
- Hollow-bearing tree/Habitat tree
- Habitat trees
- Mixed Floodplain Forest (EEC)
- Moist Open Forest - White Mahogany - Grey Gum
- Regrowth Swamp Oak
- Mixed Floodplain Forest
- Swamp Forest - Swamp Oak

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Sensitive Area Plans

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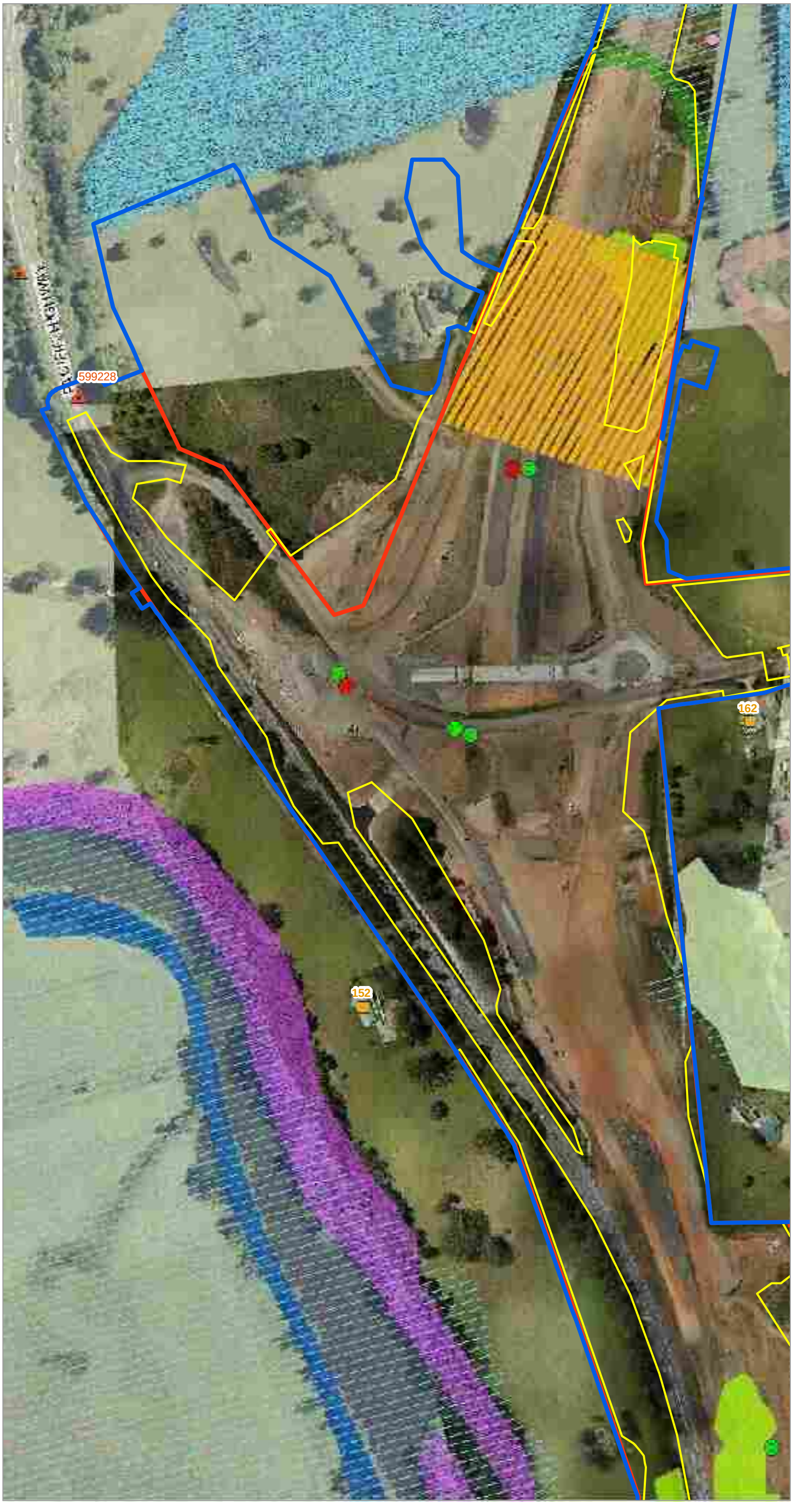
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Potential contaminated site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Maundia triglochinoides
- Microbat roost site/habitat
- Habitat trees - GeoLINK
- Habitat trees
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Swamp Oak Forest (EEC)
- Moist Open Forest - White Mahogany - Grey Gum
- Mixed Floodplain Forest
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

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Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Potential contaminated site
- Facade treatments to noise receivers
-) Sensitive noise receiver
- (Maundia triglochinoides
- R Habitat trees
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Swamp Oak Forest (EEC)
- Moist Open Forest - White Mahogany - Grey Gum
- Mixed Floodplain Forest
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

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Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- Facade treatments to noise receivers
-) Sensitive noise receiver
- (Maundia triglochinoides
- Flying Fox camp (Jan 2015)
- Location of Maundia
- Freshwater Wetlands (EEC)
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Swamp Oak Forest (EEC)
- Freshwater Wetlands
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

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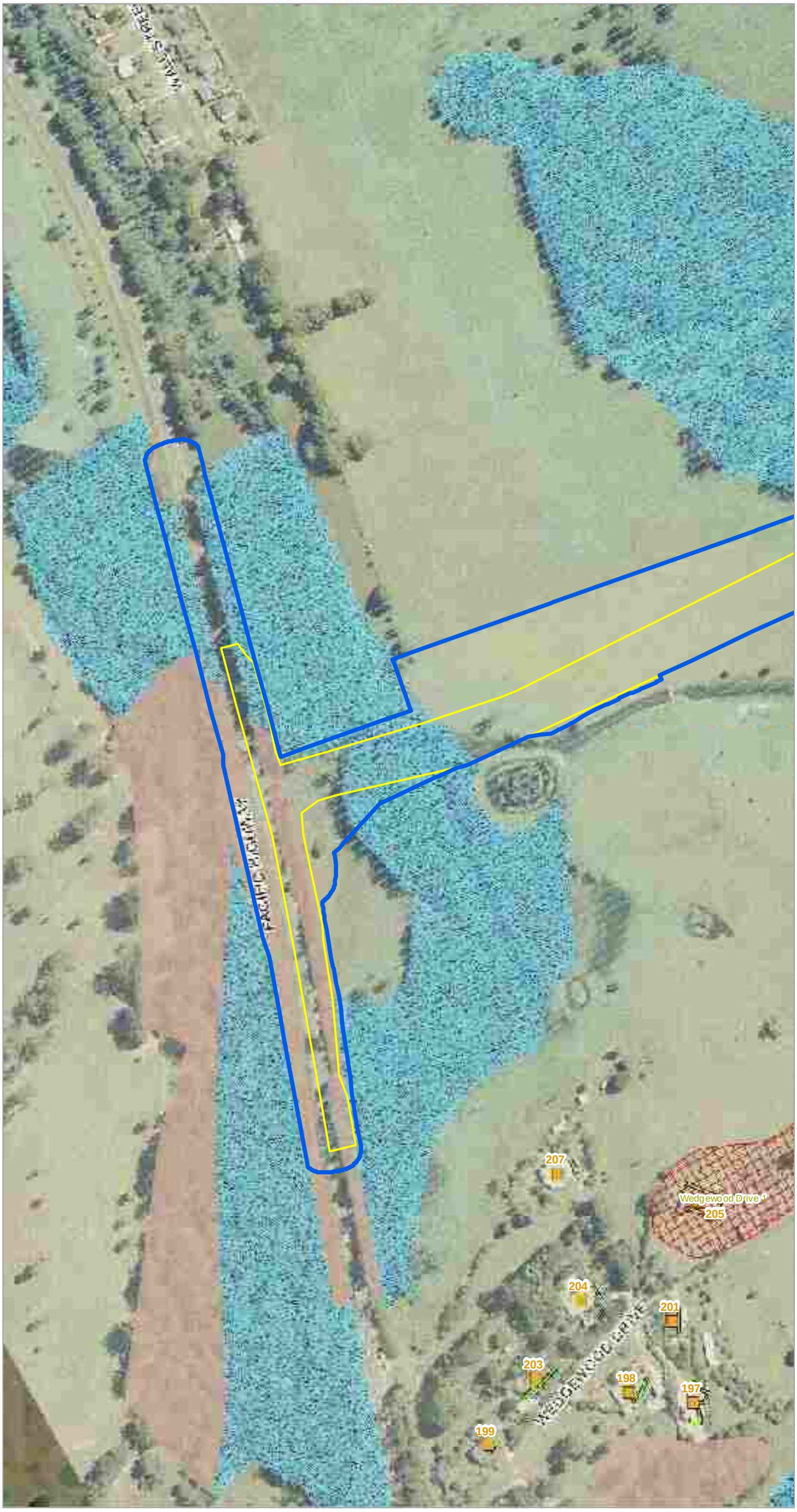
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Archaeological PAD/Site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Open Forest - Blackbutt
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

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Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- SEPP14 wetland
- Maundia triglochinoides
- Habitat trees
- Location of Maundia
- Freshwater Wetlands (EEC)
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Freshwater Wetlands
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

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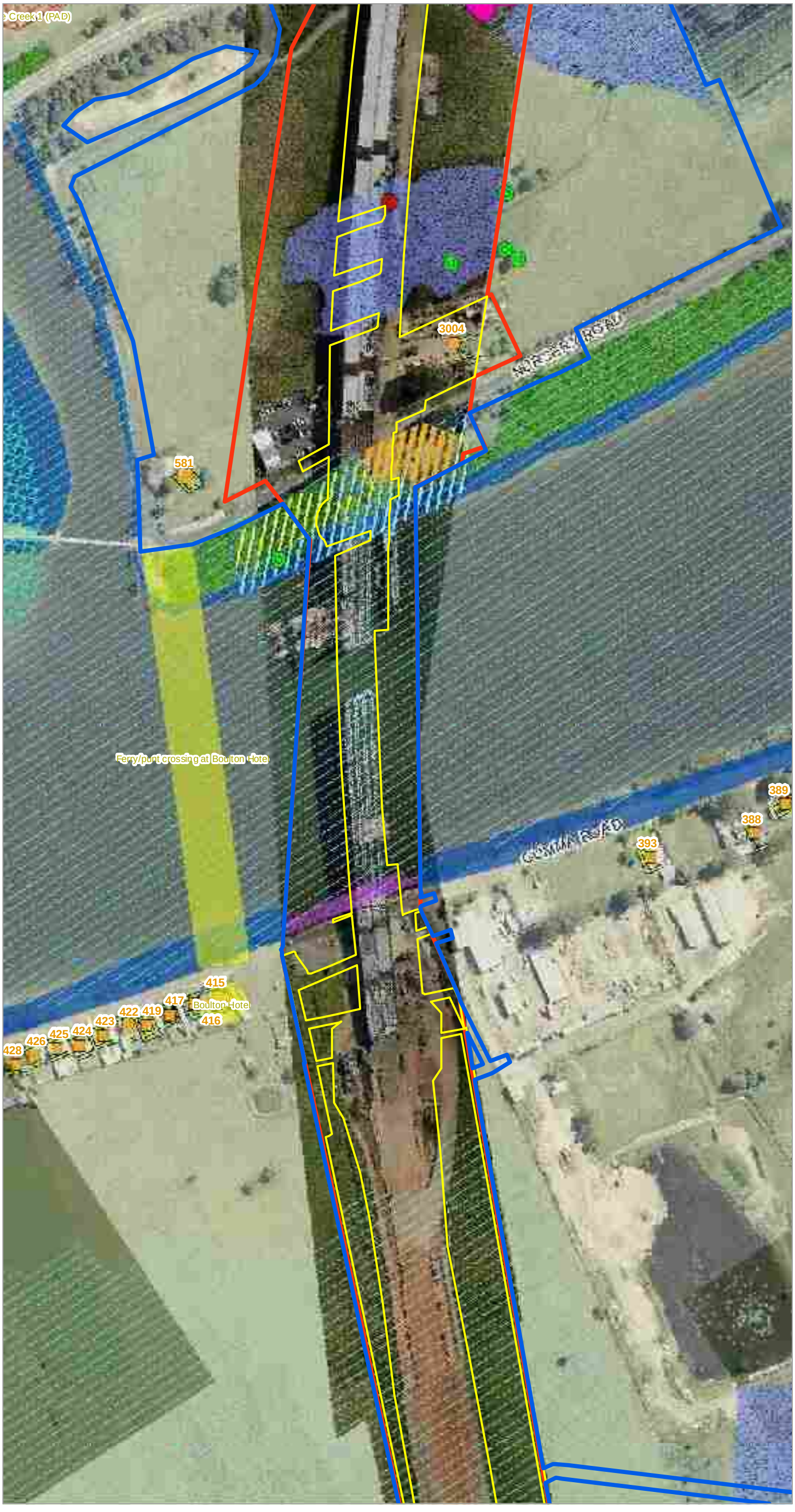
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- SEPP14 wetland
- Archaeological PAD/Site
- Non-Aboriginal heritage site
- Potential contaminated site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Habitat trees - GeoLINK
- Habitat trees
- Persicaria elatior
- Mangrove and pneumataphores
- Salt marsh
- Freshwater Wetlands (EEC)
- Mixed Floodplain Forest (EEC)
- Swamp Oak Forest (EEC)
- Mangrove Forest
- Freshwater Wetlands
- Swamp Forest - Swamp Oak

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Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 15 of 27

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Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Macksville Hospital - Early works EPL boundary
- 20yr ARI flood
- SEPP14 wetland
- Archaeological PAD/Site
- Facade treatments to noise receivers
- Sensitive noise receiver
- Microbat roost site/habitat
- Hollow-bearing tree/Habitat tree
- Habitat trees - GeoLINK
- Habitat trees
- Persicaria elatior
- Freshwater Wetlands (EEC)
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Swamp Oak Forest (EEC)
- Saltmarsh EEC
- Moist Open Forest - White Mahogany - Grey Gum
- Regrowth Swamp Oak
- Lowland Rainforest
- Swamp Forest - Swamp Oak
- Saltmarsh

0 60

Sensitive Area Plans

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV

LEGEND

- Clearing limit
- Pacifico EPL Boundary
- Macksville Hospital - Early works EPL boundary
- Archaeological PAD/Site
- ? Identified archaeological location
- Facade treatments to noise receivers
-) Sensitive noise receiver
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

Information shown is for illustrative purposes only

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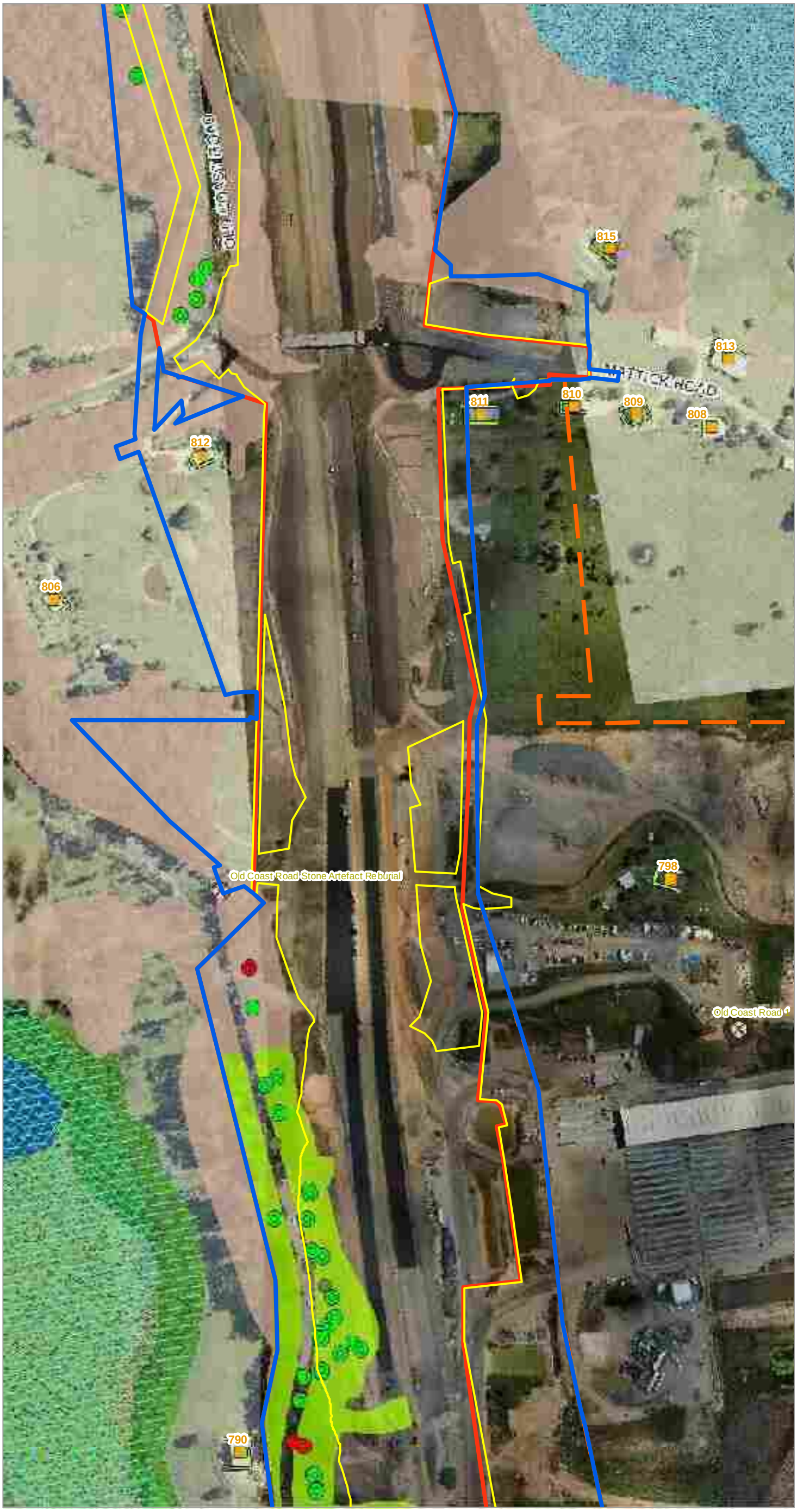
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Macksville Hospital - Early works EPL boundary
- 20yr ARI flood
- SEPP14 wetland
- Archaeological PAD/Site
- ? Identified archaeological location
- Facade treatments to noise receivers
-) Sensitive noise receiver
- (Marsdenia longiloba
- R Hollow-bearing tree/Habitat tree
- R Habitat trees - GeoLINK
- R Habitat trees
- Moist Open Forest - White Mahogany - Grey Gum
- Open Forest - Blackbutt
- Swamp Forest - Swamp Mahogany / Paperbark
- Swamp Forest - Swamp Oak
- Saltmarsh

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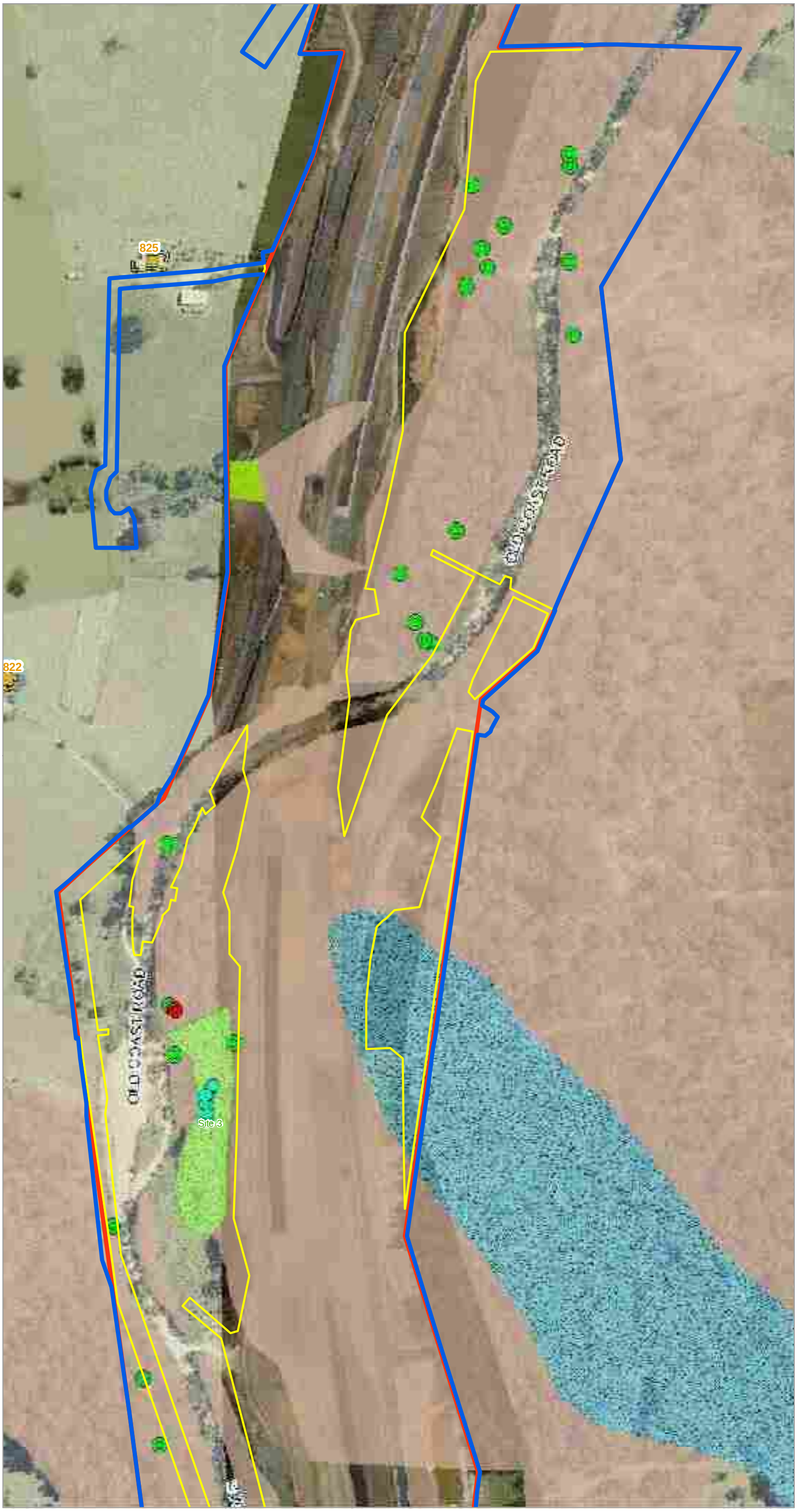
Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 18 of 27

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- 20yr ARI flood
- Facade treatments to noise receivers
-) Sensitive noise receiver
- (Translocated Marsdenia longiloba
- R Hollow-bearing tree/Habitat tree
- R Habitat trees - GeoLINK
- R Habitat trees
- Translocation receival site
- Swamp Forest - Swamp Mahogany/ Paperbark EEC
- Moist Open Forest - White Mahogany - Grey Gum
- Open Forest - Blackbutt
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
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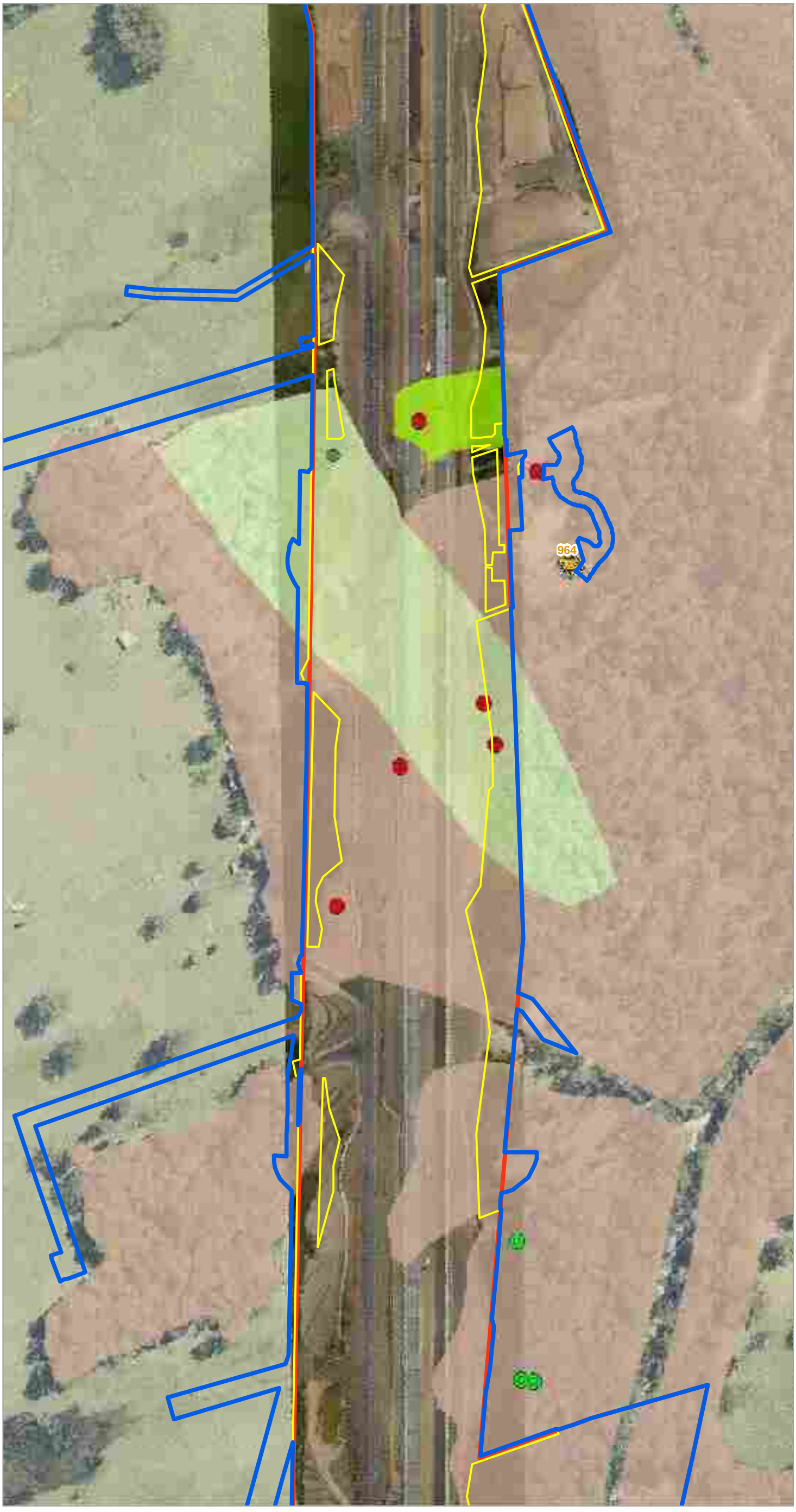

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Facade treatments to noise receivers
-) Sensitive noise receiver
- (Marsdenia longiloba
- R Habitat trees - GeoLINK
- R Habitat trees
- Moist Open Forest - Flooded Gum
- Moist Open Forest - White Mahogany - Grey Gum
- Open Forest - Blackbutt

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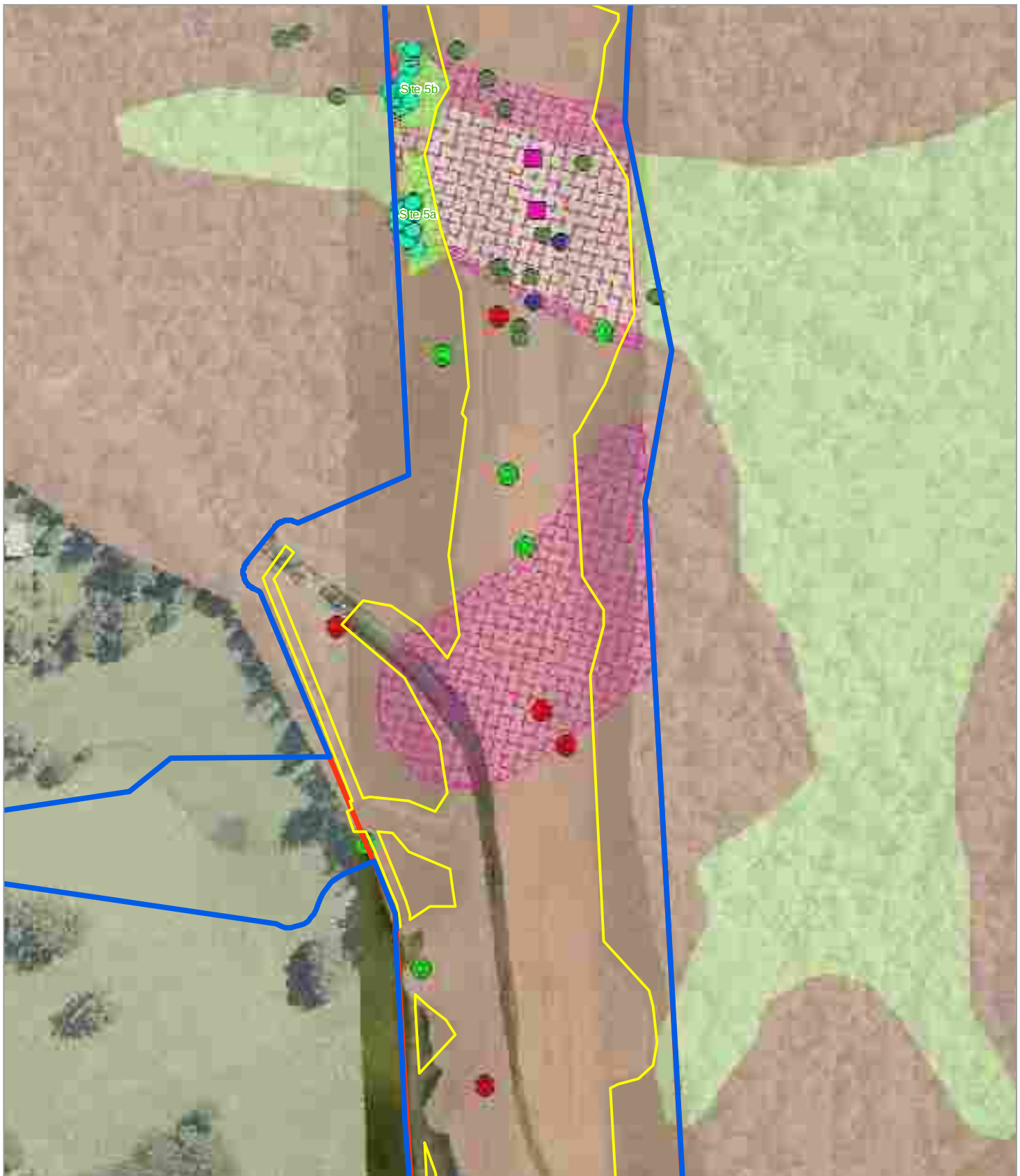
Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 20 of 27

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Translocated Marsdenia longiloba
- Additional Artanema fimbriatum
- Goodenia fordiana
- Marsdenia longiloba
- Slender Marsdenia - GeoLINK
- Hollow-bearing tree/Habitat tree
- Habitat trees - GeoLINK
- Habitat trees
- Translocation receival site
- Potential Likely Green-thighed frog habitat - GeoLINK
- Moist Open Forest - Flooded Gum
- Open Forest - Blackbutt

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Sensitive Area Plans

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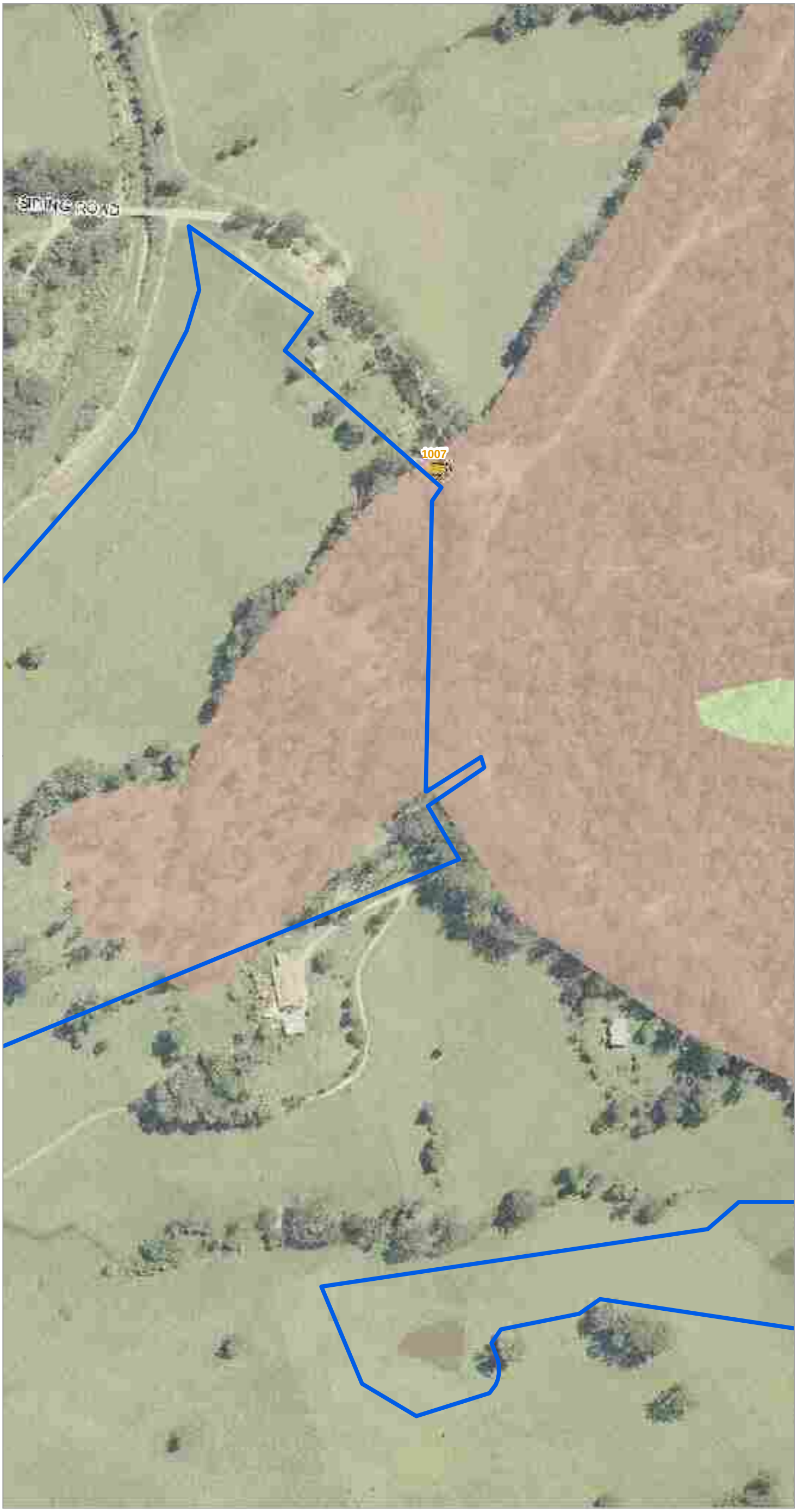
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Pacifico EPL Boundary
- Facade treatments to noise receivers
- Sensitive noise receiver

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Sensitive Area Plans

WC2NH
2378-1457 - Rev G - 14/08/2018

Map Sheet 22 of 27

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV

LEGEND
Pacifico EPL Boundary
20yr ARI flood

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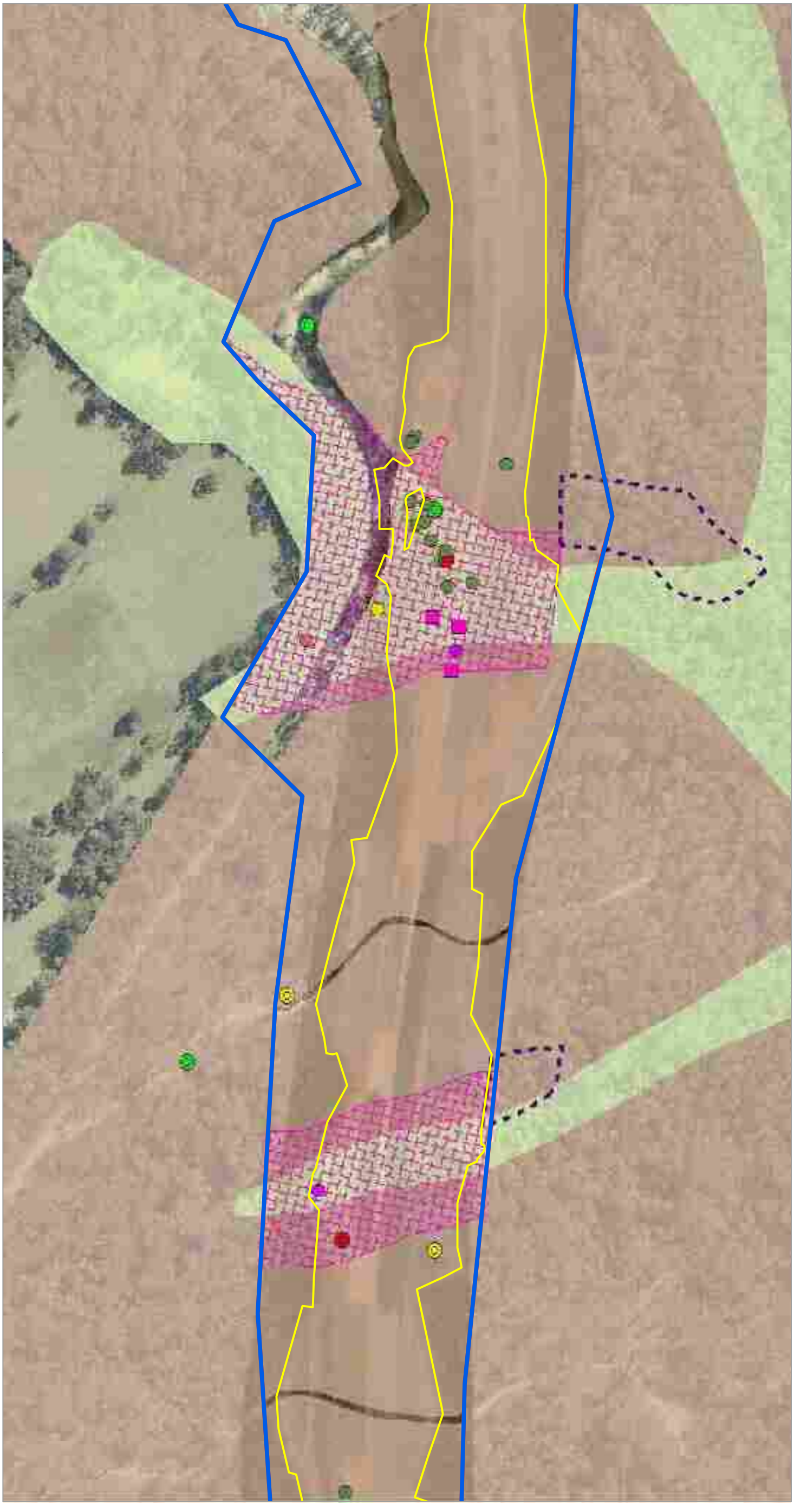
Sensitive Area Plans

Map Sheet 23 of 27

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: RE Date: 14/08/2018
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Cabbage tree palm resource site
- Additional Artanema fimbriatum
- Artanema fimbriatum
- Marsdenia longiloba
- Pseudovanilla foliata
- Caladenia (Spider Orchid)
- Green-thighed frog breeding pond
- Habitat trees - GeoLINK
- Habitat trees
- Potential Likely Green-thighed frog habitat - GeoLINK
- Moist Open Forest - Flooded Gum
- Open Forest - Blackbutt

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Sensitive Area Plans

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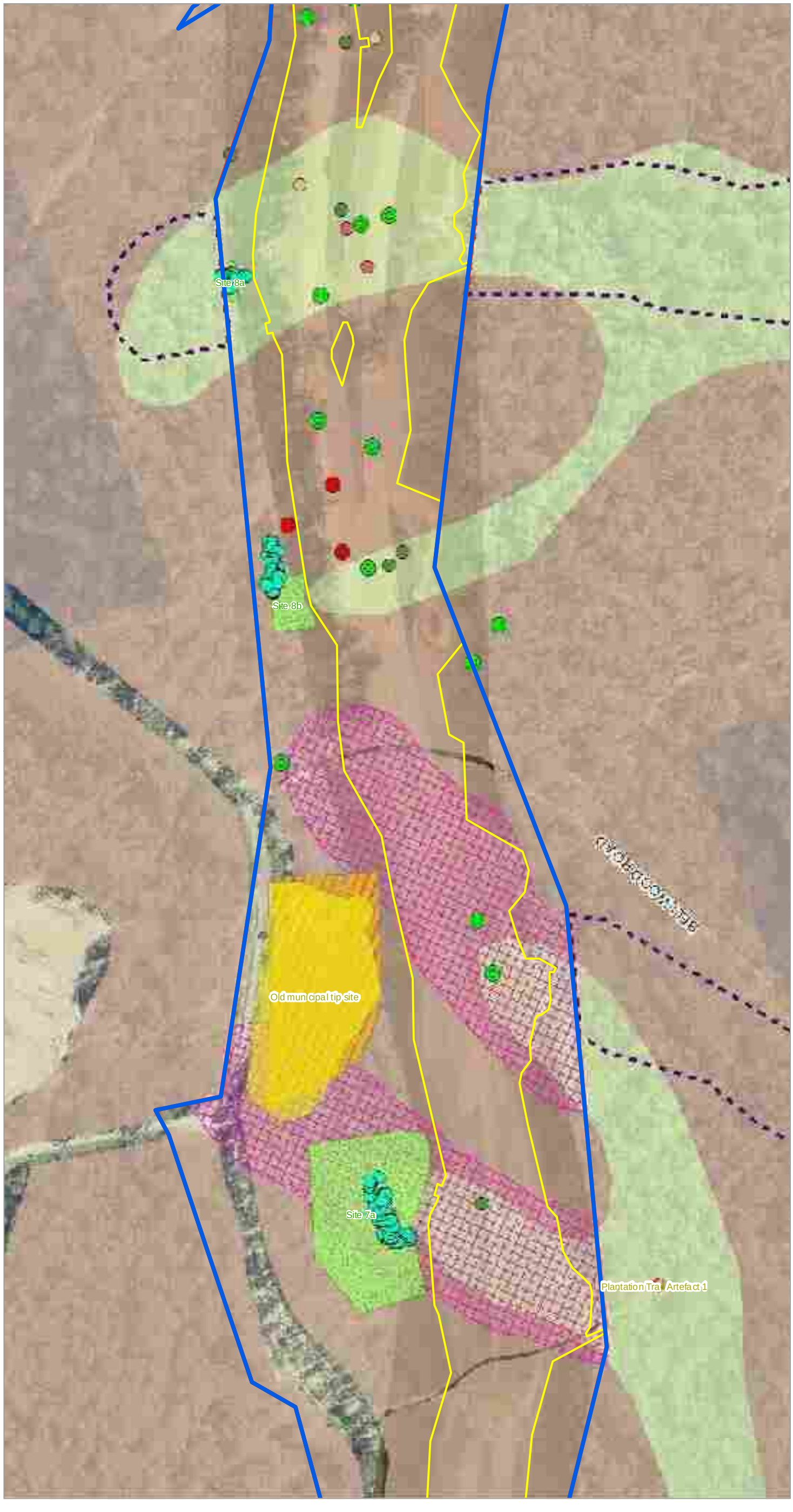
Source of base data: Roads and Maritime Services and AFJV



LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Archaeological PAD/Site
- Non-Aboriginal heritage site
- Cabbage tree palm resource site
- Potential contaminated site
- Translocated Marsdenia longiloba
- Marsdenia longiloba
- Tylophora woollsii
- Caladenia (Spider Orchid)
- Habitat trees - GeoLINK
- Habitat trees
- Translocation receival site
- Potential Likely Green-thighed frog habitat - GeoLINK
- Moist Open Forest - Flooded Gum
- Open Forest - Blackbutt

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Sensitive Area Plans

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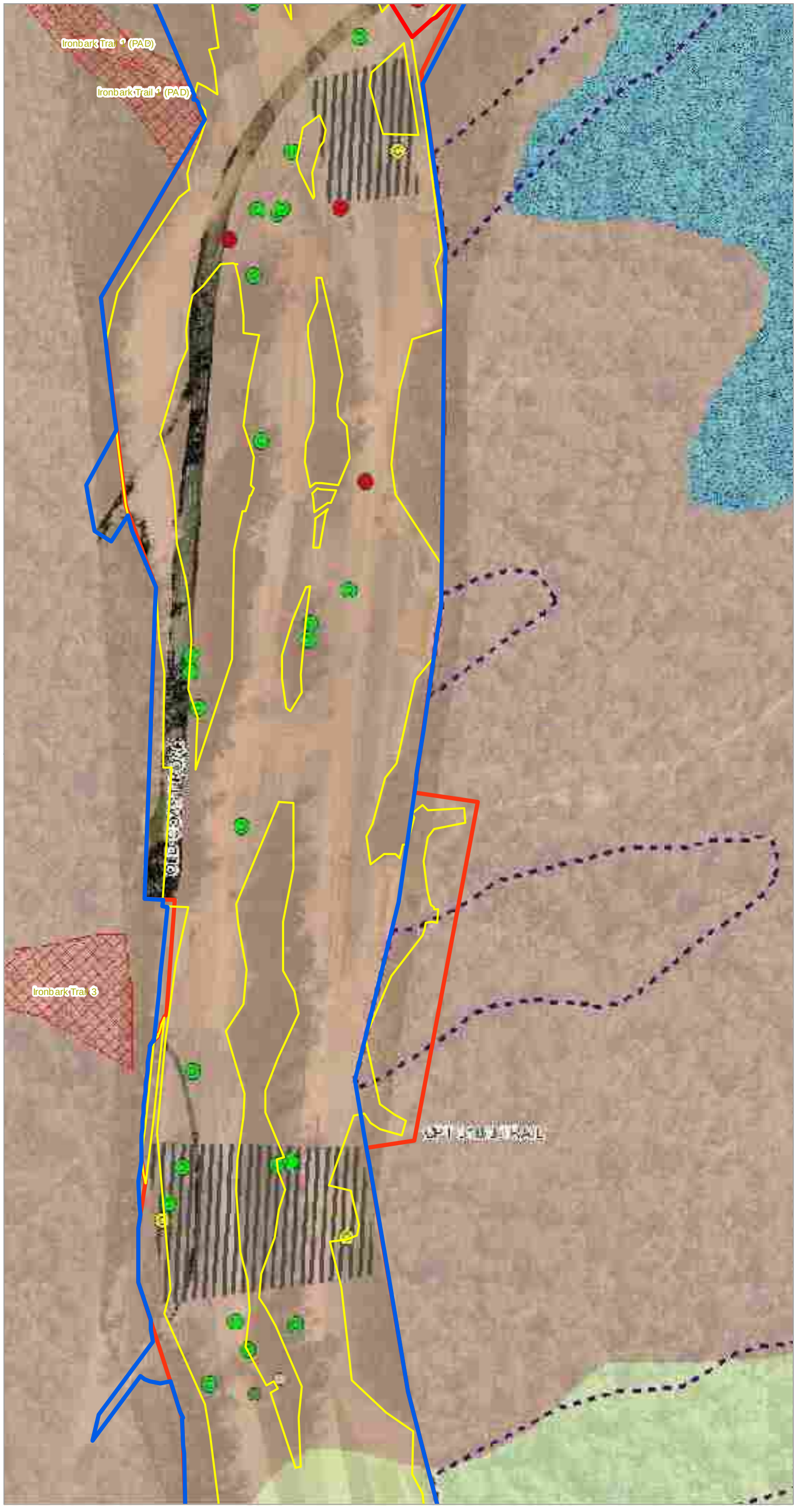

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Archaeological PAD/Site
- Cabbage tree palm resource site
- Marsdenia longiloba
- Tylophora woollsii
- Green-thighed frog breeding pond
- Habitat trees - GeoLINK
- Habitat trees
- Green-thighed frog habitat
- Moist Open Forest - Flooded Gum
- Open Forest - Blackbutt
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans

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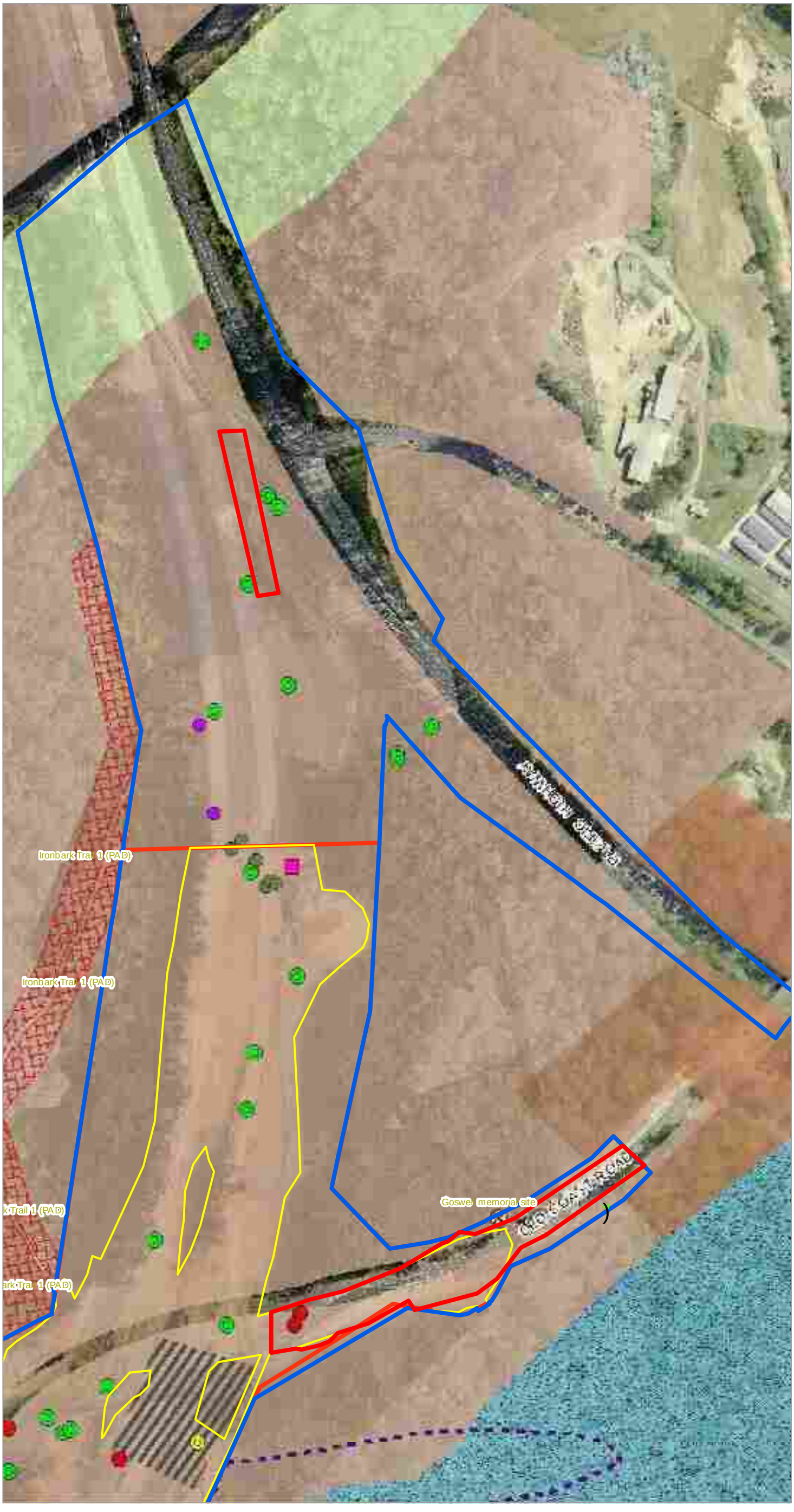

LEGEND

- Site boundary
- Clearing limit
- Pacifico EPL Boundary
- Archaeological PAD/Site
- ? Identified archaeological location
- Cabbage tree palm resource site
-) Additional Artanema fimbriatum
- (Artanema fimbriatum
- (Marsdenia longiloba
-) Habitat tree
- R Green-thighed frog breeding pond
- R Habitat trees - GeoLINK
- R Habitat trees
- Green-thighed frog habitat
- Open Forest - Blackbutt
- Swamp Forest - Swamp Mahogany / Paperbark

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Sensitive Area Plans