

Abel Ecology

Opportunities and Constraints (O&C)

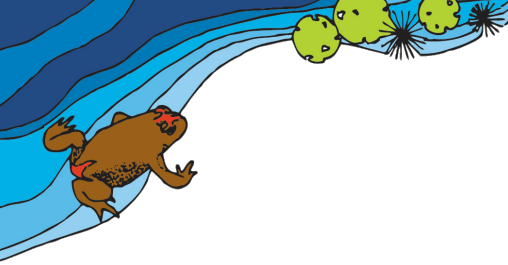
for

1064 New England Highway, Lochinvar NSW 2321

Lot 2, DP 261947

Proposed Subdivision Development

Prepared for:	Boycecorp Pty Ltd
Report No:	AE24-2706-O&C-ISS-2
Prepared by:	Abel Ecology
Date:	13 August 2024



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I confirm that I have read the NSW Land and Environment Court Practice Note commencing on 14 May 2007, Division 2, Part 31 of the Uniform Civil Procedure Rules 2005 and the Expert Witness Code of Conduct in Schedule 7 to the Uniform Civil Procedure Rules 2005. I have prepared this advice in accordance with the requirements of the Practice Note and Code of Conduct and believe this report is consistent with the requirements of the Practice Note and the Code of Conduct. I agree to be bound by the Practice Note and Code of Conduct.

Document History

Report	Version	Prepared by	Technical Review by	Proofread by	Submission	
					Method	Date
Report	Issue 1	Erin Parker Nicholas Tong	Nicholas Tong	Janelle Merry	Dropbox	08 May 2024
Report	Issue	Erin Parker Nicholas Tong	Nicholas Tong	Janelle Merry	Dropbox	13 August 2024

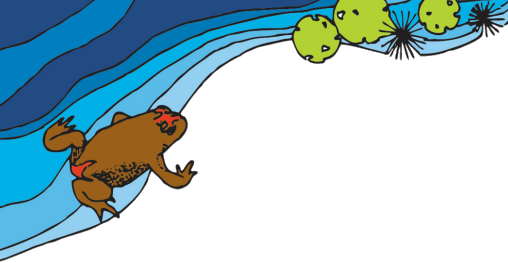


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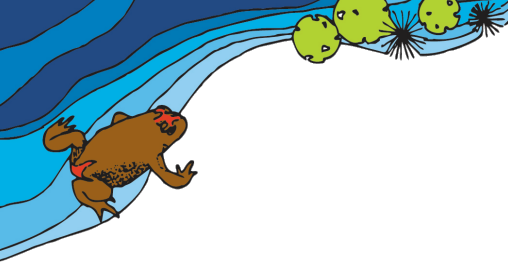
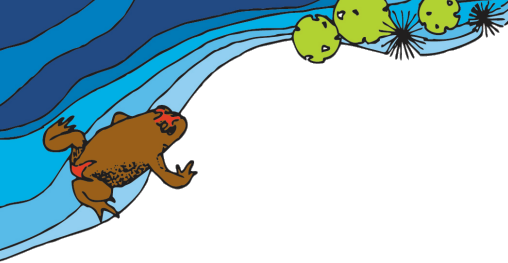


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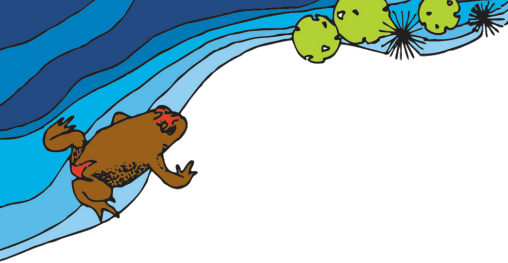
List of Abbreviations

ALS	Actual Lot Size
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016
BCR	Biodiversity Conservation Regulation 2017
BDAR	Biodiversity Development Assessment Report
d.b.h.	Diameter at breast height (~1.4 metres)
EEC	Endangered Ecological Community
ESD	Ecologically Sustainable Development
LEP	Local Environmental Plan
LGA	Local Government Area
MLS	Minimum Lot size

Note regarding maps in this report:

The diagrams/site maps used in this report have been supplied by and are used with the permission of the client, Boycecorp.

With regard to maps provided by the Land Information Centre, Topographic maps used with the permission of © Land and Property Information, NSW.



Executive summary

The proposal (Figure 2) is to establish a 206-site manufactured home estate and consists of:

- a) Residential lots
- b) Internal access roads
- c) A communal facilities building (496.5 m²)
- d) A display suite (139.73 m²)
- e) Communal swimming pool
- f) Open spaces

A preliminary biodiversity survey was carried out at 1064 New England Highway, Lochinvar to assess the likely impacts of the proposal on species and ecological communities present on the site, and whether the proposal requires a Biodiversity Development Assessment Report (BDAR) because it is a likely trigger to entry into the Biodiversity Offsets Scheme identified in s. 7.4 of the *Biodiversity Conservation Act 2016*.

The following three considerations are triggers for entry into the Biodiversity Assessment Method.

Threshold 1: The proposal is unlikely to exceed the clearing threshold area as described in clause 7.2 of the BC Regulation 2017.

Threshold 2: The proposal does not undertake clearing of native vegetation or any prescribed activities (clause 6.1 of the BC Regulation 2017) on land shaded in the Biodiversity Values Land Map

Threshold 3: The proposal is unlikely to significantly affect any threatened species or Endangered or Critically Endangered Species (however this was not assessed as part of this document).

There is no impediment to this proposal in the scope of this report. None of the three thresholds for entry into the Biodiversity Offsets Scheme are likely to be triggered by the proposal.

Biodiversity Development Assessment Report is not recommended.

Assessment using a Flora and Fauna Report is recommended.

The provisions of the *EPBC Act 1999* are likely apply to this proposal and it is unlikely that the proposal will require referral to the Commonwealth.

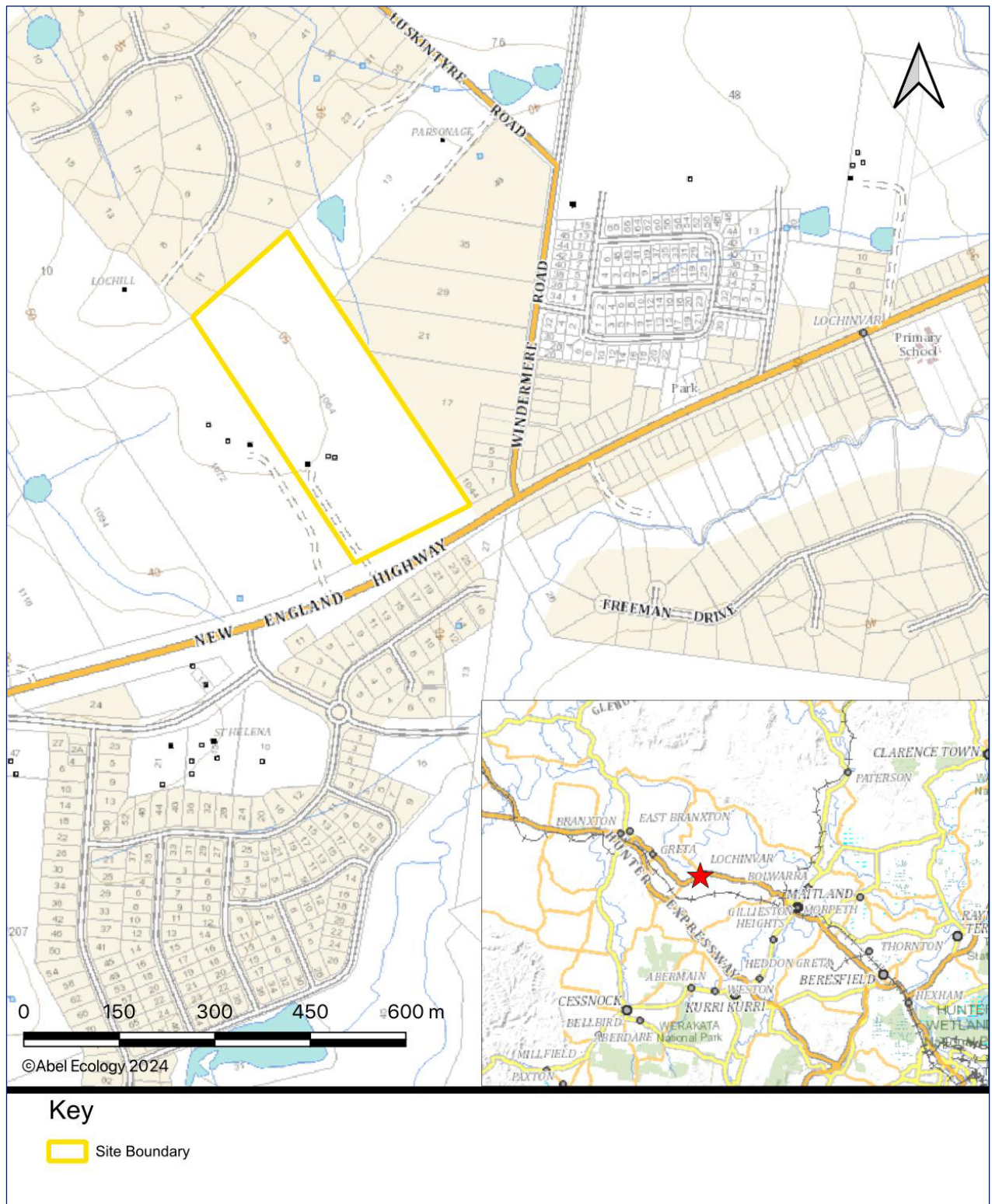
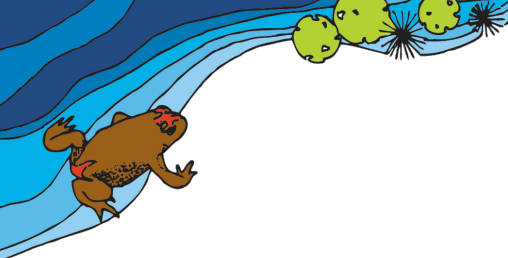


Figure 1. Locality map for the site

Source: © Land and property Information NSW. Spatial Information eXchange (SIX) website 2017.



Figure 2. Proposal diagram

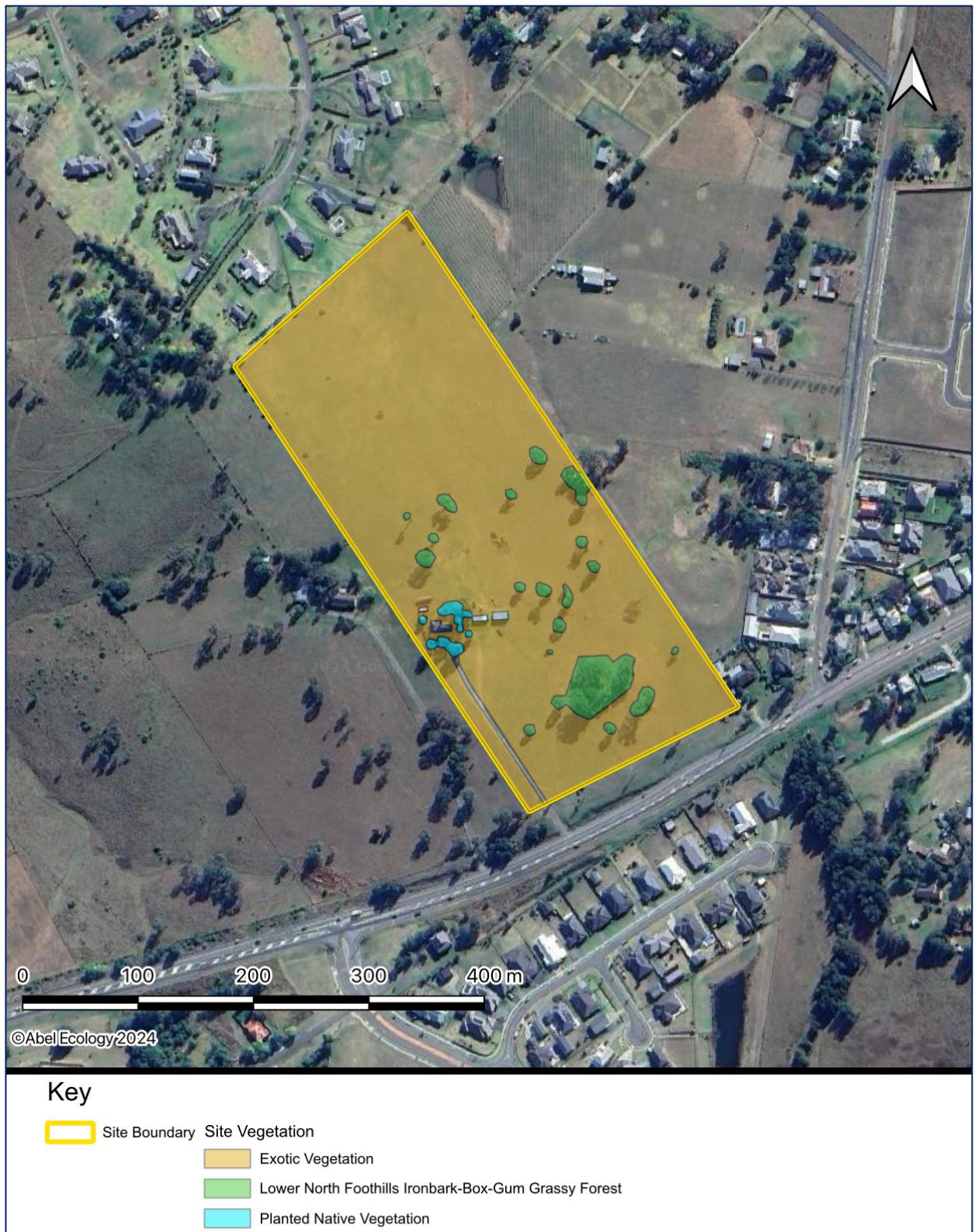
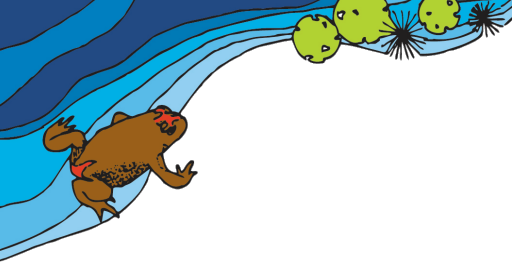


Figure 3. Native vegetation assessed on site.

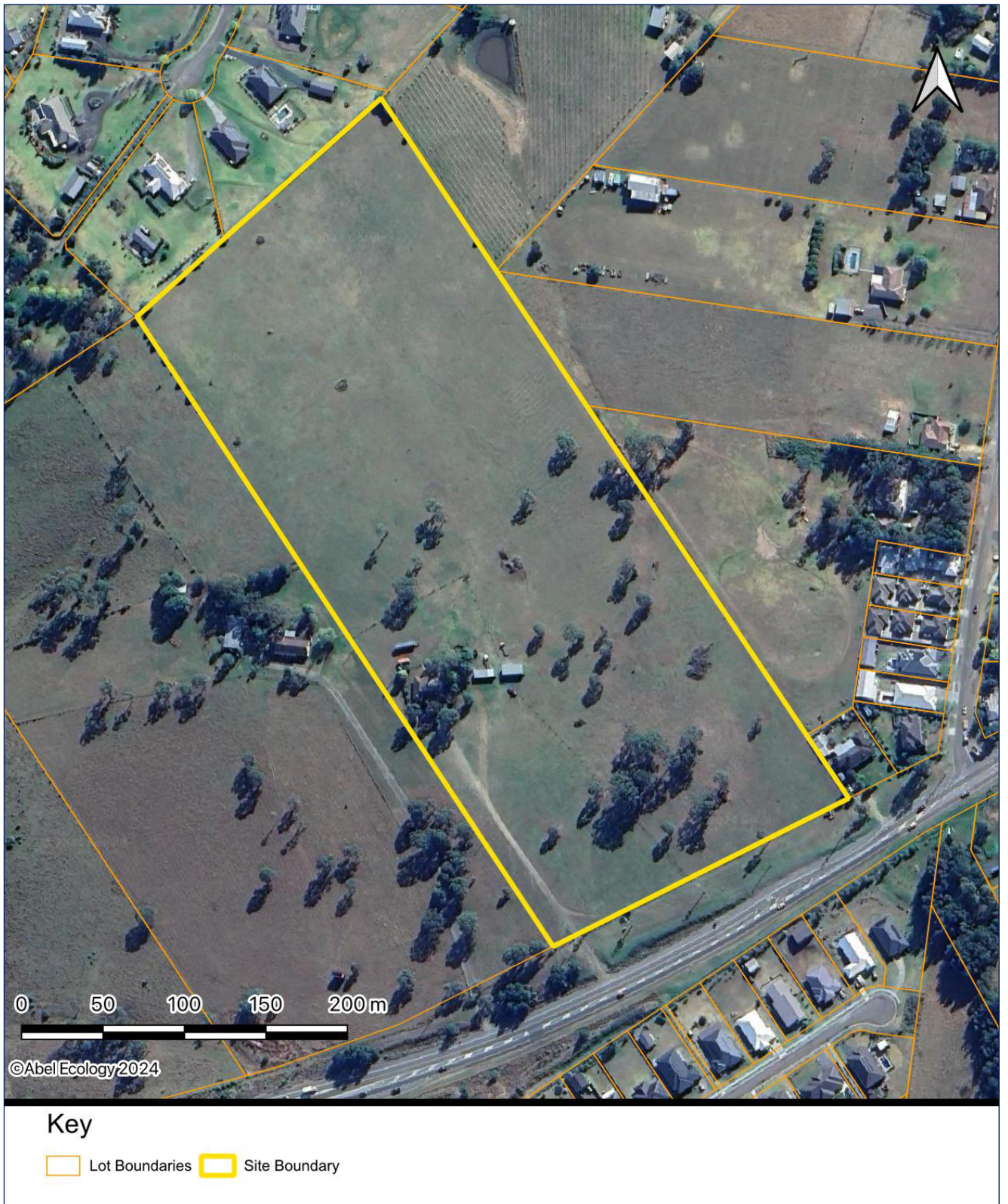
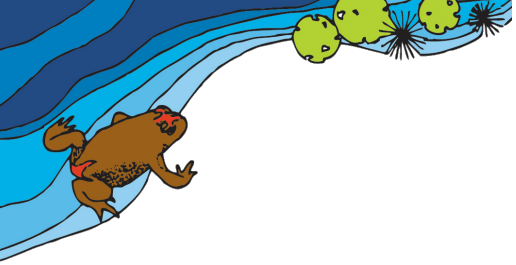


Figure 4. Aerial photo of the site and local area

Source: © Land and property Information NSW. Spatial Information eXchange (SIX) website 2021.

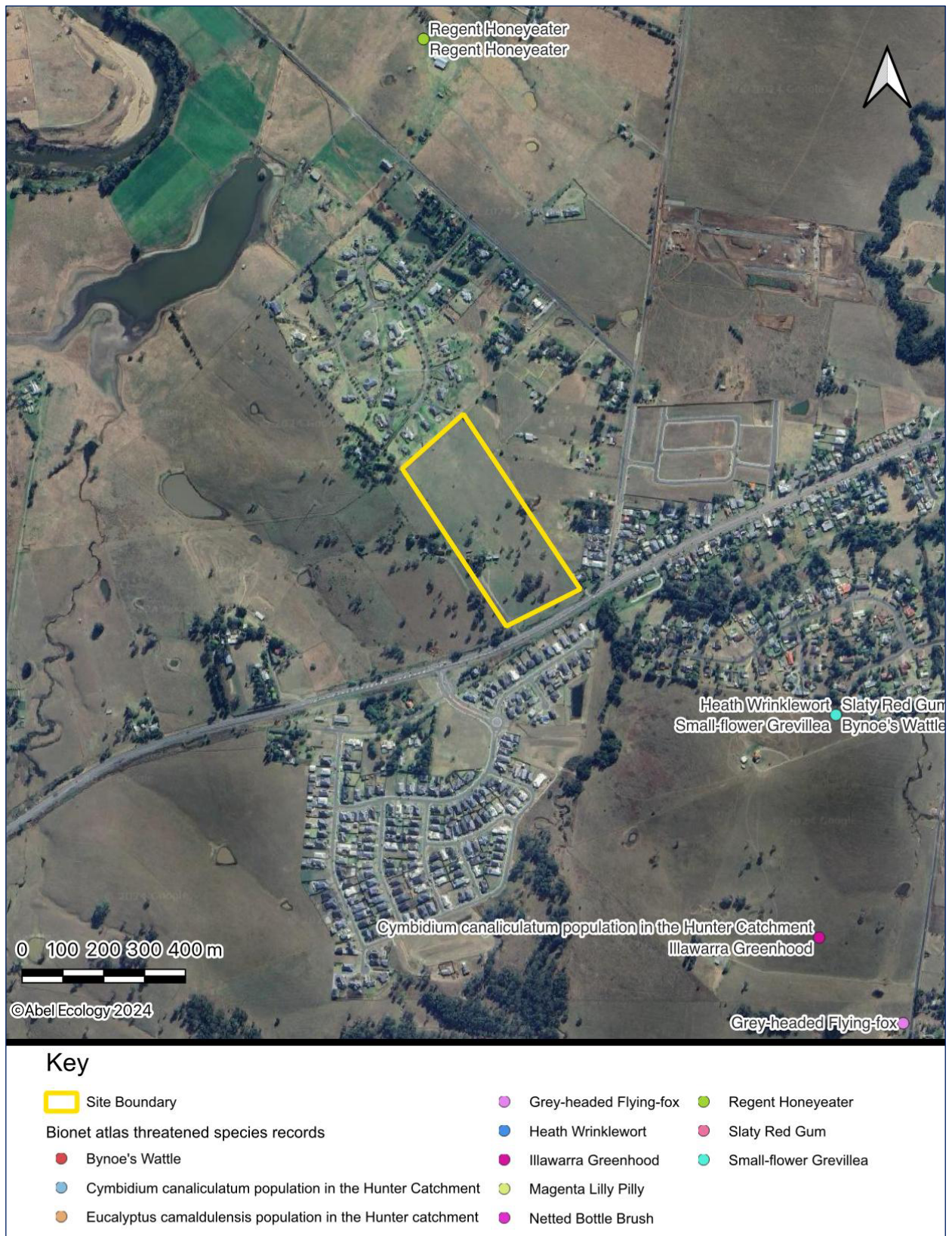
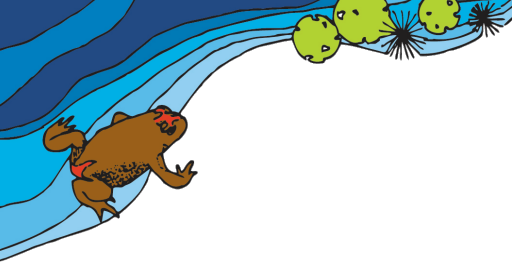


Figure 5. Bionet Atlas Records

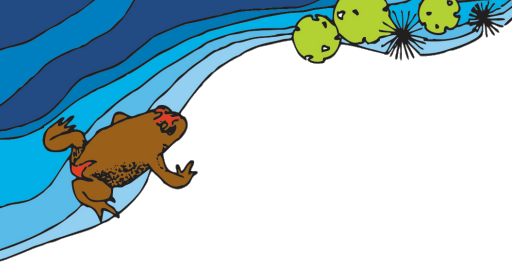


Figure 6. State Vegetation Type mapping of the site and surrounding area.

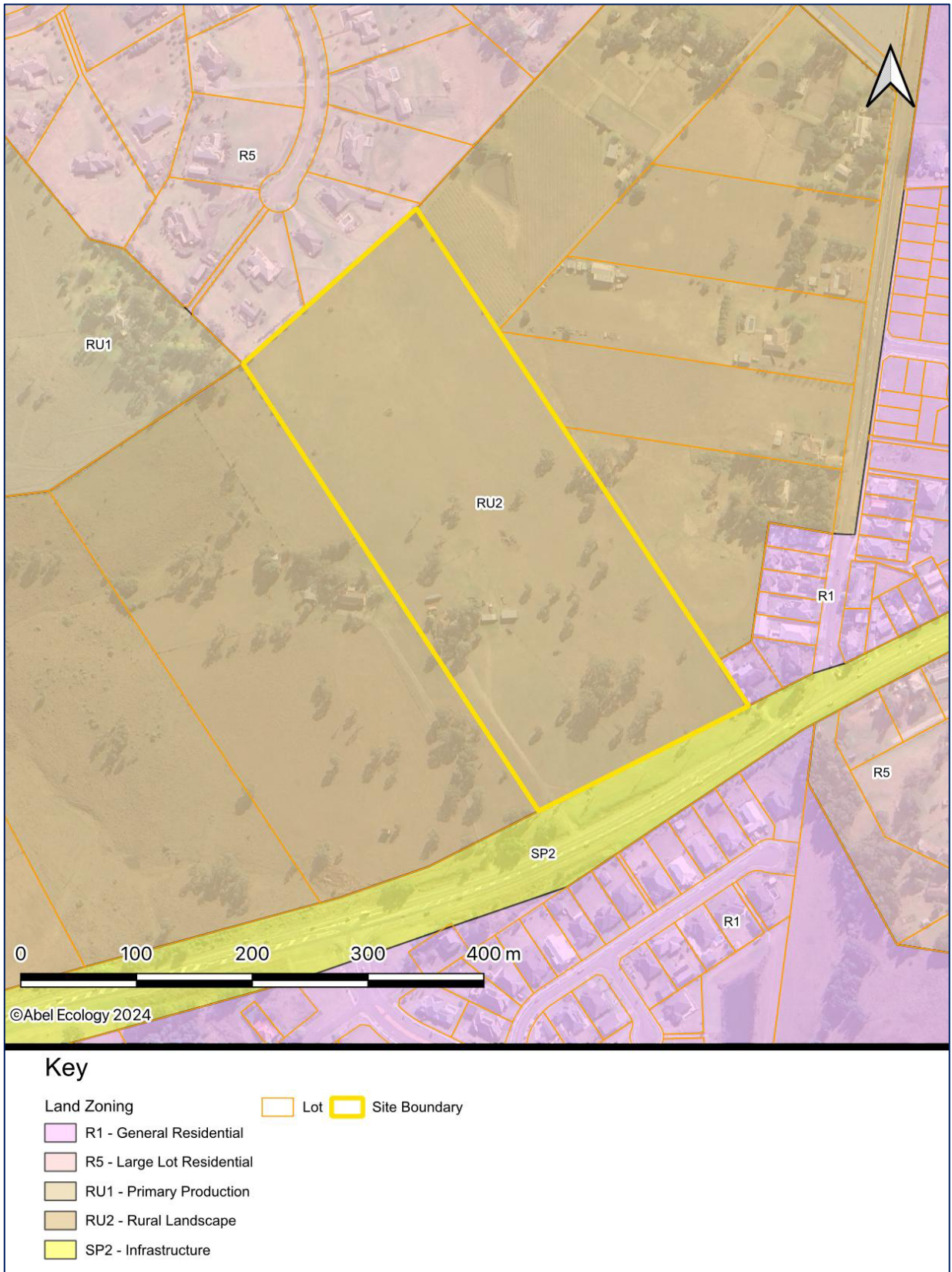


Figure 7. LEP land zoning map.



1. Introduction

1.1 Legislative context

A Council or other consent or determining authority to assess a proposed development under *Biodiversity Conservation Act 2016* and Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The authority must consider the following three Biodiversity Offset Scheme Development Thresholds.

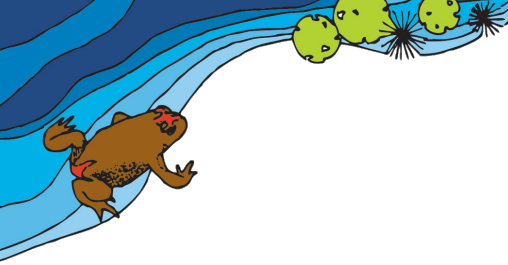
Threshold Trigger 1: Exceeding the clearing threshold on an area of native vegetation

Threshold Trigger 2: Development or a prescribed activity is carried out on land included in the Biodiversity Values Land Map.

Threshold Trigger 3: A “significant effect” on threatened species or ecological communities

A preliminary biodiversity survey of the proposed development site at 1064 New England Highway, Lochinvar (‘the site’ – Figure 1) was undertaken on 12th April 2024. This preliminary assessment investigates whether the impacts of the proposal will trigger any of the three thresholds to entry into the Biodiversity Offsets Scheme, thereby requiring a Biodiversity Development Assessment Report.

If any of the three thresholds are triggered, then a Biodiversity Development Assessment Report (BDAR) must be prepared by an accredited assessor for the Authority to issue a consent or an approval and a calculation of offsetting required.



1.2 The proposal

The proposal (Figure 2) is to establish a 206-site manufactured home estate and consists of:

- a) Residential lots
- b) Internal access roads
- c) A communal facilities building (496.5 m²)
- d) A display suite (139.73 m²)
- e) Communal swimming pool
- f) Open spaces

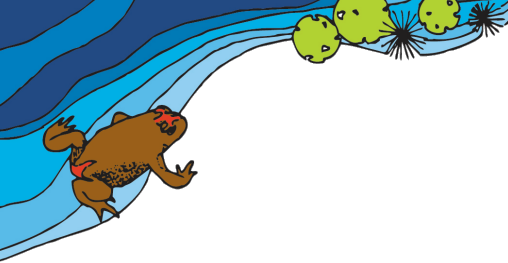
Table 1. Details of lot size and size of proposed native vegetation clearing

Component of site	Area ha	Proportion of the site %
Whole site	9.8	100 %
Extent of proposed vegetation clearing requiring offsetting (VIS Score >17)	0.5	5%
Extent of proposed disturbed (exotic) vegetation clearing (VIS Score <17)	9.2	94%

1.3 Sources of information used in this assessment

Literature reviewed in order to assess possible issues relating to this site include:

- Air photo (SIX maps, NearMap)
- Site Plan (ATJ Architects)
- Vegetation map (SVTM, on ground assessment)
- Schedules to the BC Act 2016
- Schedules to the EPBC Act 1999
- OEH Atlas of NSW Wildlife



2. Biodiversity offsets scheme thresholds 1 and 2

2.1 Threshold One: Biodiversity Conservation Regulation 2017 Development area assessment thresholds

Clearing of native vegetation is declared by clause 7.2(1) to exceed the biodiversity offsets scheme threshold if the area proposed to be cleared is the area set out in Column 2 of the Table to that clause (Table 2 below) opposite the minimum lot size applicable to the land to be cleared in Column 1 of that Table.

Clearing of native vegetation will trigger entry into the offsets scheme if clearing is greater than the assessment threshold. To determine the correct threshold from Table 2 below, the appropriate minimum lot size of land must be selected. The minimum lot size of land can be found on the NSW planning portal <https://www.planningportal.nsw.gov.au/find-a-property/property/>.

Table 2. Areas section 7.2(4) Biodiversity Conservation Regulation 2017

	Land to be considered	Assessment threshold
	Minimum lot size of land	Area of clearing
A	Less than 1 hectare	0.25 hectare or more
B	Less than 40 hectares but not less than 1 hectare	0.5 hectare or more
C	Less than 1,000 hectares but not less than 40 hectares	1 hectare or more
D	1,000 hectares or more	2 hectares or more

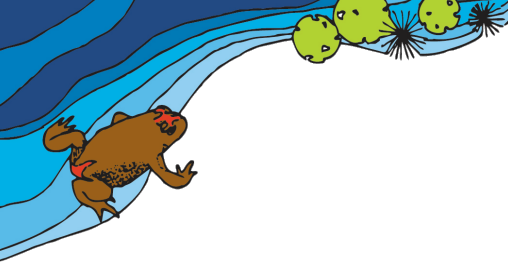
The area threshold applies to all proposed native vegetation clearing associated with a proposal, regardless of whether this clearing is across multiple lots. In the case of a subdivision, the proposed clearing must include all future clearing likely to be required for the intended use of the land after it is subdivided.

The parcel of land is zoned RU2 and the minimum lot size for this lot is 40 ha. Row C in Table 2 is appropriate for this proposal, therefore the area of clearing threshold is 1.0 ha.

The area of native vegetation clearing (entire lot) is approximately 0.5 ha, this is less than the clearing threshold of 1.0 ha.

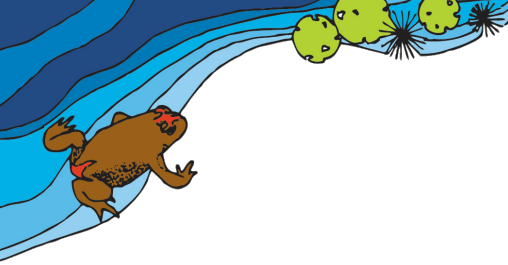
Conclusion

The proposed clearing does not exceed the threshold and entry into the *BC Act* offset scheme is not required as a result of clearing.



2.2 Threshold Two: Clearing or prescribed activities as listed in the Biodiversity Conservation Regulation 2017 on land included on the Biodiversity Values Map

No part of the site is included on the Biodiversity Values Map (Figure 5). Threshold two is not breached.



3. Survey Results: Vegetation and habitat description

3.1 Methodology

The BAM plots were located in areas proposed to be impacted under the proposal. Areas that contain canopy species from the aerial imagery are assumed to be native vegetation. Locations for the BAM plots were then selected for qualitatively the highest native vegetation covered areas excluding those areas with canopy cover.

Therefore, the BAM Plots represent areas with the highest coverages of native species.

3.2 Site vegetation and habitat

The site contains three (3) vegetation and habitat zones which are described below.

There is generally a lack of fallen logs and dead wood/coarse woody debris.

Other site habitat characteristics are described below.

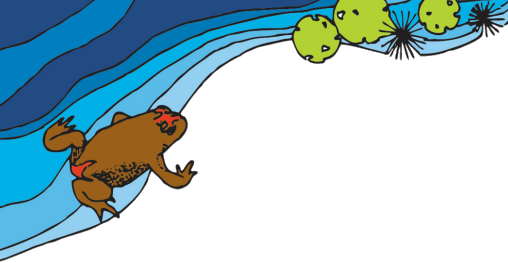
3.2.1 Vegetation and habitat- Zone 1 – Native Woodland PCT 3446 Lower North Foothills Ironbark-Box-Gum Grassy Forest (BAM Plot 1)

Due to a history of grazing and slashing, the vegetation on site occurs as mainly scattered trees with the understorey absent. The groundcover is a mix of native and exotic species.

This PCT is associated with a *BC Act* Listed Endangered Ecological Community ‘Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions’ and *EPBC Act* Listed Critically Endangered Central Hunter Valley eucalypt forest and woodland.

3.2.2 Vegetation and habitat - Zone 2 – Exotic Improved Pasture (BAM Plot 2)

The vegetation community is: Exotic vegetation. The BAM Plot Data was compared with the benchmarks for PCT 3446, which is likely to have been the remnant community on the site (Vegetation Integrity Score: 4). While flora species native to NSW were captured in the plot, the resulting vegetation integrity score is below that required by the Biodiversity Assessment Method 2020 Section 9.2.1 non-TEC and even for a CEEC the vegetation is considered exotic and does not require assessment.



“Biodiversity Assessment Method 2020 Section 9.2.1

The assessor must determine an offset for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity score of: ≥ 15 , where the PCT is representative of an EEC or a CEEC, ≥ 17 , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community and ≥ 20 , where the PCT does not represent a TEC and is not associated with threatened species habitat.”

The vegetation within this zone qualifies as Cleared class.

Visual inspection of the vegetation that is to be impacted by the proposal suggests that all the vegetation that is not covered in Zone 1 is of the quality in BAM Plot 2 or lower.

3.2.3 Vegetation and habitat - Zone 3 – Planted Native Vegetation (No Plot)

The vegetation around the house is a mixture of planted native exotic species. A species list is present in the table below.

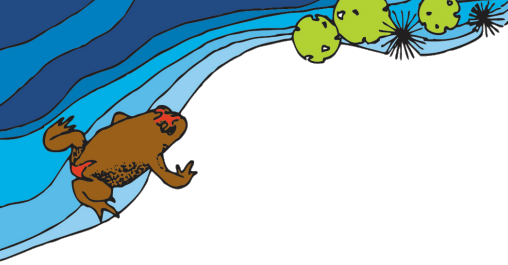
Table 3. Species list in Zone 3 – Planted Native and Exotic Vegetation

Common Name	Scientific Name	Area
Wallangarra White Gum	<i>Eucalyptus scoparia</i> #	House
Brush Box	<i>Lophostemon confertus</i> #	House
Ash	<i>Fraxinus sp.</i> *	House
Black Tea-tree	<i>melaleuca bracteata 'revolution gold'</i> #	House
Duranta	<i>Duranta erecta</i> *	House
Ficus benjamina	<i>Ficus benjamina</i> *	House
Mediterranean cypress	<i>cupressus sempervirens</i> *	House
Chinese thuja	<i>Thuja orientalis</i> *	House
Orchid Tree	<i>Bauhinia sp.</i> *	House
Willow Bottlebrush	<i>Callistemon salignus</i> #	House
Bottlebrush	<i>Callistemon sp.</i> #	House

Key:

* Introduced species

Native species not endemic to the remnant plant community



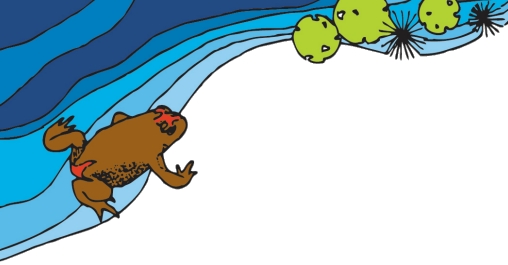
4. Conclusion and Recommendations

Neither of the two thresholds are likely to be triggered as follows:

1. Area of clearing
2. Biodiversity Land Map – clearing or prescribed biodiversity impacts
3. Five Part Tests (not assessed)

Therefore, a Biodiversity Development Assessment Report (BDAR) is **not** recommended.

A Flora and Fauna report is recommended to assess the Five Part Tests.



Appendix 1. Company Profile

Abel Ecology has been in the biodiversity consulting business since 1991, starting in the Sydney Region, and progressively more state-wide in New South Wales since 1998, and now also in Victoria. During this time extensive expertise has been gained with regard to Master Planning, Environmental Impact assessments including flora and fauna, bushfire reports, Vegetation Management Plans, Management of threatened species, Review of Environmental Factors, Species Impact Statements, Biodiversity Development Assessment Reports and as Expert Witness in the Land and Environment Court. We have done consultancy work for industrial and commercial developments, golf courses, civil engineering projects, tourist developments as well as residential and rural projects. This process has also generated many connections with relevant government departments and city councils in NSW. Our team consists of seven scientists and three administrative staff, plus casual assistants as required.

Licences

NPWS s132C Scientific licence number is SL100780.

NPWS GIS data licence number is CON95034.

NSW Dept of Primary Industries Secretary's Animal Care and Ethics Committee Approval: 18/575.

NSW Dept of Primary Industries Animal Research Authority. Accreditation No: 84207.

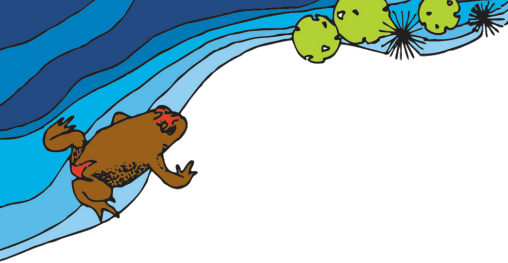
The Consultancy Team

Dr Danny Wotherspoon

BSc, DipEd, MA, PhD, Grad Dip Bushfire Protection,
MECA NSW, MEPLA, MNELA, MESA, MEIANZ, White card.

Danny has practised as an ecological and bushfire consultant since 1991. He is a consulting ecologist to private developers, State Government agencies and various City Councils on a regular basis, for development applications, government projects, and as expert witness in the NSW Land and Environment Court.

Danny's PhD researched fragmented vegetation and fauna habitat use. He has special expertise in fauna habitat use. Danny has presented invited papers at international conferences since 2001 in Australia, China, South Africa, Sri Lanka and Israel on his PhD and other research, including golf course habitat management. Danny's scientific papers have been published in both international and Australian academic journals.



Koala survey qualification Dr Danny Wotherspoon

Requirements of SEPP Koala habitat Protection 2021:

Surveys Must be Carried Out by a Suitably Qualified Person. This is taken to mean a person with:

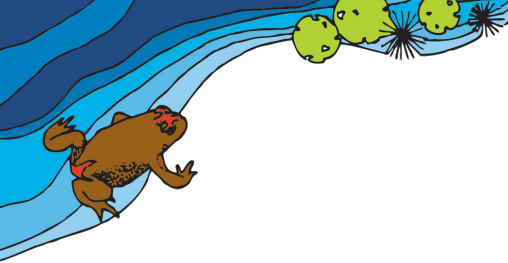
Criterion	Dr Wotherspoon
A minimum undergraduate qualification in natural sciences, ecology, environmental management forestry or similar from a university and	BSc (zoology and ecology) PhD (animal ecology)
A minimum 3 years experience in environmental assessment including field identification of plant and animal species and habitat.	Ecological consultant since 1991 Certified Practising Ecological Consultant (ECA NSW registration no. 1).

This includes having as a minimum the following experience in conducting koala surveys:

Criterion	Dr Wotherspoon
<ul style="list-style-type: none"> Greater than 10 surveys 	Many surveys over more than 20 years. LGAs include Hawkesbury, Campbelltown, Port Macquarie, Blue Mountains, Pittwater, Snowy Monaro etc.
<ul style="list-style-type: none"> Experience in using the koala presence survey methods identified below 	Yes. Training workshop AKF annual Conference Philip Island 1999. NSW LEC expert witness.
<ul style="list-style-type: none"> Can accurately identify preferred koala use trees 	Yes. Arborist expert witness, so experience in identifying trees.
<ul style="list-style-type: none"> Can distinguish between koala faecal pellets and those from other species that may present similar characteristics 	Yes. Training workshop AKF annual Conference Philip Island 1999. Museum collection of pellets held in our office.

The person's skills in koala survey should be demonstrable by relevant qualifications and the following:

Criterion	Dr Wotherspoon
<ul style="list-style-type: none"> a history of experience in koala habitat / population assessments and associated survey methods and/or 	Research paper published by Australian Koala Foundation (AKF) (1999). Paper presented AKF annual Conference Philip Island 1999 Wotherspoon, D, (2021, in press) Koala survey and the SEPP (Koala Habitat Protection) 2019. <i>Consulting Ecology</i> .
<ul style="list-style-type: none"> a resume giving details of koala survey projects conducted over the previous 10 years including employers' names and periods of employment (where relevant). 	Owner and founder of Abel Ecology P/L (previously Blue Mountain Wilderness Services P/L) since 1991.



Mark Mackinnon

B Env. Sci. (Hons); Grad. Dip. in Bushfire Protection

Bushfire Planning & Design (BPAD), Accredited Practitioner Level 3. Accreditation number 36395.

MEIANZ, White Card

Mark is a passionate and enthusiastic scientist who thrives in the field of natural resource management. Mark has worked for a number of inter-state government agencies and environmental consultancies. He has experience in threatened species, fire ecology, bushfire management, pest plant and animals, and landscape restoration. In particular, he specializes in ornithology and bushfire management. Mark has a number of specialized field-based skills including simple and complex tree climbing, working at heights, general firefighter departmental fire accreditation, venomous snake and reptile handling, immunization to handle bat species, and an A - class bird banding license with mist-net endorsement. Mark is also skilled in ArcGIS mapping, first-aid, four -wheel-driving.

Mark Sherring

BM, MAABR, Cert. Hort., Cert. Bush Regen, Cert. Rural Ops, White Card.

Member of the Australian Association of Bush Regenerators

Mark has extensive knowledge and experience of plant species in New South Wales. He has built up his expert knowledge on NSW native plant species over the many years that he has practised as a Botanist. He is regularly asked to contribute to the extensive (ongoing) flora surveys of the Sydney Basin and Blue Mountains carried out by the Royal Botanic Gardens, Sydney. Mark has extensive field survey experience, having worked for over ten years in various plant-related roles. His role in Abel Ecology is to provide expert advice on flora and on the full range of flora management issues encountered and in the design and management of environmental monitoring projects.

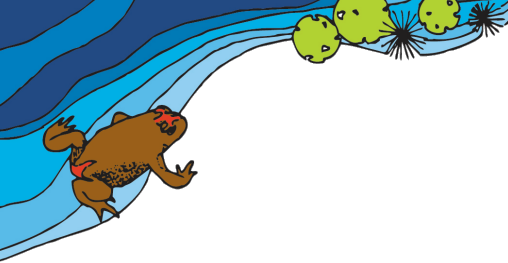
Nick Tong

BSc (Biology), MPhil (Ecology), Cert. III CLM

BAM Accredited Assessor (BAAS22012),

MECA NSW, Snr First Aid, White card.

Nicholas is an experienced ecologist with expertise in fauna, plant species identification, vegetation assessment and ecological restoration. In the last six years, he has been a consulting ecologist to private developers and large corporations, for a variety of projects including State Significant Developments. Nick has extensive field work experience in Sydney, the Blue Mountains and Central West NSW. His Master's project investigated the impacts of exotic predators on herpetofauna in the arid zone. His role at Abel Ecology is to provide expert advice on fauna and the application of the Biodiversity Offset Scheme.



Carna Feldtmann

BEnvSys *USYD.*, DipCLM (enrolled).
AMEIANZ, ECA (NSW), White Card.
Botanist/Ecologist.

Carna is an Environmental Scientist with a strong background in environmental systems, having graduated from the University of Sydney. With a particular interest in conservation, she is committed to contributing to the sustainable management of natural resources. She brings a range of skills, including fieldwork experience, enabling her to develop well informed strategies and recommendations. Her current research interests involve investigating how the fragmentation of natural habitats affects the distribution, abundance, and intersections of fauna and flora species, as well as the overall resilience of the ecosystem. Carna also has experience in management and monitoring of Koala populations.

Emily Barbaro

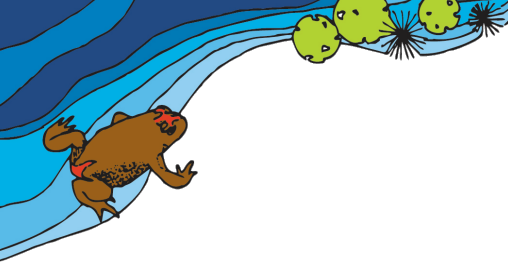
BA, MPublishing, Grad. Cert. EnvSc, MEScM (enrolled).
Junior Ecologist

Emily has completed a Graduate Certificate in Environmental Science and is currently enrolled in a Masters of Environmental Science and Management. Emily has previously worked as a Bush Regenerator and has been volunteering with Bushcare for Blue Mountains City Council for the last three years. She is passionate about learning more about her local Blue Mountains flora and fauna.

Erin Parker

B Biodiversity and Conservation, Macquarie University.
Junior Ecologist and Admin Assistant

Erin has completed a Bachelor of Biodiversity and Conservation at Macquarie University. Erin has previously worked as a bush regeneration team member while completing her degree. There she was able to develop plant ID skills and understanding of the procedures of weed management and restoration. Erin has also taken part in a casual position assisting with threatened species surveys in the Central West of NSW. This involved various tasks including tree hollow surveys for Glossy Black Cockatoos, preparation for reptile surveys, spotlighting, harp trapping surveys of microbats, and Koala SAT plot surveys. Erin is passionate about furthering her knowledge on native Australian flora and fauna, their ecology and impacts.



Dr Stephanie Clark

B Sc (Hons), PhD

Stephanie has over 30 years experience in the collection, identification and taxonomy of marine, estuarine, freshwater and terrestrial molluscs. She has conducted numerous targeted surveys for endangered and threatened species (particularly land and freshwater molluscs) in both Australia and the United States. She is particularly interested in the systematics, taxonomy, morphology (external and internal), population and conservation genetics and conservation of molluscs particularly terrestrial (especially the Helicoidea) and freshwater (especially the Hydrobiidae and related families) groups.