



## Approval

### Pacific Highway Upgrade, Warrell Creek to Nambucca Heads, NSW (EPBC 2013/7101)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

#### Proposed action

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**person to whom the approval is granted** Roads and Maritime Services

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**proponent's ABN** 76 236 371 088

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**proposed action** To upgrade approximately 19.5 kilometres (km) of the Pacific Highway, from the northern end of Allgoamera deviation, south of Warrell Creek to Old Coast Road, west of Nambucca Heads, on the mid north coast of New South Wales (NSW) [See EPBC Act referral 2013/7101].

#### Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved with conditions

#### conditions of approval

This approval is subject to the conditions specified below.

#### expiry date of approval

This approval has effect until 31 December 2064.

#### Decision-maker

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**name and position** James Tregurtha  
Assistant Secretary  
South-Eastern Australia Environment Assessments

#### signature

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**date of decision** 11 DECEMBER 2014

## Conditions attached to the approval

### Impacts

1. The **approval holder** must not **clear** more than:
  - a) 17.80 hectares (ha) of **Slender Marsdenia/Clear Milkvine and Wooll's Tylophora/Cryptic Forest Twiner habitat**;
  - b) 106.60 ha of **Koala habitat**, including 86.50 ha critical to the survival;
  - c) 106.60 ha of **Grey-headed Flying-fox habitat**, comprised of 103.50 ha of foraging habitat critical to survival and 3.10 ha of roosting habitat critical to survival;
  - d) 113.30 ha of **Spotted-tail Quoll habitat**;
  - e) 0.70 ha of **Giant Barred Frog habitat**;
  - f) 0.40 ha of Australian Painted Snipe (*Rostratula australis*) wetland habitat;
  - g) 5.30 ha of Regent Honeyeater (*Anthochaera phrygia*) and Swift Parrot (*Lathamus discolor*) wintering habitat, comprising dry sclerophyll forests containing Swamp Mahogany; and
  - h) 24.30 ha of Parsonsia dorrigoensis (*Milky Silkpod*) habitat, comprising Mixed Floodplain Forest, Flooded Gum Open Forest and White Mahogany/Grey Gum/Ironbark Open Forest.
2. Within 30 days of the **completion of construction**, the **approval holder** must:
  - a) notify the **Minister** in writing of the **completion of construction**; and
  - b) provide a report (supported by maps) that clearly shows the location of all **threatened species**, including the number of individuals of threatened flora and their **habitat cleared** as a result of **action**, which demonstrates compliance with Condition 1.

### Management Plans

3. The **approval holder** must undertake the **action** and implement all mitigation measures in accordance with the **Koala Management Plan, Grey-headed Flying-Fox Management Plan, Spotted-tail Quoll Management Plan and Giant Barred Frog Management Plan**. These **Plans** must be implemented.
4. To mitigate impacts to **threatened species**, the **approval holder** must submit the Flora and Fauna Management Sub Plan and Construction Environment Management Plan to the **Department** for approval prior to **commencement**. The Plans must include the additional mitigation measures not included in the **management plans** and as described in the **Biodiversity Offset Strategy**. The approved **plans** must be implemented.
5. In the event of any inconsistency, ambiguity or discrepancy between the **management plans** and the Flora and Fauna Management Plan or the Construction Environmental Management Plan, the **management plans** have precedence.

### *Threatened Flora Management Plan*

6. Prior to **commencement**, the **approval holder** must amend the monitoring program proposed in the **Threatened Flora Management Plan** to:
  - a) include detailed monitoring methodology designed to monitor the success of the management and mitigation measures proposed for pre-construction, construction and operations; and
  - b) ensure all performance thresholds, corrective actions and monitoring/timing frequency are specific, measurable, auditable, enforceable and time-bound to monitor the success of the management and mitigation measures proposed.
7. The **approval holder** must not **commence** the **action** until the **Threatened Flora Management Plan** has been approved by the **Minister**. The approved **Threatened Flora Management Plan** must be implemented.

### *All Management Plans*

8. The **approval holder** must monitor all mitigation measures until they are demonstrated to be successful, and with written agreement from the **Department**.
9. If **MNES** not previously identified and reported to the **Department**, are found in the **action** area, the **approval holder** must notify the **Department** in writing within five business days of finding the **MNES**, and within a further 30 business days, the **approval holder** must outline in writing how **impacts** to these **MNES** will be avoided, mitigated and/or **offset**.
10. Prior to **commencement**, all **management plans** must be made publicly available on the **approval holder's website**, for 10 years following **commencement**. The monitoring results must also be made available on request for the duration of the **approval**.
11. The **approval holder** must make all monitoring results required by the **management plans** publicly available on the **approval holder's website** within two months of the monitoring event, for 10 years following **commencement**. The monitoring results must also be made available on request for the duration of the **approval**.

### **Offsets**

#### *Biodiversity Offset Package*

12. To compensate for the loss of **threatened species habitat**, within 12 months of the approval of the **action**, the **approval holder** must submit to the **Minister** for approval a Biodiversity Offset Package. The Package must:
  - a) provide known **habitat** and compensate for the residual significant **impacts** on the **threatened species** and their **habitat** in Condition 1a) to e);
  - b) demonstrate consistency with and meets the requirements of the **EPBC Act Environmental Offsets Policy**;
  - c) detail the **offset attributes** (including maps in electronic Geographic Information System (GIS) format with accompanying **shapefiles**), site descriptions,

environmental values relevant to **threatened species** being **offset**, connectivity with other **habitat** and biodiversity corridors;

- d) include detailed surveys and quantitative and qualitative descriptions of any proposed **offset areas** which clearly identify **baseline** conditions. This must include:
- i. a **baseline** description (prior to any management activities) of the current **quality** of the **habitat** for each relevant **threatened species** in each **offset area**, including the location of survey points (GPS reference);
  - ii. the quantity (in hectares) of suitable **habitat** present within the **offsets areas** for the **threatened species** the **quality** of the **habitat** for the relevant **threatened species** found within the **offset areas**;
  - iii. vegetation condition mapping; and
  - iv. photo reference points.
- e) be prepared by a **suitably qualified ecologist**;
- f) include conservation and management measures for long-term protection and adaptive management of the **offsets** to improve **habitat** for **threatened species** within the **offset areas** from **baseline** conditions, including but not limited to:
- i. a map showing **offset areas** to be managed;
  - ii. conservation management actions for each **offset area** and the details of methods to be used;
  - iii. **offset** management must be consistent with **threat abatement plans** for **threatened species**;
  - iv. the timing of management activity for each **offset area** and anticipated timeframes for achieving performance objectives;
  - v. clear performance measures and performance indicators for each **offset area** including contingency actions, criteria for triggering contingency actions and a commitment to the implementation of these actions in the event that performance objectives are not met that will enable maintenance and enhancement of **habitat** within the **offset area**, as well as contribute to the better protection of individuals and/or populations of **threatened species** and their **habitat**;
  - vi. a monitoring program to assess the effectiveness of the management actions measured against the **baseline** condition. This must include, but not be limited to, control sites and periodic ecological surveys to be undertaken by a **suitably qualified ecologist**;
  - vii. a risk assessment and a description of the contingency measures that would be implemented to mitigate these risks;
  - viii. details of the various parties responsible for the management, monitoring and implementing the management activities, including their experience and qualifications and employment or engagement status; and
  - ix. details of qualifications and experience of persons responsible for undertaking monitoring, review, and implementation of the Biodiversity

Offset Package, including the role of the **independent expert** in preparing, reviewing, and implementing the Biodiversity Offset Package; and

- x. a description of protection and funding arrangements or agreements including work programs and responsible entities.
13. The **approval holder** must implement the approved Biodiversity Offset Package within 24 months of the date of this **approval**.
  14. If an **offset** site proposed as a part of the Offset Package is already required to be protected as a result of a separate **EPBC Act** approval, only the management actions which can be demonstrated to be additional to those required for the separate approval, can be considered as an **offset** for this project. The legal protection of the site and management action required for separate approvals cannot be considered a part of the **offsets**, in accordance with the **Environmental Offsets Policy**.
  15. The **approval holder** must, within 12 months of the **approval** of the Biodiversity Offset Package, register a legally binding conservation mechanism to provide long-term protection to the **offsets** approved by the **Minister** in the Biodiversity Offset Package, which prohibits any activities that are not conservation activities from being undertaken in the **offsets**.
  16. If within 6 years, after **impacts to Grey-headed Flying-fox habitat**, the results of the monitoring required in the **Grey-headed Flying-fox Management Plan**, show that the Macksville Grey-headed Flying-fox Camp is abandoned by the Grey-headed Flying-fox, between September and May for two consecutive years, the **approval holder** must then **offset** the entire 23.50 ha roosting habitat critical to survival within 24 months, rather than 3.10 ha required by Condition 1.

Note: The provision of the additional offset, if required, would be additional to the requirements of Condition 13-16.

## General

17. Within 14 days after the **commencement** of the **action**, the person taking the **action** must advise the **Department** in writing of the actual date of **commencement**.
18. The **approval holder** must notify the **Department** in writing of potential non-compliance with any condition of this **approval** as soon as practical and within no later than two business days of becoming aware of the non-compliance. The notice provided to the **Department** under this condition must specify:
  - a) the condition which the **approval holder** has potentially breached;
  - b) the nature of the non-compliance; and
  - c) when and how the **approval holder** became aware of the non-compliance.

Further to providing any such notice, the **approval holder** must provide the following information within 10 business days of becoming aware of a potential non-compliance:

- a) how the non-compliance will affect the anticipated impacts of the **approved action**, in particular how the non-compliance will affect the impacts on the **MNES**;
- b) the measures the **approval holder** will take to address the impacts of the non-compliance on the **MNES** and rectify the non-compliance; and

- c) the time by when the **approval holder** will rectify the non-compliance.
19. Within three months of every 12 month anniversary of the **commencement** of the **action**, the **approval holder** must publish a report on its **website** addressing compliance with each of the conditions of this **approval**, including implementation of any **management plan, package** as specified in the conditions. **Documentary** evidence providing proof of the date of publication must be included in the published **compliance report**. The **compliance report** must remain on the **website**, for 10 years following **commencement**. The monitoring results must also be made available on request for the duration of the **approval**. Reports of any non-compliance must also be included in the annual **compliance report**.
  20. The **approval holder** must maintain accurate **compliance records** substantiating all activities associated with or relevant to the conditions of **approval**, including measures taken to implement the **management plans, package** required by this **approval**, and make them available upon request to the **Department**. Such **compliance records** may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of **approval**. Summaries of audits will be posted on the **Department's website**. The results of audits may also be publicised through the general media.
  21. Upon the direction of the **Minister**, the **approval holder** must ensure that an independent audit of compliance with the conditions of **approval** is conducted and a report submitted to the **Minister**. The audit must not commence unless and until the **Minister** has approved the independent auditor and audit criteria. The audit report must address the criteria to the satisfaction of the **Minister**.
  22. If the **approval holder** wishes to carry out any activity otherwise than in accordance with a **management plans, strategy, package** as specified in the conditions, the **approval holder** must submit to the **Department** for the **Minister's** written approval a revised version of that **management plan, package**. The varied activity must not commence until the **Minister** has approved the varied **management plan, package** in writing. The **Minister** will not approve a varied **management plan, package** unless the revised **management plan, package** would result in an equivalent or improved environmental outcome over time. If the **Minister** approves the revised **management plan, package** that **management plan, package** must be implemented in place of the **management plan, package** originally approved.
  23. If the **Minister** believes that it is necessary or convenient for the better protection of **MNES** to do so, the **Minister** may request that the **approval holder** make specified revisions to a **management plan, package** required by the conditions and submit the revised **management plan, package** for the **Minister's** written approval. The **approval holder** must comply with any such request. The revised **management plan, package** must be implemented. Until the **Minister** has approved a revised **management plan, package**, the **approval holder** must continue to implement the previously approved **management plan, package**, as specified in the conditions.
  24. If, at any time after five years from the date of this **approval**, the **approval holder** has not **commenced** the **action**, then the **approval holder** must not **commence** the **action** without the written agreement of the **Minister**.

25. Unless otherwise agreed to in writing by the **Minister**, the **approval holder** must publish the **management plans, package**, monitoring data in these conditions of **approval** on its **website**. Each **management plans, package**, monitoring data must be published on the **website** within one month of being approved (unless otherwise specified in these conditions) or within one month of data collection.
26. The **approval holder** must notify the **Department** within 5 business days of publishing the **management plan, package**, monitoring data on their website and the **management plan, package**, monitoring data must remain on the website for the life of this **approval**.

## Definitions

In these conditions, unless contrary intention is expressed:

- a) the singular includes the plural and vice versa, and a gender includes other genders;
- b) another grammatical form of a defined word or expression has a corresponding meaning;
- c) the meaning of general words is not limited by specific examples introduced by 'for example' or similar expressions;
- d) a reference to a condition or annexure is a reference to a condition of or annexure to, the **approval**;
- e) a reference to AUD, A\$, \$A, dollar or \$ is to Australian currency; and
- f) a reference to time is to the time in the place where the obligation is to be performed.

**Action** is the upgrade of ~19.5 kilometres of the Pacific Highway, from the northern end of Allgomeria deviation south of Warrell Creek to Old Coast Road, west of Nambucca Heads, on the mid north coast of New South Wales, as shown in the map at [Appendix 1](#).

**Approval** means the approval to take the **action** under section 133 of the Commonwealth EPBC Act.

**Approval holder** means the person to whom the **approval** is granted, or any person acting on their behalf, or to whom the **approval** is transferred under section 145B of the Commonwealth EPBC Act.

**Baseline data** means survey data in the **offset area/s** and **reference site/s** prior to conservation management actions occurring.

**Biodiversity Offset Package** means Package to be submitted the **Department**, which must have a benefit to **threatened species** and **habitat**.

**Biodiversity Offset Strategy** means Revision D of the Strategy submitted to the **Department** on 20 November 2014.

**Clear** includes the cutting down, felling, thinning, logging, removing, poisoning, grubbing, dewatering, ringbarking or burning of **native vegetation**.

**Commence/Commencement/Commenced** – means the **commencement** of any works required to be undertaken for the purposes of carrying out the **action**, including preparatory works, excluding the activities below that must not directly or indirectly **impact** on **threatened species** and communities or suitable **habitat** for **threatened species** and communities.

**Activities which must not cause direct or indirect impact on MNES**

<b>1</b>	<b>Ancillary facilities in the locations identified as Proposed Early Works, Works Compound in Figure 1, Maps 4 and 9</b>
1a	Establishment of site compound and temporary stockpile sites, including access road construction and provision of associated utility services.
1b	Establishment of materials management / stockpile sites, including access road construction and provision of utility services.
1c	Installation of environmental controls, including erosion and sedimentation controls associated with the activities identified in 1a and 1b above.
<b>2</b>	<b>Ecological and heritage works in the locations identified as Proposed Early Works, Nest box location or Exclusion fencing in Figure 1, Maps 1 to 14</b>
2a	Nest Box Installation as required by MCoA B6 in accordance with approved Nest Box Plan (LES, 2013c).
2b	Installation of temporary exclusion fencing around sensitive ecological and heritage areas (including habitat for MNES matters) in the locations identified in <b>Figure 2</b> .
2c	Investigations of heritage sites.
<b>3</b>	<b>Property adjustment works in the locations identified as Proposed Early Works, Demolition activity, Boundary fencing or Façade treatments to noise receivers in Figure 1, Maps 1 to 14</b>
3a	Installation of property fencing.
3b	House demolition and removal.
3c	Relocation of utilities (including water supply and electrical) to properties.
3d	Provision of acoustic treatments to properties.
3e	Construction of property ingress and egress.
<b>4</b>	<b>Survey works</b>
4a	Survey control, including installation of global positioning system (GPS) repeater stations.
4b	General project alignment survey.
4c	Survey of existing and future utility services, including potholing investigations.
4d	Building / road pre-condition surveys.



Activities which must not cause direct or indirect impact on MNES	
<b>5</b>	<b>Existing road network adjustments in the locations identified as Proposed Early Works, Traffic work activity in Figure 1, Maps 1 to 14</b>
5a	Minor upgrades to existing local roads and existing Pacific Highway network.
5b	Installation of temporary project signage.
5c	Installation of environmental controls, including erosion and sedimentation controls associated with the activities identified in 5a and 5b above.
<b>6</b>	<b>General project activities in the locations identified as Proposed Early Works, Geotechnical investigations or Proposed utility works (up to April 2015) in Figure 1, Maps 1 to 14</b>
6a	Geotechnical investigations, including boreholes, test pits, seismic investigations.
6b	Investigation and treatment of contaminated sites.
6c	Relocation of utilities.
6d	Installation of environmental controls, including erosion and sedimentation controls associated with activities identified in 6a, 6b and 6c above.

**Compliance records/reports** means all records prepared in relation to these Conditions and in the **approval holder's** possession or that is within the **approval holder's** power to obtain lawfully, including the **documents**.

**Completion of construction** means the **completion** of any final works required to be undertaken for the purposes of carrying out the **action**.

**Department** means the Australian Government Department administering the Commonwealth **EPBC Act**.

**Documents/documentation** means documents required to be prepared or provided to the **Department** and implemented by the **approval holder** in accordance with these Conditions.

**EPBC Act** means the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

**EPBC Act Environmental Offsets Policy** means the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (October 2012)* or subsequent revisions.

**Giant Barred Frog habitat** means 0.7 hectares of riparian habitat at Upper Warrell Creek.

**Giant Barred Frog Management Plan** means Version L of the Plan submitted to the **Department** on 3 December 2014, or a subsequent plan only if approved by the **Department**, which must have a benefit to the species.

**Grey-headed Flying-fox habitat** means foraging habitat consisting of: Blackbutt Open Forest – 77.0 ha, Mixed Floodplain Forest – 4.0 ha, White Mahogany/Grey Gum/Ironbark Moist Open Forest – 5.5 ha, Flooded Gum Moist Open Forest – 14.8 ha and Swamp Mahogany/Paperbark Swamp Forest – 5.3 ha (inclusive of 3.1 ha of roosting habitat).

**Grey-headed Flying-fox Management Plan** means Version 10 of the Plan submitted to the **Department** on 7 November 2014, or a subsequent plan only if approved by the **Department**, which must have a benefit to the species.

**Habitat** means **Giant Barred Frog habitat, Grey-headed Flying-fox habitat, Koala habitat, Slender Marsdenia/Clear Milkvine habitat and Spotted-tail Quoll habitat.**

**Independent expert** means a real person who must be approved by the **Department**, and who is independent, is not an employee of, nor has ever been employed by, the **approval holder**, and who has relevant tertiary qualifications and a minimum of five years demonstrated experience relevant to undertake a review of the Biodiversity Offset Package.

**Impact** has the definition assigned to it in section 527E of the Commonwealth **EPBC Act**.

**Koala habitat** means Blackbutt Open Forest – 77.0 ha, Mixed Floodplain Forest – 4.0 ha, White Mahogany/Grey Gum/Ironbark Moist Open Forest – 5.5 ha, Flooded Gum Moist Open Forest – 14.8 ha, and Swamp Mahogany/Paperbark Swamp Forest – 5.3 ha.

**Koala Management Plan** means Version 8 of the Plan submitted to the **Department** on 7 November 2014, or a subsequent plan only if approved by the **Department**, which must have a benefit to the species.

**Management plans** means the **Threatened Flora Management Plan, Koala Management Plan, Grey-headed Flying-fox Management Plan, Spotted-tail Quoll Management Plan and Giant Barred Frog Management Plan.**

**Matters of National Environmental Significance (MNES)** means matters of National Environmental Significance, being the relevant matters protected under Part 3 of the Commonwealth **EPBC Act**.

**Minister** means the Minister responsible for administering the **EPBC Act** including any delegate of the **Minister**.

**Native vegetation** means indigenous vegetation, including trees (including any sapling, shrub and scrub), understorey plants, groundcover (being any type of herbaceous vegetation), epiphytes, and plants occurring in a wetland or swamp.

**Offset attributes** means an '.xls' file capturing relevant attributes of the **offset area**, including the EPBC reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC protected matters that the **offset** compensates for, any additional EPBC protected matters that are benefiting from the **offset**, and the size of the **offset** in hectares.

**Offset area/Offset** means an area of land or water on which an offset activity will occur, to compensate for the residual adverse **impacts** of an approved **action** on **MNES**.

**Package** means the Biodiversity Offset Package.

**Quality** - 'site condition', 'site context', and 'species stocking rate', as described in the **Department's** *How to use the Offsets Assessment Guide*.

**Records** means all **documents** or other material in whatever form, including, without limitation, any correspondence, reports, assessments, methodologies, operations manuals, specifications, training materials and instructions or data relating to the **approved action**.

**Reference site** means a site other than the **action** area which is similar to the **action** area and is largely undisturbed. Unless otherwise approved by the **Minister**, **reference sites** must:

- a) have the same vegetation types and similar **ecological characteristics** to the test sites in the **action** area;
- b) be from the same bio-geographic and climatic regions as the **action** area;
- c) have similar geology, soil type and topography to the **action** area; and
- d) not be so close to the test sites in the **action** area that any disturbance at the test site also results in a change at the **reference site**.

**Shapefile** means an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes of the **offset area**, including the shape, EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

**Slender Marsdenia/Clear Milkvine and Woolf's Tylophora/Cryptic Forest Twiner habitat** means moist open forests, margins of subtropical and warm temperate rainforest, as well as, areas of rocky outcrops as identified habitat maps in the final preliminary documentation.

**Spotted-tail Quoll habitat** means Blackbutt Open Forest – 77.0 ha, Mixed Floodplain Forest – 4.0 ha, White Mahogany/Grey Gum/Ironbark Moist Open Forest – 5.5 ha, Flooded Gum Moist Open Forest – 14.8 ha, Swamp Mahogany /Paperbark Swamp Forest – 5.3 ha, Swamp Forest - Swamp Oak – 0.4 ha, Freshwater Wetlands – 0.64 ha, Mangrove Forest – 0.1 ha and Hardwood plantation – 3.6 ha.

**Spotted-tail Quoll Management Plan** means Version 8 of the Plan submitted to the **Department** on 7 November 2014, or a subsequent plan only if approved by the **Department**, which must have a benefit to the species.

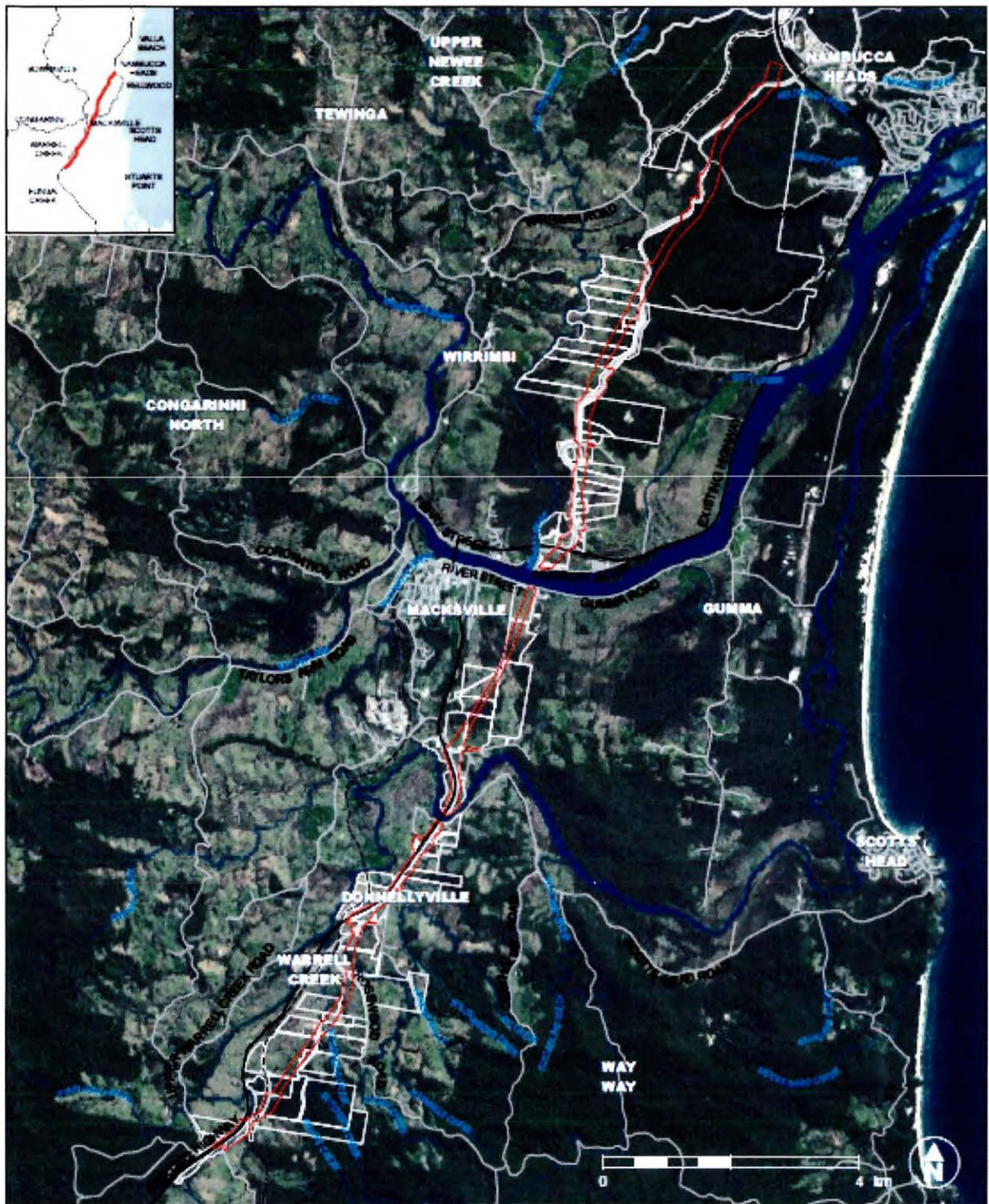
**Suitably qualified ecologist/expert** means a real person with tertiary qualifications and/or a minimum of five years demonstrated experience relevant to the task in question.

**Threat abatement plans** means the [Threat Abatement Plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis](#), the [Threat Abatement Plan for predation by the European red fox](#) and the [Threat Abatement Plan for predation by feral cats](#).

**Threatened Flora Management Plan** means Version 3 of the Plan submitted to the **Department** on 28 November 2014, or a subsequent plan only if approved by the **Department**, which must have a benefit to both species.

**Threatened species** means Slender Marsdenia/Clear Milkvine (*Marsdenia longiloba*), Koala (*Phascolarctos cinereus*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Spotted-tail Quoll (*Dasyurus maculatus maculatus* SE mainland population), Giant Barred Frog (*Mixophyes iteratus*) and Cryptic Forest Twiner (*Tylophora woollsi*).

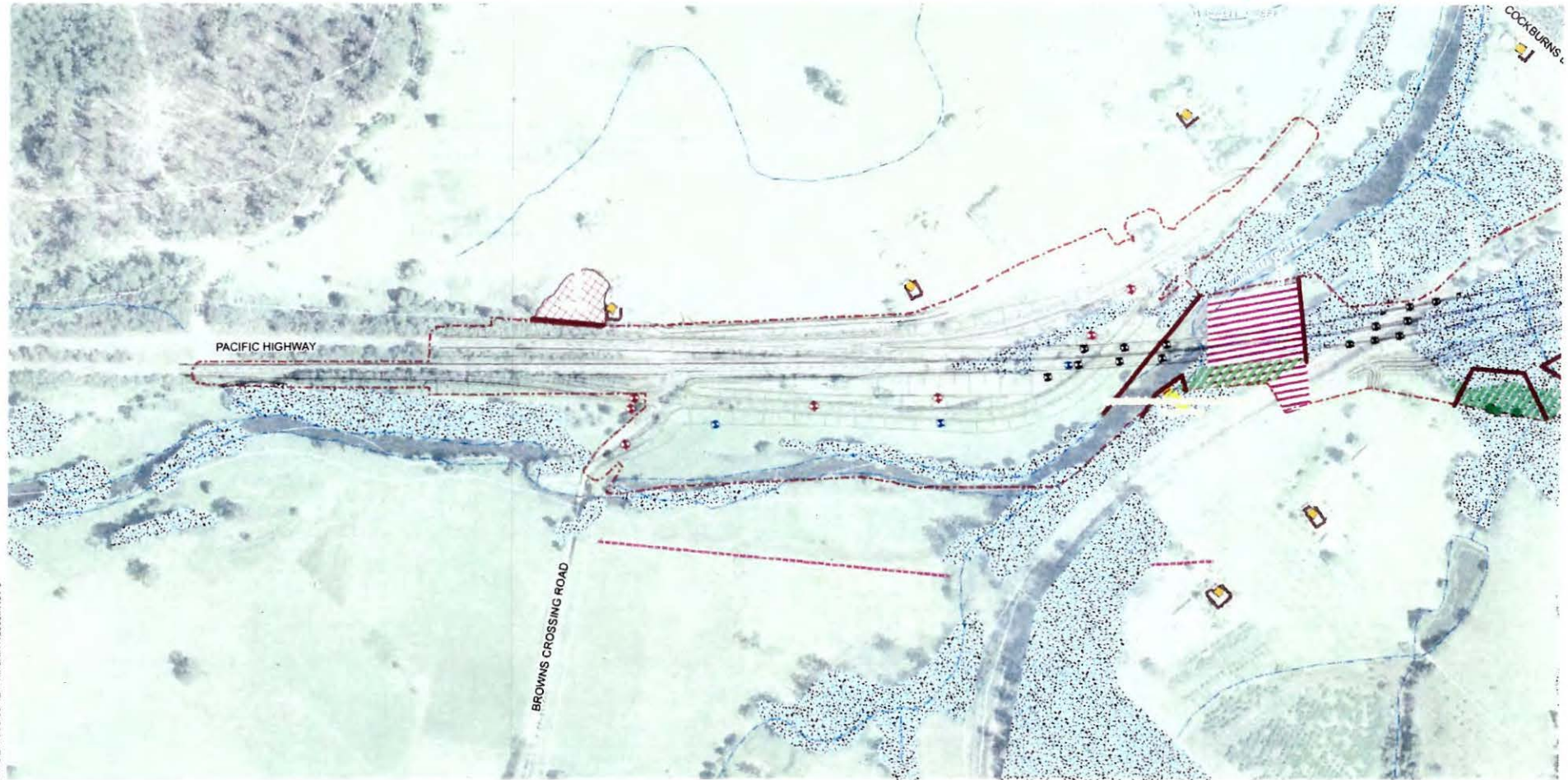
**Website** means the NSW Roads and Maritime Services website <http://www.rms.nsw.gov.au>.



- Road boundary
- Existing Highway
- Railway
- Waterway

**Figure 1**



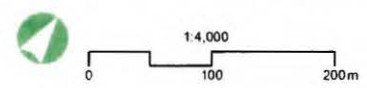


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<p><b>Proposed Early Works</b></p> <ul style="list-style-type: none"> <li> Works compound</li> <li> Boundary fencing</li> <li> Exclusion fencing</li> <li> Proposed utility works (up to April 2015)</li> <li> Demolition activity</li> <li> Nest box location</li> <li> Proposed Borehole</li> </ul>	<ul style="list-style-type: none"> <li> Proposed Test pit</li> <li> Proposed Cone penetration test</li> </ul>	<p><b>Future AFJV ancillary areas</b></p> <ul style="list-style-type: none"> <li> Ancillary site facility</li> <li> Stockpile</li> </ul> <p><b>Design data</b></p> <ul style="list-style-type: none"> <li> Project boundary #</li> <li> 500m Grey-headed Flying Fox buffer zone</li> <li> 300m Grey-headed Flying Fox buffer zone</li> <li> Construction protection area</li> <li> Natural drainage</li> </ul>	<p><b>Heritage</b></p> <ul style="list-style-type: none"> <li> Archaeological PAD/site</li> <li> Heritage item</li> <li> Non-Aboriginal heritage site</li> <li> Cabbage tree palm resource site</li> </ul> <p><b>Acoustic</b></p> <ul style="list-style-type: none"> <li> Facade treatments to noise receivers</li> <li> Sensitive noise receiver</li> </ul>	<p><b>Biodiversity - Flora</b></p> <ul style="list-style-type: none"> <li> Marsdenia longlobo</li> <li> Tylophora woollea</li> <li> Giant Barred Bog habitat</li> <li> Flying Fox camp (Feb 2014)</li> </ul> <p><b>Vegetation</b></p> <ul style="list-style-type: none"> <li> habitat for Keala, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF)</li> </ul>
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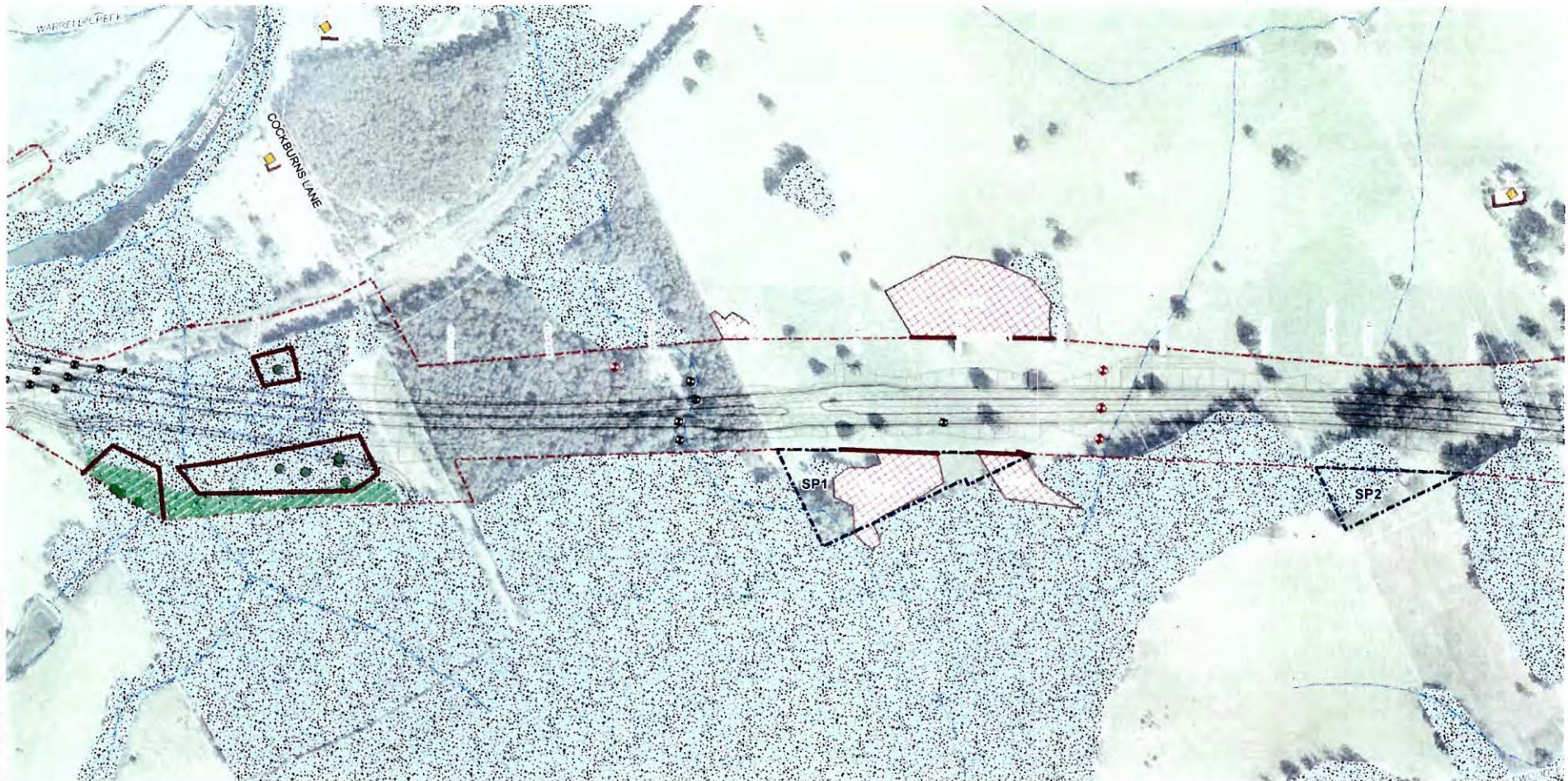
**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.khp received 02/12/2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH  
FIGURE: Proposed Early Works Activities (Map 1 of 14)

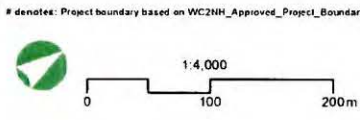


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- |                                   |  |   |
|-----------------------------------|--|---|
| <b>Proposed Early Works</b>       | <ul style="list-style-type: none"> <li> Works compound</li> <li> Boundary fencing</li> <li> Exclosure fencing</li> <li> Proposed utility works (up to April 2015)</li> <li> Demolition activity</li> <li> Nest box location</li> </ul> | <ul style="list-style-type: none"> <li> Proposed Test pit</li> <li> Proposed Cone penetration test</li> </ul> |
| <b>Geotechnical Investigation</b> | <ul style="list-style-type: none"> <li> Proposed Borehole</li> </ul>   |   |

- |   |   |   |
|---|---|---|
| <b>Future AFJV ancillary areas</b>  | <b>Heritage</b>   | <b>Biodiversity - Flora</b>   |
| <ul style="list-style-type: none"> <li> Ancillary site facility</li> <li> Stockpile</li> </ul>  | <ul style="list-style-type: none"> <li> Archaeological PAD/site</li> <li> Heritage item</li> <li> Non-Aboriginal heritage site</li> <li> Cabbage tree palm resource site</li> </ul> | <ul style="list-style-type: none"> <li> <i>Marsdenia longloba</i></li> <li> <i>Tylophora woodi</i></li> <li> Giant Barred bog habitat</li> <li> Flying Fox camp (Feb 2014)</li> </ul> |
| <b>Design data</b>  | <b>Acoustic</b>   | <b>Vegetation</b>   |
| <ul style="list-style-type: none"> <li> Project boundary #</li> <li> 500m Grey-headed Flying Fox buffer zone</li> <li> 300m Grey-headed Flying Fox buffer zone</li> <li> Construction protection area</li> <li> Natural drainage</li> </ul> | <ul style="list-style-type: none"> <li> Facade treatments to noise receivers</li> <li> Sensitive noise receiver</li> </ul>  | <ul style="list-style-type: none"> <li> habitat for Keala Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF)</li> </ul>   |

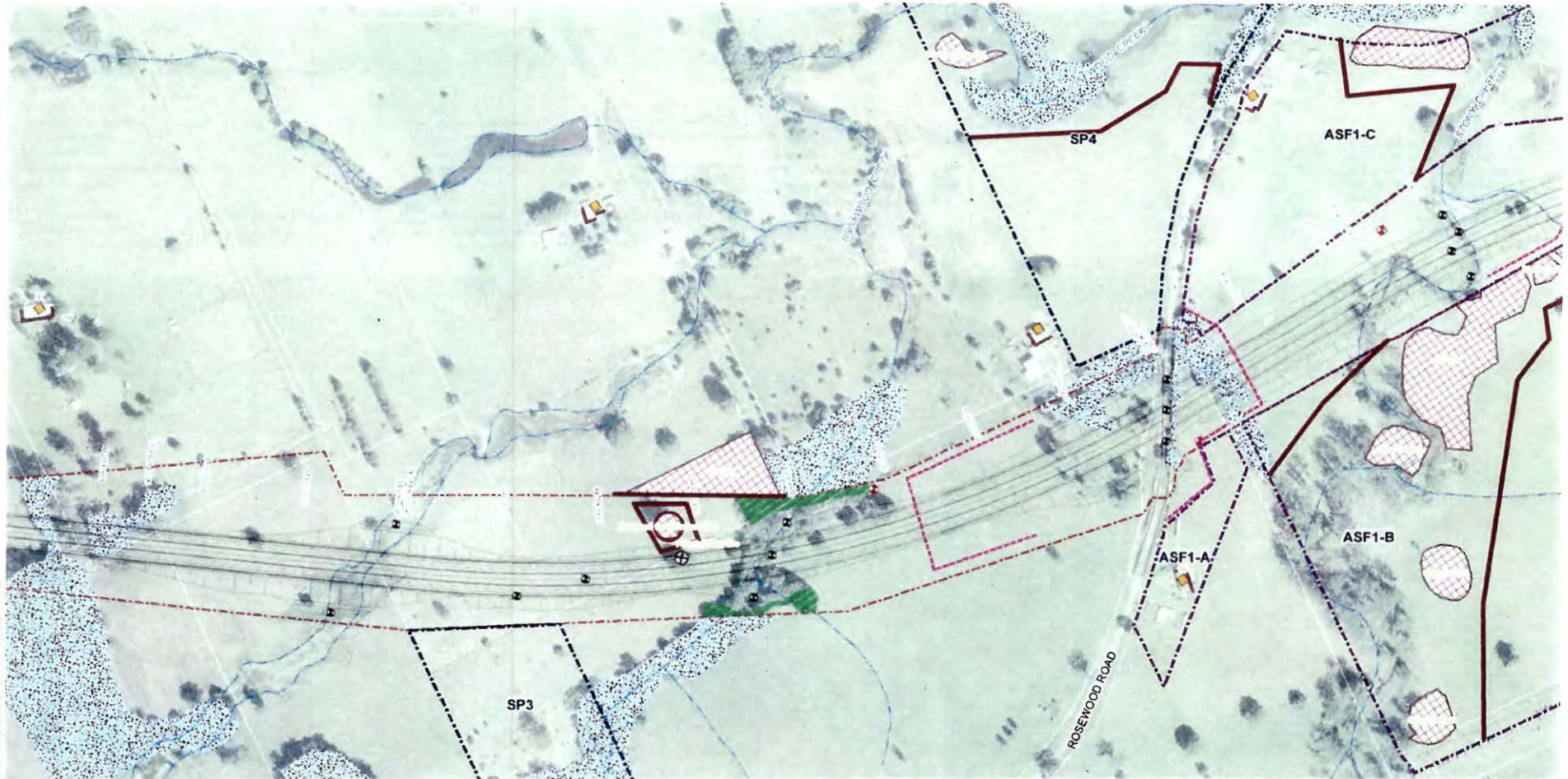
**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH  
**FIGURE: Proposed Early Works Activities (Map 2 of 14)**





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<b>Proposed Early Works</b>	Proposed Test pit
Works compound	Proposed Cone penetration test
Boundary fencing	
Exclusion fencing	
Proposed utility works (up to April 2015)	
Demolition activity	
Heat box location	
<b>Geotechnical Investigation</b>	
Proposed Borehole	

**Future AFJV ancillary areas**

- Ancillary site facility
- Stockpile
- Design data**
- Project boundary #
- 500m Grey-headed Flying Fox buffer zone
- 300m Grey-headed Flying Fox buffer zone
- Construction protection area
- Natural drainage

**Heritage**

- Archaeological PAD/site
- Heritage item
- Non-Aboriginal heritage site
- Cabbage tree palm resource site

**Acoustic**

- Facade treatments to noise receivers
- Sensitive noise receiver

**Biodiversity - Flora**

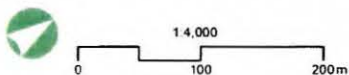
- Mandenia longloba
- Tytophora weelkesii
- Giant Barred frog habitat
- Flying Fox camp (Feb 2014)

**Vegetation**

- habitat for Kaala Spotted Tailed Quoll (STO) and Grey Headed Flying Fox (GHFF)

**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

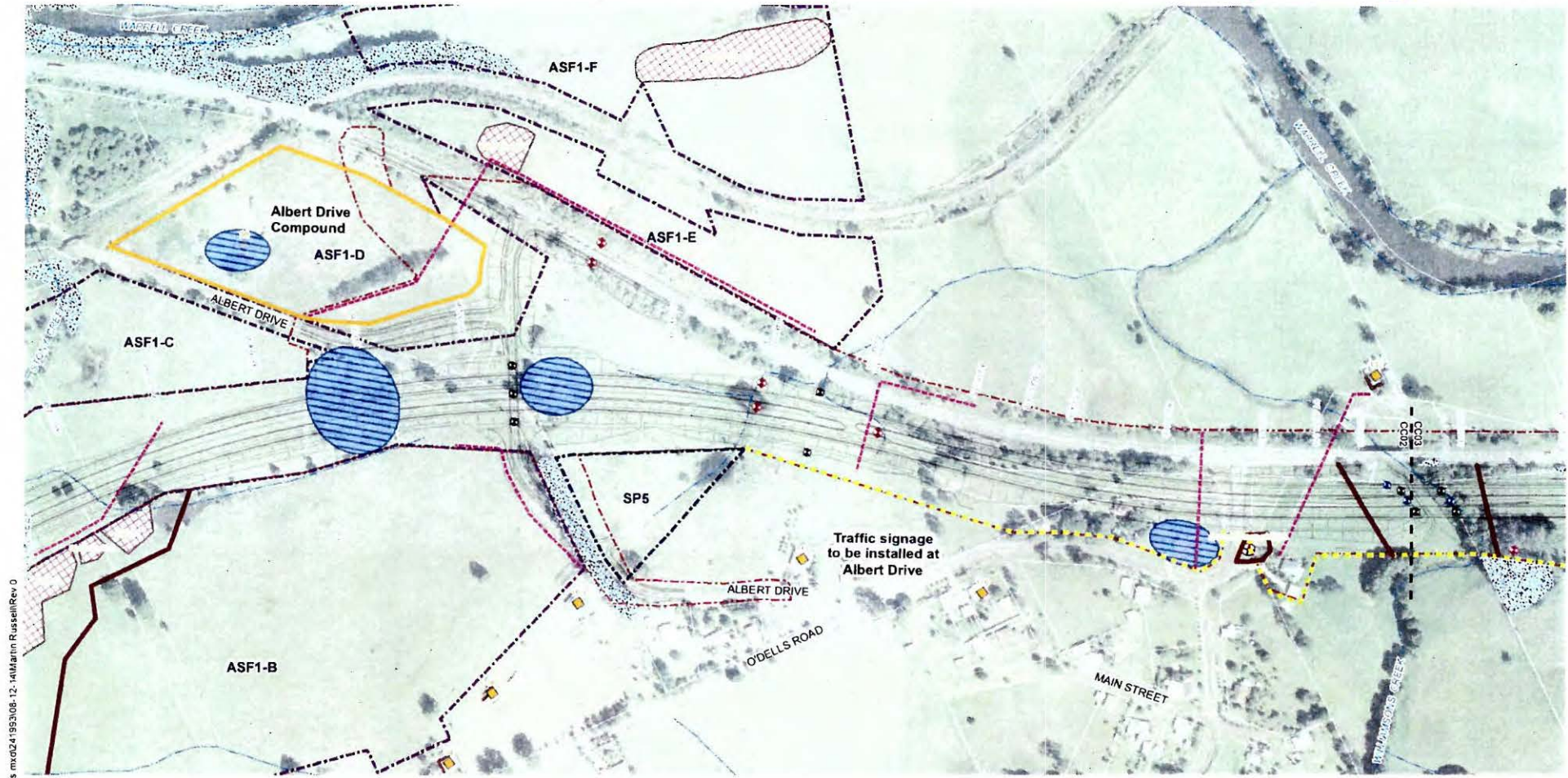
# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.shp received 02/12/2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

**PACIFIC HIGHWAY UPGRADE W2NH**

**FIGURE: Proposed Early Works Activities (Map 3 of 14)**



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 # denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.shp received 02/12/2014

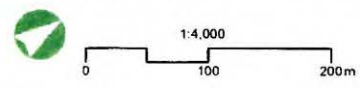
Proposed Early Works	
	Works compound
	Boundary fencing
	Exclusion fencing
	Proposed utility works (up to April 2015)
	Demolition activity
	Nest box location
Geotechnical Investigation	
	Proposed Test pit
	Proposed Cone penetration test

Future AFJV ancillary areas	
	Ancillary site facility
	Stockpile
Design data	
	Project boundary #
	500m Grey-headed Flying Fox buffer zone
	300m Grey-headed Flying Fox buffer zone
	Construction protection area
	Natural drainage

Heritage	
	Archaeological PAD/ate
	Heritage item
	Non-Aboriginal heritage site
	Cabbage tree palm resource site
Acoustic	
	Facade treatments to noise receivers
	Sensitive noise receiver

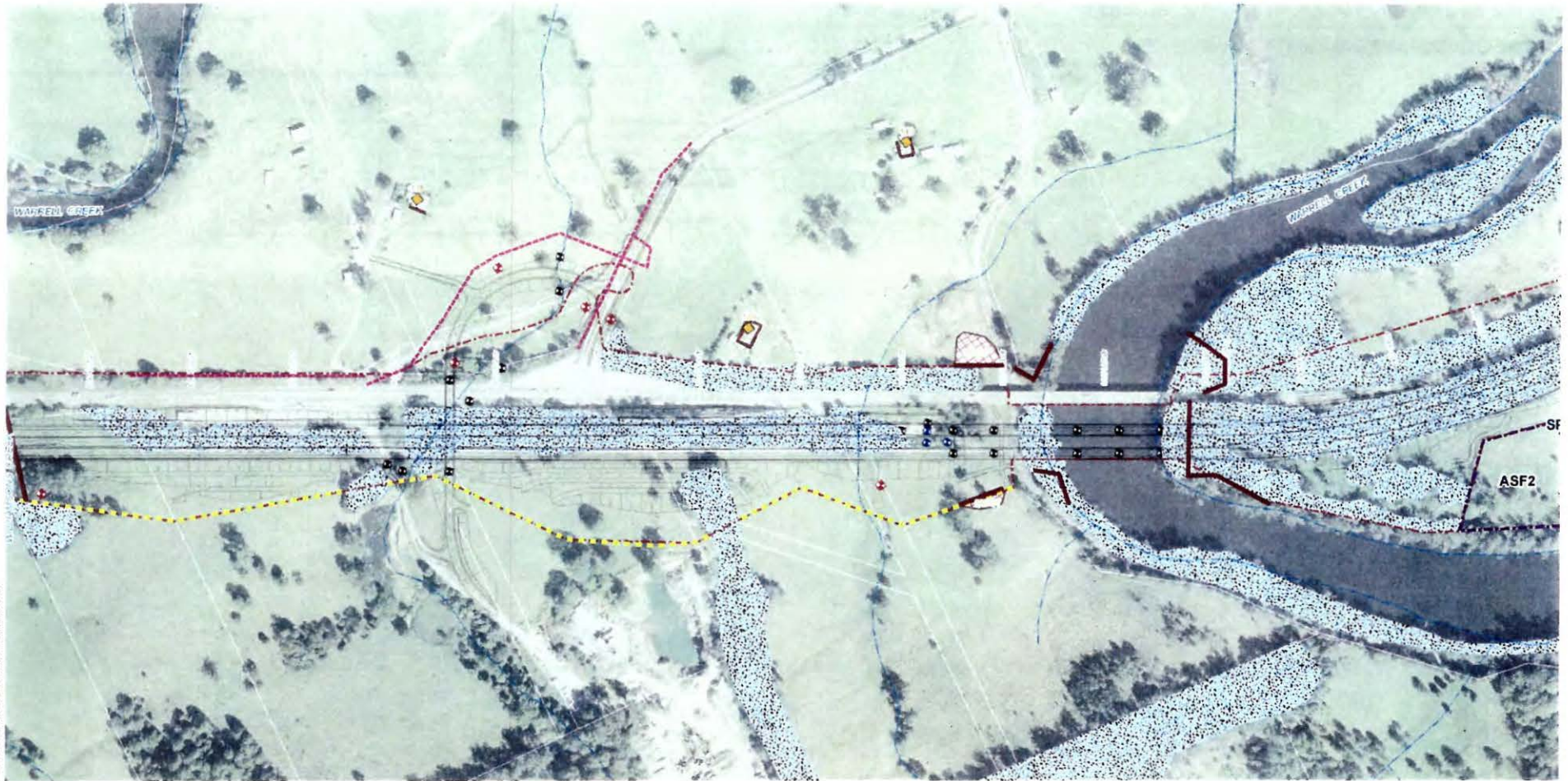
Biodiversity - Flora	
	Marsdenia longiloba
	Tylophora woodii
	Giant Barred frog habitat
	Flying Fox camp (Feb 2014)
Vegetation	
	habitat for Koala, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF)

**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH  
FIGURE: Proposed Early Works Activities (Map 4 of 14)

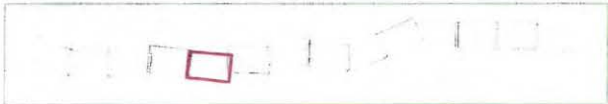
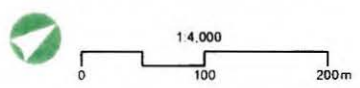


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<p><b>Proposed Early Works</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid yellow; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Works compound</li> <li><span style="border-bottom: 1px dashed yellow; width: 15px; margin-right: 5px;"></span> Boundary fencing</li> <li><span style="border-bottom: 1px solid black; width: 15px; margin-right: 5px;"></span> Exclusion fencing</li> <li><span style="border-bottom: 1px dashed red; width: 15px; margin-right: 5px;"></span> Proposed utility works (up to April 2015)</li> <li><span style="border-bottom: 1px solid blue; width: 15px; margin-right: 5px;"></span> Demolition activity</li> <li><span style="border-bottom: 1px solid green; width: 15px; margin-right: 5px;"></span> Nest box location</li> <li><span style="border-bottom: 1px solid purple; width: 15px; margin-right: 5px;"></span> Proposed Berthole</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: red;">+</span> Proposed Test pt</li> <li><span style="color: blue;">+</span> Proposed Cone penetration test</li> </ul>	<p><b>Future AFJV ancillary areas</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid black; width: 15px; height: 10px; margin-right: 5px;"></span> Ancillary site facility</li> <li><span style="border: 1px solid black; width: 15px; height: 10px; margin-right: 5px;"></span> Stockpile</li> </ul> <p><b>Design data</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid red; width: 15px; height: 10px; margin-right: 5px;"></span> Project boundary #</li> <li><span style="border: 1px solid orange; width: 15px; height: 10px; margin-right: 5px;"></span> 500m Grey-headed Flying Fox buffer zone</li> <li><span style="border: 1px solid brown; width: 15px; height: 10px; margin-right: 5px;"></span> 300m Grey-headed Flying Fox buffer zone</li> <li><span style="border: 1px solid grey; width: 15px; height: 10px; margin-right: 5px;"></span> Construction protection area</li> <li><span style="border: 1px solid blue; width: 15px; height: 10px; margin-right: 5px;"></span> Natural drainage</li> </ul>	<p><b>Heritage</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid black; width: 15px; height: 10px; margin-right: 5px;"></span> Archaeological PAD/site</li> <li><span style="border: 1px solid black; width: 15px; height: 10px; margin-right: 5px;"></span> Heritage item</li> <li><span style="border: 1px solid yellow; width: 15px; height: 10px; margin-right: 5px;"></span> Non-Aboriginal heritage site</li> <li><span style="border: 1px solid green; width: 15px; height: 10px; margin-right: 5px;"></span> Cabbage tree palm resource site</li> </ul> <p><b>Acoustic</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid black; width: 15px; height: 10px; margin-right: 5px;"></span> Facade treatments to noise receivers</li> <li><span style="border: 1px solid yellow; width: 15px; height: 10px; margin-right: 5px;"></span> Sensitive noise receiver</li> </ul>	<p><b>Biodiversity - Flora</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">●</span> Marsdenia longifolia</li> <li><span style="color: yellow;">●</span> Tylophora woollex</li> <li><span style="border-bottom: 1px solid red; width: 15px; margin-right: 5px;"></span> Giant Barred Bog habitat</li> <li><span style="border-bottom: 1px solid blue; width: 15px; margin-right: 5px;"></span> Flying Fox camp (Feb 2014)</li> </ul> <p><b>Vegetation</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid black; width: 15px; height: 10px; margin-right: 5px;"></span> habitat for Keak, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF)</li> </ul>
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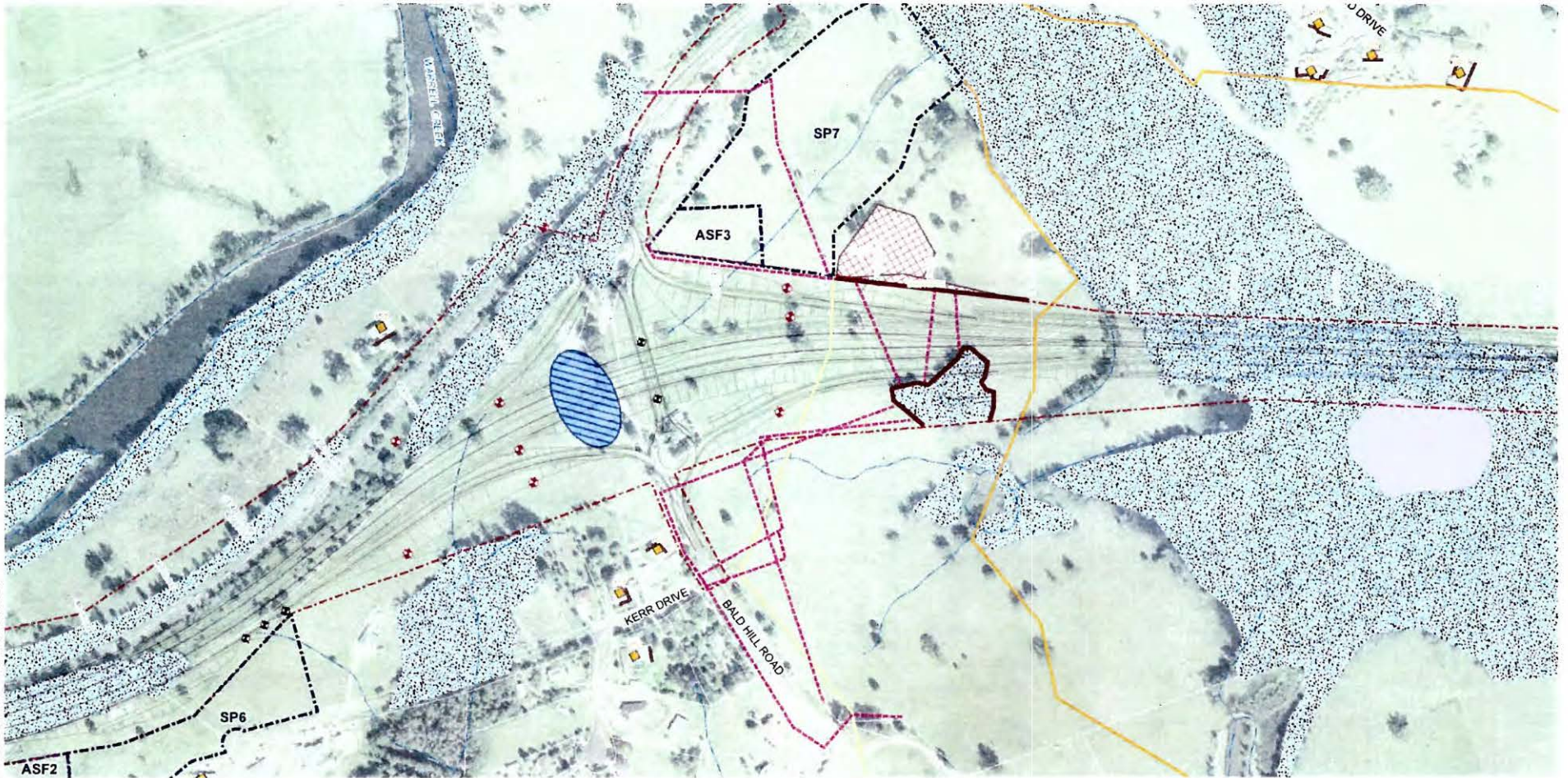
**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.shp received 02/12/2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH  
FIGURE: Proposed Early Works Activities (Map 5 of 14)



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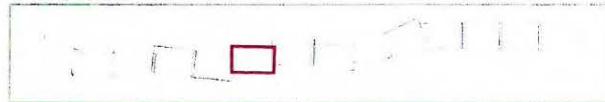
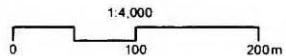
- |   |                                |
|---|--------------------------------|
| <b>Proposed Early Works</b>               | Proposed Test pit              |
| Works compound                            | Proposed Cone penetration test |
| Boundary fencing                          |                                |
| Exclusion fencing                         |                                |
| Proposed utility works (up to April 2015) |                                |
| Demolition activity                       |                                |
| Heat box location                         |                                |
| <b>Geotechnical Investigation</b>         |                                |
| Proposed Borehole                         |                                |

- |   |                                      |
|---|--------------------------------------|
| <b>Future AFJV ancillary areas</b>      | <b>Heritage</b>                      |
| Ancillary site facility                 | Archaeological PAD site              |
| Stockpile                               | Heritage item                        |
| <b>Design data</b>                      | Non-Aboriginal heritage site         |
| Project boundary #                      | Cabbage tree palm resource site      |
| 500m Grey-headed Flying Fox buffer zone | <b>ACOUSTIC</b>                      |
| 300m Grey-headed Flying Fox buffer zone | Facade treatments to noise receivers |
| Construction protection area            | Sensitive noise receiver             |
| Natural drainage                        |                                      |

- |                             |   |
|-----------------------------|---|
| <b>Biodiversity - Flora</b> | <b>Vegetation</b>   |
| Marsdenia longebos          | habitat for Keala, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF) |
| Tylospora woodleyi          |   |
| Giant Barred hog habitat    |   |
| Flying Fox camp (Feb 2014)  |   |

**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

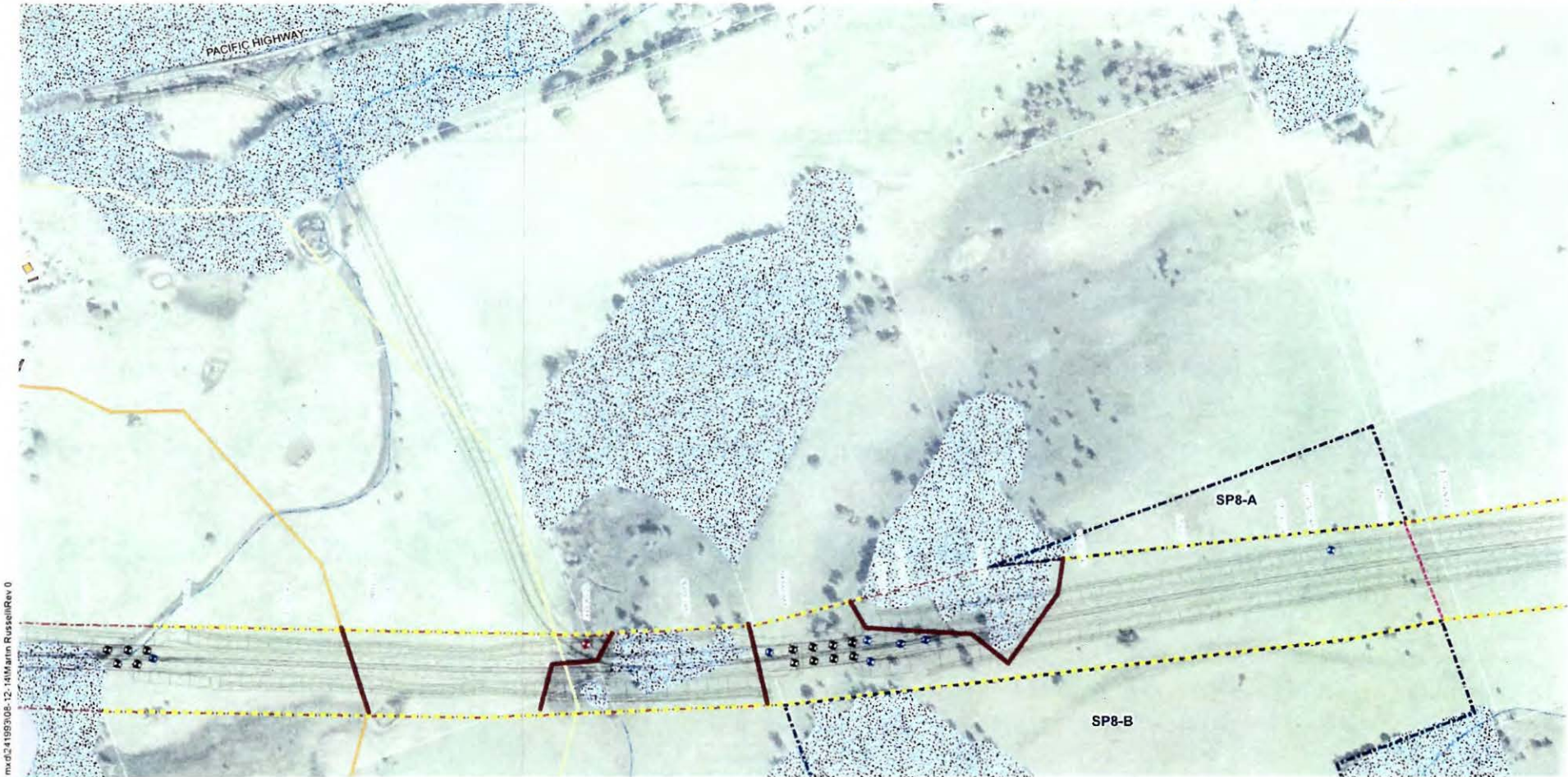
# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.shp received 02/12/2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH

FIGURE: Proposed Early Works Activities (Map 6 of 14)



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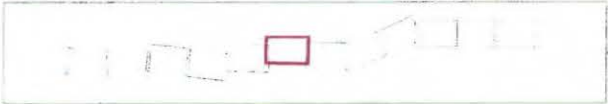
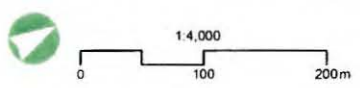
- |   |                                |
|---|--------------------------------|
| <b>Proposed Early Works</b>               | Proposed Test pit              |
| Works compound                            | Proposed Cone penetration test |
| Boundary fencing                          |                                |
| Exclusion fencing                         |                                |
| Proposed utility works (up to April 2015) |                                |
| Demolition activity                       |                                |
| Heat box location                         |                                |
| <b>Geotechnical Investigation</b>         |                                |
| Proposed Borehole                         |                                |

- |   |                                      |
|---|--------------------------------------|
| <b>Future AFJV ancillary areas</b>      | <b>Heritage</b>                      |
| Ancillary site facility                 | Archaeological PAD site              |
| Stockpile                               | Heritage item                        |
| <b>Design data</b>                      | Non-Aboriginal heritage site         |
| Project boundary #                      | Cabbage tree palm resource site      |
| 500m Grey-headed Flying Fox buffer zone | <b>Acoustic</b>                      |
| 300m Grey-headed Flying Fox buffer zone | Facade treatments to noise receptors |
| Construction protection area            | Sensitive noise receptor             |
| Natural drainage                        |                                      |

- |                             |   |
|-----------------------------|---|
| <b>Biodiversity - Flora</b> | <b>Vegetation</b>   |
| Marsdenia longloba          | habitat for Koala, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF) |
| Tytophora woodii            |   |
| Giant Barred bog habitat    |   |
| Flying Fox camp (Feb 2014)  |   |

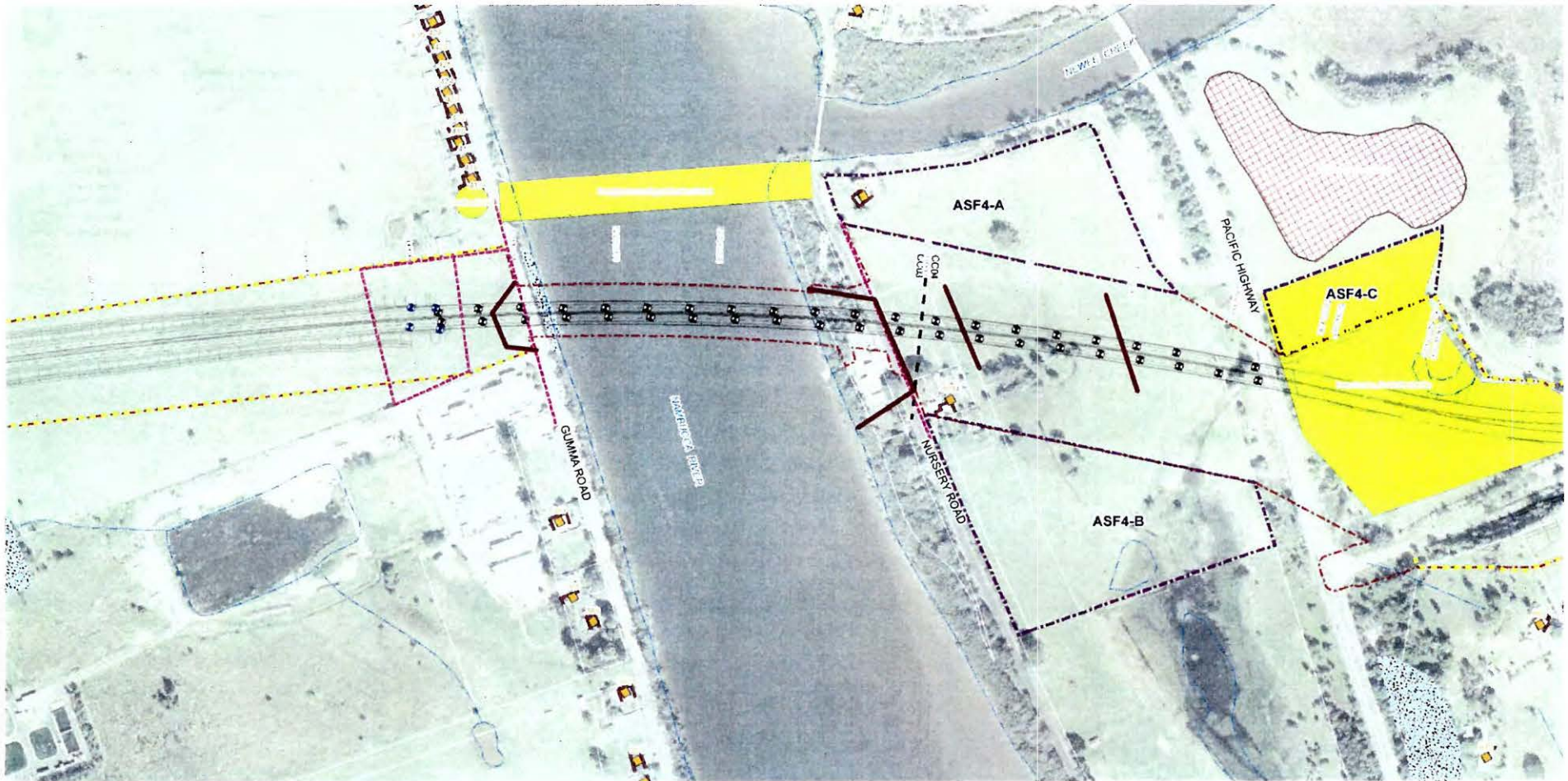
Note:  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

# denotes: Project boundary based on WC2NH\_Appeared\_Project\_Boundary\_20141202\_V2.khp received 02/12/2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH  
FIGURE: Proposed Early Works Activities (Map 7 of 14)



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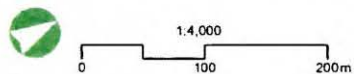
<b>Proposed Early Works</b>	Proposed Test pit
Works compound	Proposed Cone penetration test
Boundary fencing	
Exclusion fencing	
Proposed utility works (up to April 2015)	
Demolition activity	
Nest box location	
<b>Geotechnical investigation</b>	
Proposed Borehole	

<b>Future AFJV ancillary areas</b>	<b>Heritage</b>
Ancillary site facility	Archaeological PAD/site
Stockpile	Heritage item
<b>Design data</b>	Non-Aboriginal heritage site
Project boundary #	Cabbage tree palm resource site
500m Grey-headed Flying Fox buffer zone	<b>Acoustic</b>
300m Grey-headed Flying Fox buffer zone	Facade treatments to noise receivers
Construction protection area	Sensitive noise receiver
Natural drainage	

<b>Biodiversity - Flora</b>	<b>Vegetation</b>
<i>Mareeina longloba</i>	habitat for Koala, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF)
<i>Tylophora woodse</i>	
Giant Barred kang habitat	
Flying Fox camp (Feb 2014)	

**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

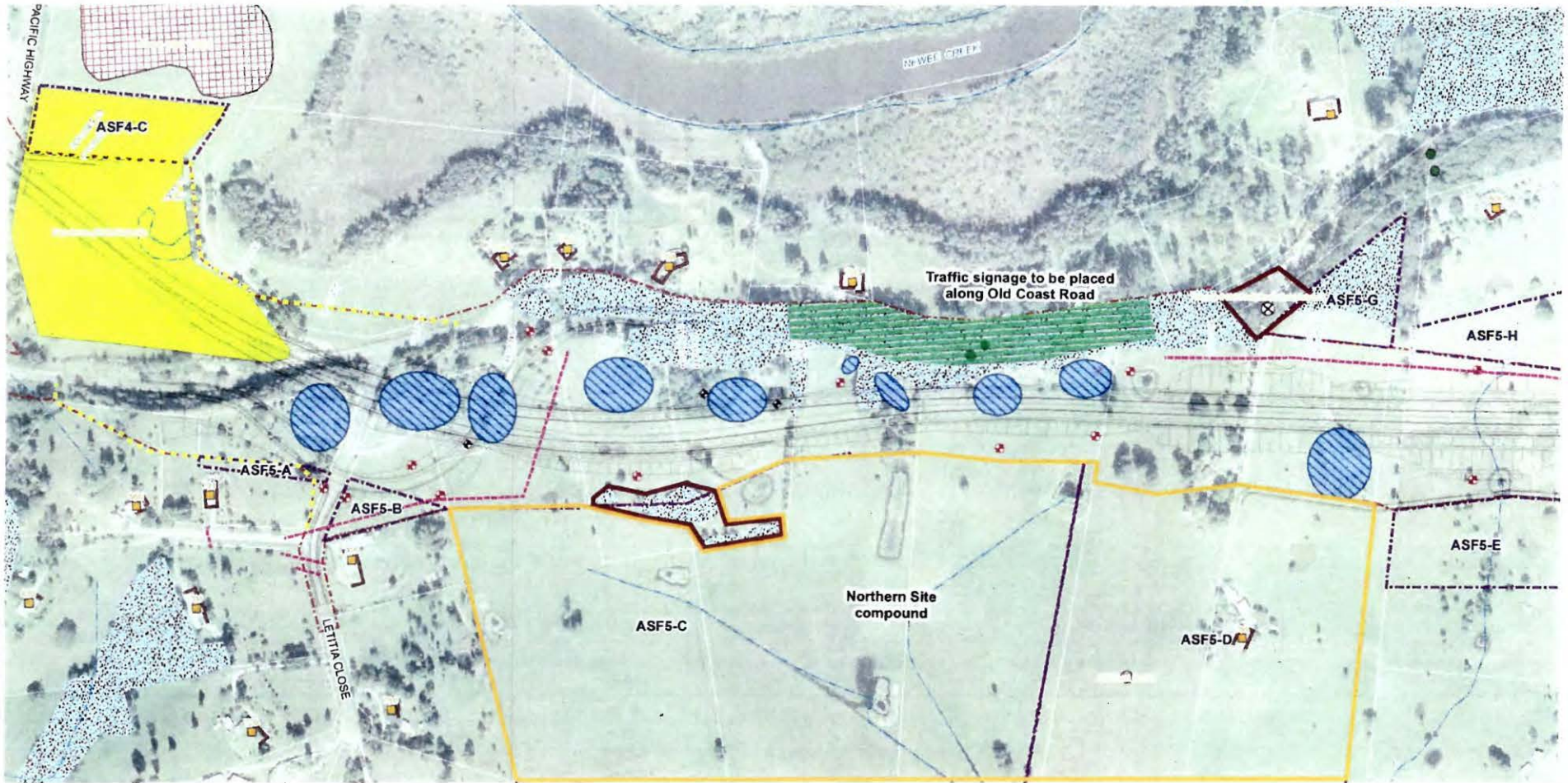
# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.shp received 02/12/2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH

FIGURE: Proposed Early Works Activities (Map 8 of 14)



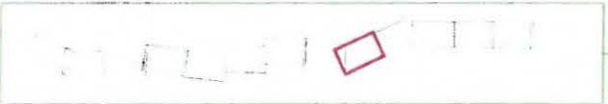
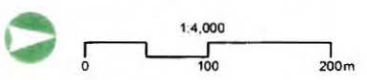
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<b>Proposed Early Works</b>	<ul style="list-style-type: none"> <li> Works compound</li> <li> Boundary fencing</li> <li> Exclusion fencing</li> <li> Proposed utility works (up to April 2015)</li> <li> Demolition activity</li> <li> Nest box location</li> <li><b>Geotechnical Investigation</b></li> <li> Proposed Test pit</li> <li> Proposed Cone penetration test</li> </ul>
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<b>Future AFJV ancillary areas</b>	<b>Heritage</b>	<b>Biodiversity - Flora</b>
<ul style="list-style-type: none"> <li> Ancillary site facility</li> <li> Stockpile</li> <li><b>Design data</b></li> <li> Project boundary #</li> <li> 500m Grey-headed Flying Fox buffer zone</li> <li> 300m Grey-headed Flying Fox buffer zone</li> <li> Construction protection area</li> <li> Natural drainage</li> </ul>	<ul style="list-style-type: none"> <li> Archaeological PAD/site</li> <li> Heritage item</li> <li> Non-Aboriginal heritage site</li> <li> Cabbage tree palm resource site</li> <li> Facade treatments to noise receivers</li> <li> Sensitive noise receiver</li> </ul>	<ul style="list-style-type: none"> <li> <i>Marsdenia longoba</i></li> <li> <i>Tylophora woolfii</i></li> <li> Giant Barred bog habitat</li> <li> Flying Fox camp (Feb 2014)</li> <li><b>Vegetation</b></li> <li> habitat for Koala, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF)</li> </ul>

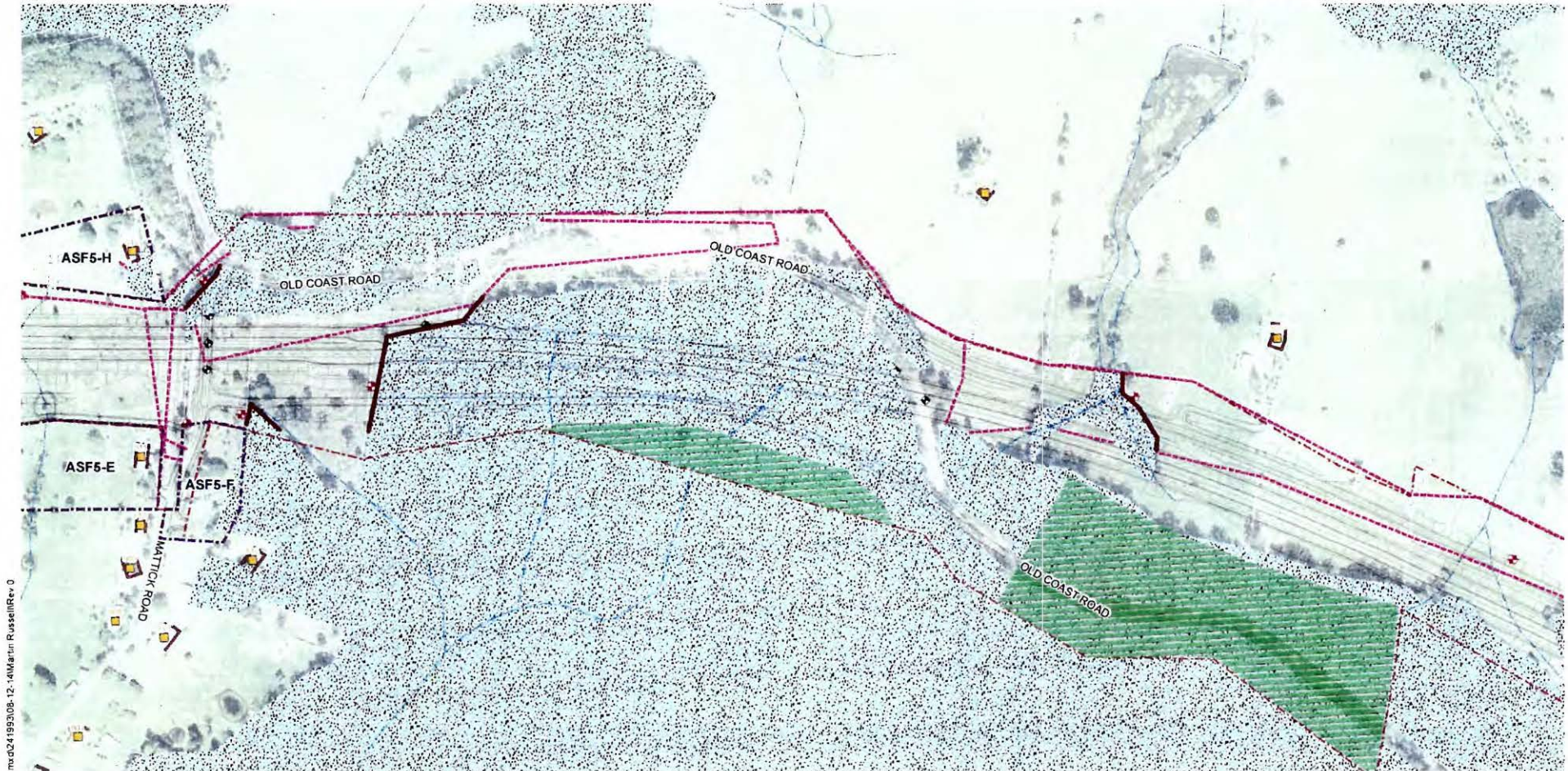
**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.shp received 02/12/2014



Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH  
**FIGURE: Proposed Early Works Activities (Map 9 of 14)**



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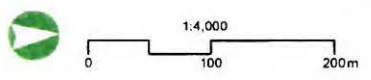
<b>Proposed Early Works</b>	Proposed Test pit
Works compound	Proposed Cone penetration test
Boundary fencing	
Exclusion fencing	
Proposed utility works (up to April 2015)	
Demolition activity	
Nest box location	
<b>Geotechnical Investigation</b>	
Proposed Borehole	

<b>Future AFJV ancillary areas</b>	<b>Heritage</b>
Ancillary site facility	Archaeological PAD/site
Stockpile	Heritage item
<b>Design data</b>	Non-Aboriginal heritage site
Project boundary #	Cabbage tree palm resource site
500m Grey-headed Flying Fox buffer zone	<b>ACOUSTIC</b>
300m Grey-headed Flying Fox buffer zone	Facade treatments to noise receivers
Construction protection area	Sensitive noise receiver
Natural drainage	

<b>Biodiversity - Flora</b>	<b>Vegetation</b>
Mandera longiloba	Habitat for Keala, Spotted Tailed Quoll (STQ) and Grey Headed Flying Fox (GHFF)
Tylophora woodiæ	
Giant Barred bog habitat	
Flying Fox camp (Feb 2014)	

**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Geolink in July and August 2014

# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.shp received 02/12/2014

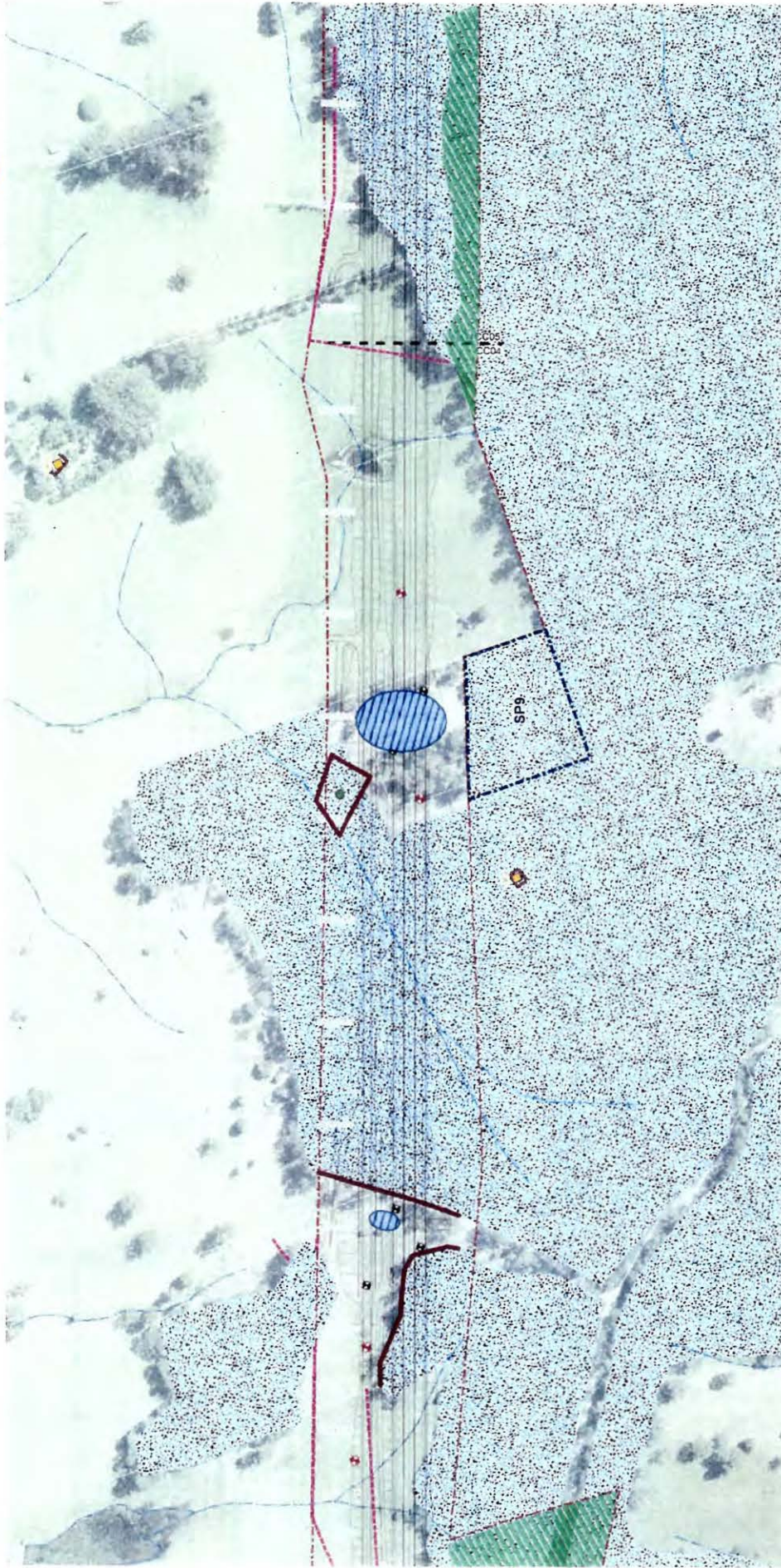


Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

PACIFIC HIGHWAY UPGRADE W2NH

FIGURE: Proposed Early Works Activities (Map 10 of 14)





**Proposed Early Works**

- Proposed Test pit
- Works compound
- Boundary fencing
- Exclosure fencing
- Proposed utility works (up to April 2015)
- Demolition activity
- Heat box location

**Geotechnical Investigation**

- Proposed Borehole

**Future AFJV ancillary areas**

- Ancillary site facility
- Strategic
- Design data
- Project boundary #
- 500m Grey-headed Flying Fox buffer zone
- 300m Grey-headed Flying Fox buffer zone
- Construction protection area
- Natural drainage

**Heritage**

- Archaeological PAD site
- Heritage item
- Non-Aboriginal heritage site
- Cabbage tree palm resource site
- Acoustic
- Excuse treatments to noise receptors
- Sensitive noise receptor

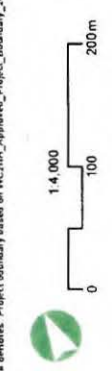
**Biodiversity - Flora**

- Mandarin langbeils
- Typhoid woodbush
- Giant Banded log sheath
- Pump Fox camp (Feb 2014)

**Vegetation**

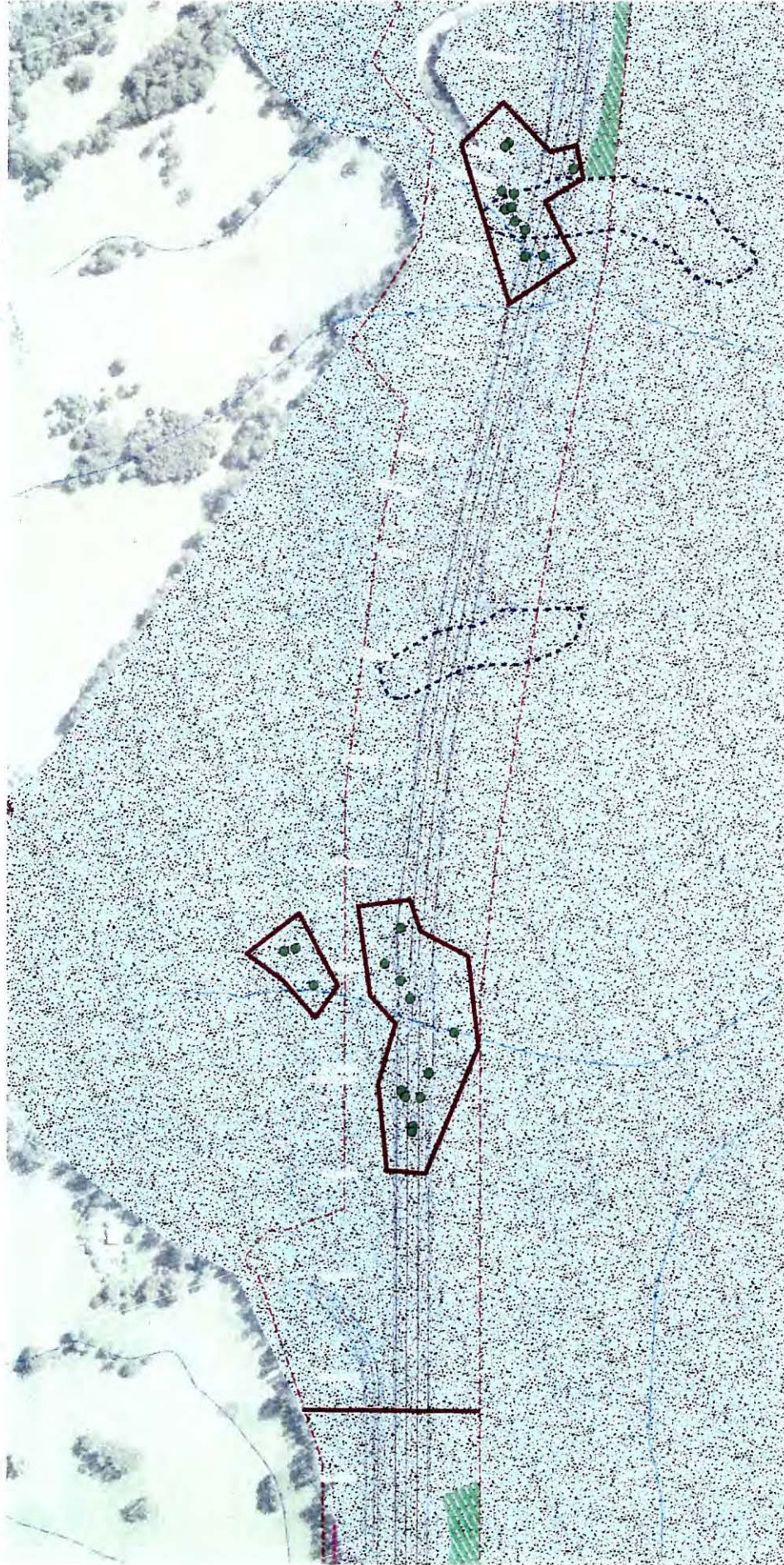
- habitat for Koola, Spotted Tailed Quail (STQ) and Grey-headed Flying Fox (GHFF)

**Note:**  
Habitat mapping includes results of ground-touring surveys within the project boundary, undertaken by Geolink in July and August 2014



**PACIFIC HIGHWAY UPGRADE W2NH**  
 Projection: GDA 1984 MGA Zone 56  
 Source: RMS, AADJV  
**FIGURE: Proposed Early Works Activities (Map 11 of 14)**

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**Proposed Early Works**

- Proposed Test pit
- Works compound
- Boundary fencing
- Exclusion fencing
- Proposed utility works (up to April 2015)
- Demolition activity
- Heat box location

**Geotechnical Investigation**

- Proposed borehole

**Future AFJV ancillary areas**

- Ancillary site facility
- Stockpile
- Design data
- Project boundary #
- 500m Grey-headed Flying Fox buffer zone
- 300m Grey-headed Flying Fox buffer zone
- Construction protection area
- Natural drainage

**Heritage**

- Archaeological PAD/zone
- Heritage item
- Non-Aboriginal heritage site
- Cabbages (tree palm resource site)
- Acoustic
- Facade treatments to noise receptors
- Sensitive noise receiver

**Biodiversity - Flora**

- Marsdenia longibos
- Tylospora woodlands
- Giant Banded frog habitat
- Flying Fox camps (Feb 2014)
- Vegetation
- Habitat for Koala, Spotted Tailed Quail (STQ) and Grey-headed Flying Fox (GHFF)

**Note:**  
Habitat mapping includes results of ground-ruthing surveys within the project boundary, undertaken by Geolink in July and August 2014

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**PACIFIC HIGHWAY UPGRADE W2NH**

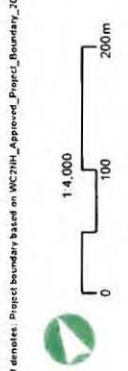
Projection: GDA 1994 MGA Zone 56  
Source: RMS, AADJV

FIGURE: Proposed Early Works Activities (Map 12 of 14)



**Note:**  
Habitat mapping includes results of ground-truthing surveys within the project boundary, undertaken by Gealink in July and August 2014

- Proposed Early Works**
  - Works compound
  - Boundary fencing
  - Exclosure fencing
  - Proposed utility works (up to April 2015)
  - Demolition activity
  - Test box location
- Geotechnical Investigation**
  - Proposed Borehole
- Future AFJV ancillary areas**
  - Ancillary site facility
  - Stockpile
  - Design data
  - Project boundary #
  - 500m Grey-headed Flying Fox buffer zone
  - 300m Grey-headed Flying Fox buffer zone
  - Construction protection area
  - Natural drainage
- Heritage**
  - Archaeological PAD site
  - Heritage dam
  - Non-Aboriginal heritage site
  - Cabbage tree palm resource site
  - Acoustic
  - Facade elements to noise receptors
  - Sensitive noise receptor
- Biodiversity - Flora**
  - Marsdenia longiloba
  - Tylophora viminalis
  - Quint Barred bog habitat
  - Flying Fox camp (Feb 2014)
- Vegetation**
  - habitat for Koola Spotted Tailed Quail (STQ)
  - and Grey Headed Flying Fox (GHFF)

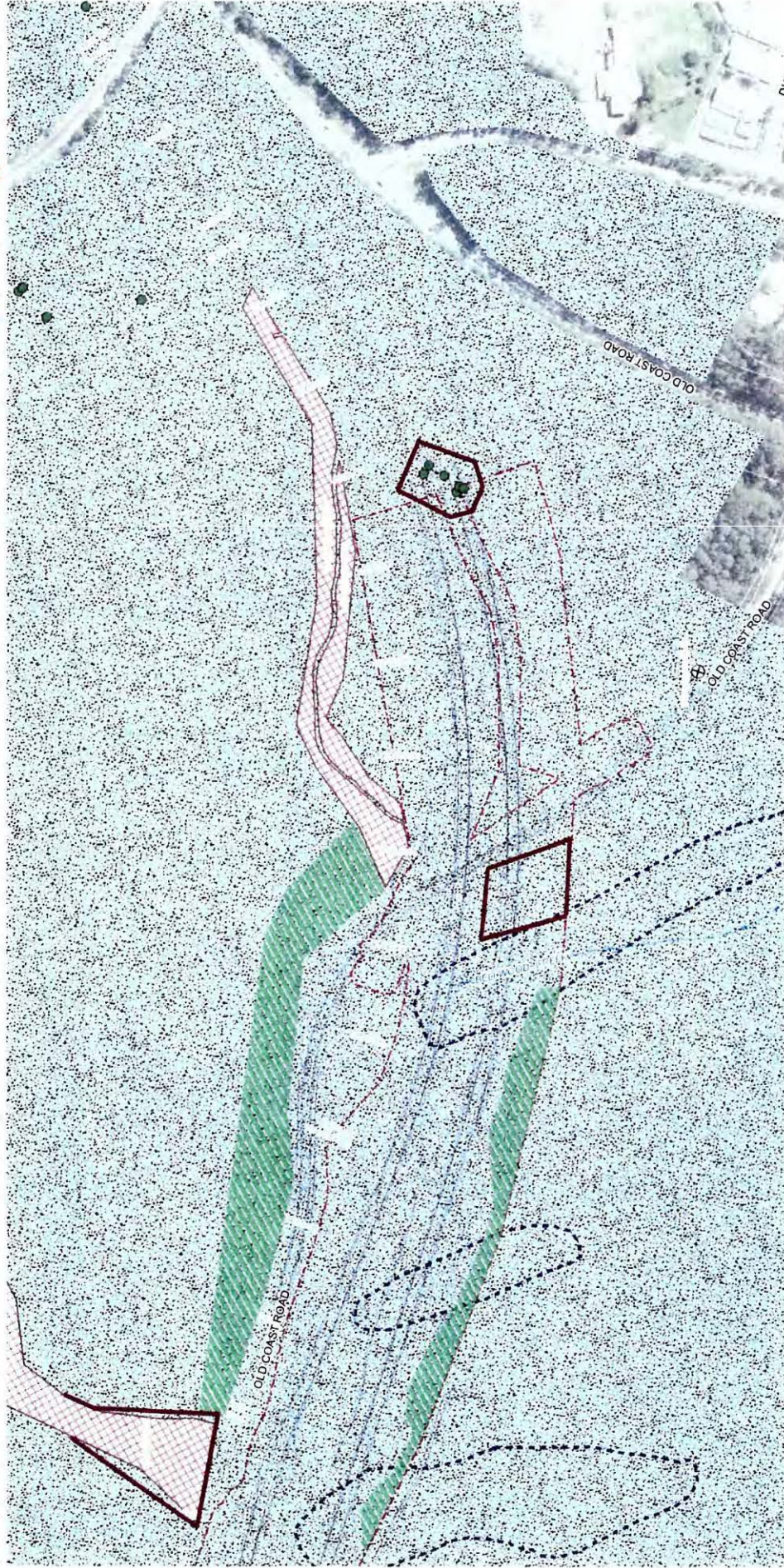


# denotes: Project boundary based on WC2NH\_Approved\_Project\_Boundary\_20141202\_V2.sxd received 02/12/2014



PACIFIC HIGHWAY UPGRADE W2NH

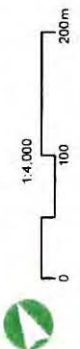
Projection: GDA 1994 MGA Zone 56  
Source: RMS -AADJV  
FIGURE: Proposed Early Works Activities (Map 13 of 14)



- Proposed Early Works**
- Works compound
  - Boundary fencing
  - Exclusion fencing
  - Proposed utility works (up to April 2015)
  - Demolition activity
  - Heatbox location
  - Geotechnical Investigation
  - Proposed Structure
- Future AFJV ancillary areas**
- Ancillary site layout
  - Stockpile
  - Design data
  - Project boundary #
  - 500m Grey-headed Flying Fox buffer zone
  - 300m Grey-headed Flying Fox buffer zone
  - Construction protection area
  - Natural drainage
- Heritage**
- Archaeological PAD site
  - Heritage item
  - Non-Aboriginal heritage site
  - Cabbage tree palm resource site
  - Acoustic
  - Facade treatments to noise receivers
  - Granite noise receiver
- Biodiversity - Flora**
- Mandakia broadbark
  - Tylosurus woollsii
  - Giant Banded Ibis habitat
  - Flying Fox camp (Feb 2014)
  - Vegetation
  - Nabari for Koala
  - Spotted Tailed Quail (STQ)
  - and Grey-headed Flying Fox (GHFF)

**Note:**  
Habitat mapping includes results of ground-inthing surveys within the project boundary, undertaken by Geolink in July and August 2014

# denotes: Project boundary based on WC2NH\_Agproved\_Project\_Boundary\_20141202\_V2.shx received 02/12/2014



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