



Central Coast Council
Planning Proposal
205 Johns Road
Wadalba

RZ/5/2016;
November 2016



Planning Proposal
205 Johns Road
Wadalba

RZ/5/2016

Date: November 2016

Consultation Version

Central Coast Council

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Lot 1 DP 206056 205 Johns Road, Wadalba
File No. RZ/5/2016

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Introduction & Locality Context

The subject site is located on the northern side of Johns Road Wadalba approximately 7 kilometres north-east of the township of Wyong.

The subject lot is bounded by a drainage reserve and vacant residentially zoned land to the west, Johns Road to the south, the "Homeland" caravan and mobile home part to the east and an unmade section of Kamira Road to the north.

The part of the site proposed for rezoning comprises cleared land dominated by areas of exotic grassland and vegetation and slopes gently from east to west.

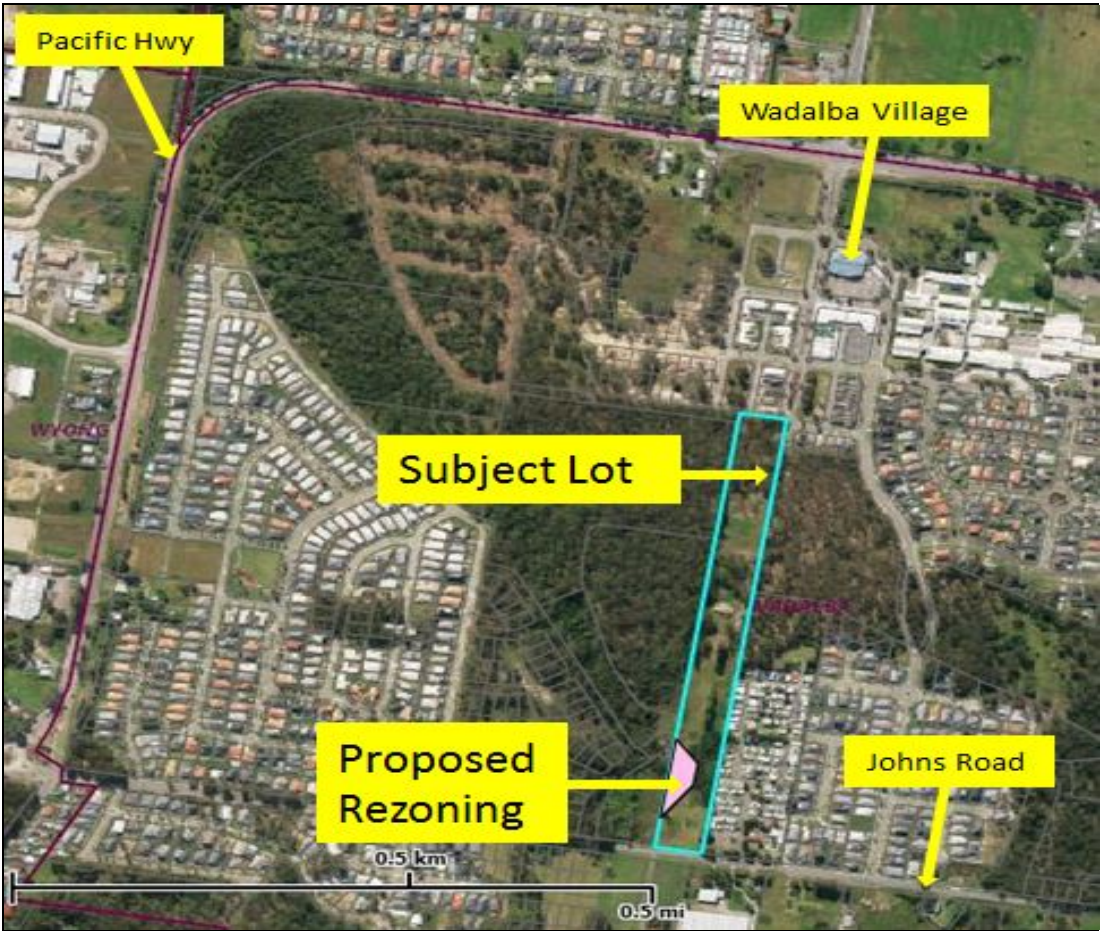


Figure 1 Contextual Locality Plan

Part 1 Objectives or Intended Outcomes

The purpose of the proposal is to facilitate the future subdivision of the land into residential allotments with a minimum allotment area of at least 450m² commensurate with the surrounding land zoned R2 Low Density Residential under *Wyong Local Environmental Plan (LEP) 2013*.

Part 2 Explanation of Provisions

The outcome will be achieved by an amendment to

- *Wyong LEP 2013*: Land Zoning Map altering the zoning for the subject land from E2 Environmental Conservation to R2 – Low Density Residential.
- *Wyong LEP 2013*: Lot Size Map altering the minimum lot size for the subject land from 40 Ha to 450m².

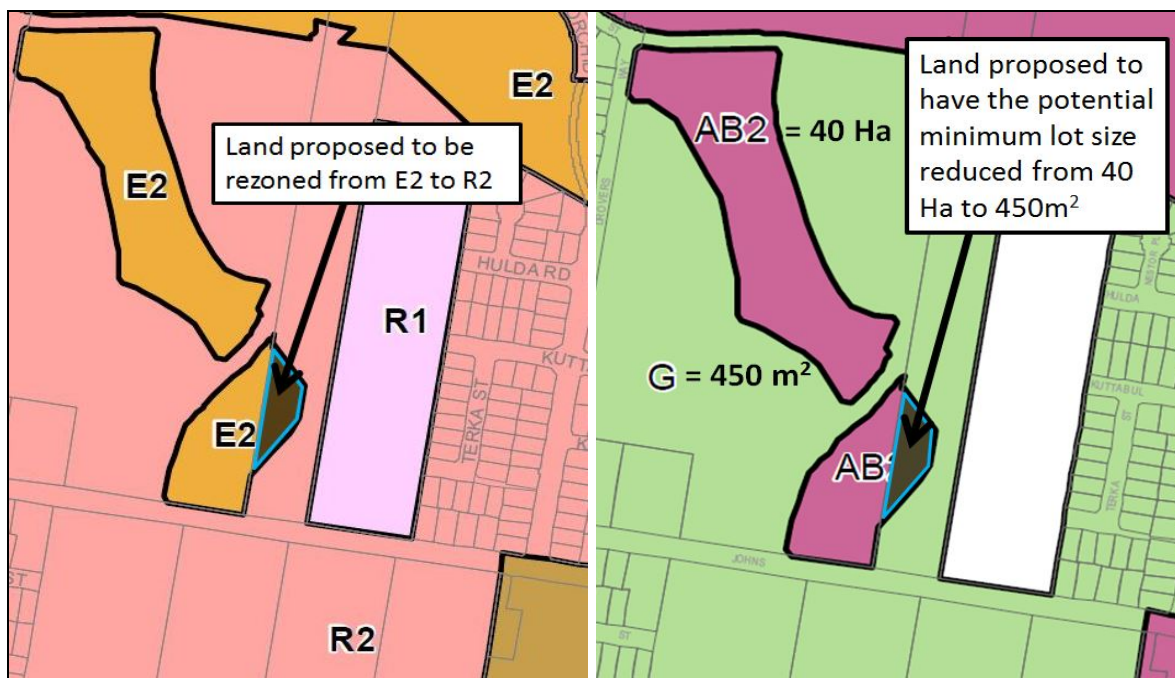


Figure 2 LEP Map Extracts highlighting land that is the subject of this proposal and the proposed changes to LEP provisions.

Part 3 Justification

Background

Prior to December 2013, under the former provisions of *Wyong Local Environmental Plan 1991*, the subject lot and surrounding land were zoned 2e (Urban Release Area Zone). The part of the site that is the subject of this proposal was identified under *Wyong Development Control Plan 2005 Chapter No. 49 - Warnervale East and Wadalba North-West* as a "drainage line corridor".

In accordance with the *Environmental Management Framework (2012 p.42)* that supported the exhibition and implementation of *Wyong LEP 2013*, land zoned 2(e) that was, "dedicated and proposed dedicated land as a drainage corridor" was recommended to be converted to the E2 zone. Subsequently the E2 zone was adopted for the subject land under *Wyong LEP 2013*, at the time of its initial gazettal, 23 December 2013.

The application is supported by information that indicates that, following works that have been undertaken on adjoining land, the subject land is no longer required to be retained for drainage purposes. Supporting information also indicates that the land is not an area of high ecological, scientific, cultural or aesthetic value.

Section A – Need for the Planning Proposal

1. Is the Planning Proposal a result of any Strategic Study or report?

Relevant Report – Stormwater & Flooding

A group of three (3) documents produced by ADW Johnson (formerly Johnson Partners) have been submitted in support of this application. These documents are the *Stormwater Management Plan (SWMP) – Proposed Subdivision of Westminster West Lot 2602 DP 1043825 Johns Road Wadalba (February 2008)*, which was initially produced in support of Development Application DA/1580/2005 for the residential subdivision of adjoining land. In addition two addendums to this SWMP dated 12 June 2014 and 17 February 2016 respectively have been provided (refer to Appendix 05A).

In relation to stormwater management and detention, the reports indicate that in the works undertaken in relation to DA/1580/2005 assumed full development in the area and therefore included the subject site as part of the contribution catchment. The reports conclude that works undertaken as part of the construction of the residential subdivision on the adjoining land as part of DA/1580/2005 have resulted in the subject land no longer required for drainage corridor purposes.

The adequacy of the existing works to satisfy the stormwater management requirements for the area has been confirmed through a review of the proposal by Council's engineering staff.

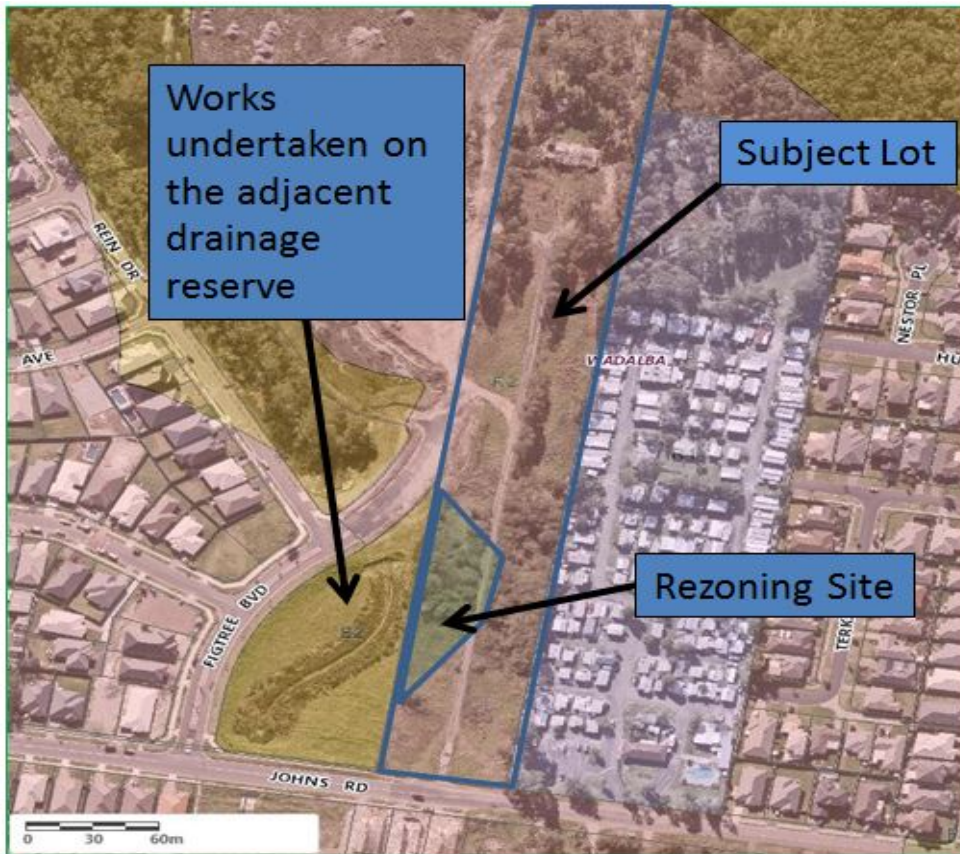


Figure 3 Location of land to be rezoned and the drainage works completed on the adjoining site

Relevant Report - Flora and Fauna

The proposal is supported by a *Flora and Fauna Assessment Report – Proposed Rezoning Part Lot 1 DP 306056 Johns Road Wadalba* (Conacher Consulting 2015) (refer to Appendix 05B). The report states that,

the site consists of land where native vegetation has been removed and contains exotic grassland and coral tree thicket vegetation. The site does not form part of an area of native vegetation and does not provide a potential natural connective habitat for wildlife within the locality.

There is no significant native vegetation on the site and the rezoning will not raise any significant ecological issues.

The assessment of the proposal by Council's environmental staff supported the preparation of a planning proposal though indicated that, given the location of site next to an identified stream, the modification of the proposed subdivision plan and/or additional works in the area may be required to satisfy the requirements of the NSW Office of Water. Given that the site is within 40 metres of a watercourse the NSW Office of Water will need to be consulted as part of any gateway determination and any requirements of the Office of Water taken into consideration prior to the exhibition of a planning proposal.

The relevant objectives for the E2 – Environmental Conservation Zone under *Wyong LEP 2013* are:

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To protect endangered ecological communities, coastal wetlands and littoral rainforests.

The information provided and Council's assessment of the proposal indicate that the subject land does not have characteristics that are commensurate with the objectives of the E2 zone.



Figure 4 Extract from Conacher Flora and Fauna Report indicating the vegetation on-site.

2. Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The intended outcome is that residential subdivision occur and dwelling houses be built on the subject site. Dwelling houses are prohibited in the E2 zone under *Wyang LEP 2013* so a zone change is required.

While there is likely to be a consolidated LEP produced for the Central Coast sometime in the future which could potentially include minor LEP amendments, this is unlikely to occur in a timeframe to alleviate the need for this planning proposal.

Section B – Relationship to strategic planning framework

Where a regional or sub-regional strategy is in place:

3. Is the planning proposal consistent with the objectives and actions contained within the applicable regional or sub-regional strategy (including the Sydney Metropolitan Strategy and exhibited draft strategies)?

Central Coast Regional Plan

The *Draft Central Coast Regional Plan 2036* came into force 14 October 2016.

The Plan “provides an overarching framework that will guide the preparation of detailed land use plans, the determination of development proposals and inform infrastructure funding decisions”. Where Actions under CCRP are directly relevant to the planning proposal, the reason why the proposal is either consistent or inconsistent with relevant actions must be considered.

The site is located within the Northern Growth Corridor identified in the CCRP and located between two identified Strategic Centres at Wyong and Warnervale.

Table 1 identifies the Actions under the CCRP that are relevant to this proposal. The proposal is consistent with all the relevant Actions identified under the CCRP.

Action	Consistency
3.3 Establish the Northern and Southern Growth Corridors as key locations for economic development, residential growth and investment in health, education, research, knowledge-based industries, professional services, sport and leisure, agribusiness, food manufacturing, high-tech manufacturing and clean technologies.	The proposal will result in marginal residential growth within the Northern Growth Corridor.
12.1 Identify terrestrial and aquatic biodiversity values and protect areas of high environmental value to sustain the lifestyle, economic success and environmental health of the region.	There is no significant native vegetation on the site and the rezoning will not raise any significant ecological issues.
15.1 Create a well-planned, functional and compact settlement pattern around existing urban and employment areas, the Warnervale-Wadalba release area, the Northern and Southern Growth Corridors, existing rural villages and sites included in an endorsed local strategy.	The site is located on land identified as existing urban land at Wadalba under the <i>North Wyong Shire Structure Plan (2012) (NWSSP)</i> and will result in marginal residential growth within the Northern Growth Corridor.
15.2 Ensure the settlement pattern responds to settlement planning principles and does not encroach on sensitive land uses.	The environmental value of the land has been assessed and is considered. There is no significant native vegetation on the site and a rezoning will not raise any significant ecological issues.
15.3 Plan for communities to be better connected by an integrated transport system that prioritises safe walking, cycling and public transport.	The subject land is within an existing urban area with good access to schools, shops and public transport.
17.1 Align land use and infrastructure planning to maximise the use and capacity of existing infrastructure, and the efficiency of new infrastructure.	The proposal is effectively infill residential development within an existing urban area and that the proposal will make more efficient use of the capacity of existing infrastructure.
17.4 Coordinate the delivery of infrastructure to support the timely and efficient release of land	The land will be released for development as part of a surrounding larger subdivision currently

for development, including interregional infrastructure and service delivery issues in the growing areas of Warnervale, Bushells Ridge and Wyee.	zoned for residential development.
17.5 Ensure new and intensified development is serviced by enabling and supporting infrastructure, that it contributes to the associated cost and that development which occurs outside of sequencing pays a greater proportion of infrastructure costs.	Servicing of the site has been considered in the planning of surrounding development.
19.1 Release land for housing and employment in the North Wyong Shire Structure Plan area to align with the delivery of local and State infrastructure.	The site is located within an existing urban area identified in the <i>NWSSP</i> .
19.3 Monitor land and housing delivery and accelerate housing supply to meet projected housing demand of 41,500 additional dwellings by 2036.	The proposal will facilitate the development of additional housing in a well-serviced area.
20.1 Improve housing choice by supporting housing delivery in and near the growth corridors and local centres.	The proposed R2 zoning under <i>Wyong LEP 2013</i> provides for a range of housing types and is appropriate given the relative location of the site to centres and other services.
21.1 Provide greater housing choice by delivering diverse housing, lot types and sizes, including small-lot housing in infill and greenfield housing locations.	The proposed R2 zoning under <i>Wyong LEP 2013</i> provides for a range of housing types and is appropriate given the relative location of the site to centres.

Table 1 – CCRP Assessment

North Wyong Shire Structure Plan

In accordance with the *NWSSP*, the subject site is considered to be part of an “existing urban area”, though a significant proportion of the existing residential land is still to be developed.

With regard to housing and achieving minimum residential targets set out under the Regional Strategy (and succeeding Regional Plan) the *NWSSP* indicates that,

Any potential shortfall in achieving the targeted residential densities due to localised development constraints (e.g. surface subsidence controls, biodiversity and flooding) is expected to be offset by medium density development opportunities in and immediately around centres, minor infill development in existing urban areas and development within areas identified for further investigation.

The proposal provides in-fill development within a well serviced area.

4. Is the planning proposal consistent with the local Council's Community Strategic Plan, or other local strategic plan?

Wyong Community Strategic Plan (CSP) 2030

The *Wyong Shire Community Strategic Plan (CSP)* remains the relevant strategic plan for the former Wyong Local Government Area. This plan identifies what the Shire Strategic Vision and how the Shire Strategic Vision integrates with *Council's Asset Management Strategy* and long-term Financial Strategy. The *CSP* identifies 8 priority objectives, each supported by a range of actions:

CSP Objective	Consistency
Communities will be vibrant, caring and connected with a sense of belonging and pride in their neighbourhood.	The subject land is within an existing residential area. Opportunities exist for new residents to participate in existing programs in the district, including community, business, sports, recreation, education and creative groups.
There will be ease of travel within the Shire and to other regional centres and cities. Travel will be available at all hours and will be safe, clean and affordable.	The subject land is within an existing urban area with good access to services. A bus services operate in the area and links to the rail network.
Communities will have access to a diverse range of affordable and coordinated facilities, programs and services	The proposed development will result in developer contributions to cultural and community facilities, open space, sports and recreation facilities. Wadalba contains a relatively large shopping centre (given its population), schools, sports and recreation facilities.
The community will be well educated, innovative and creative; people will attain full knowledge potential at all stage of life.	A community centre and school catering from Kindergarten to Year 12 is within walking distance from the development site. The site is within an existing urban area, 7 km north of Wyong.
Areas of natural value in public and private ownership will be enhanced and retained to a high level in the context of ongoing development.	The site has been assessed as being on minimal natural value and suitable for residential development.
There will be a sense of community ownership of the natural and built environment through direct public involvement with programs and services.	The community will be given an opportunity to comment on any potential impacts of this proposal through the public exhibition process.
There will be a strong sustainable business sector and increased local employment built on the Central Coast's business strengths.	An increase in residential accommodation in the area will help make local businesses sustainable.
Information communication technology will be consistent with the world's best practice and adaptive to technological advances across all sectors.	This area is serviced by the National Broadband Network.

Table 2 – CSP Assessment

The Wyong Shire Settlement Strategy

The *Wyong Shire Settlement Strategy (2013)* is the principal reference for the management of population growth, local employment increase and infrastructure access for the next 20 years. The Settlement Strategy replaces the *Wyong Residential Development Strategy 2002 (RDS)*.

The *Settlement Strategy* indicates that both greenfield and in-fill residential development will be required to accommodate expected population growth over the next 20 years.

The *Settlement Strategy* identifies that the Wadalba North West Urban Release area is appropriately zoned and infrastructure is progressively being established in the area.

This proposal is in-fill development taking advantage of the services that exist in the Wadalba area.

5. Is the planning proposal consistent with applicable state environmental planning policies?

The proposal has been considered against the relevant State Environmental Planning Policies (SEPP) as detailed below.

State Environmental Planning Policy	Comment
SEPP No. 44 – Koala Habitat	
Aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline: (a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and (b) by encouraging the identification of areas of core koala habitat, and (c) by encouraging the inclusion of areas of core koala habitat in environment protection zones	The <i>Flora and Fauna Assessment Report – Proposed Rezoning Part Lot 1 DP 306056 Johns Road Wadalba</i> (Conacher Consulting 2015) indicates that the site does “not form core koala habitat as defined by SEPP 44”.
SEPP 55 – Remediation of Land	
Aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment (a) by specifying when consent is required, and when it is not required, for a remediation work, and (b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and (c) by requiring that a remediation work meet certain standards and notification requirements.	The site has historically been used for rural use and further information will be required prior to public exhibition with regard to the potential for site contamination and the need for remediation.

State Environmental Planning Policy	Comment
Mining, Petroleum & Extractive Industries	
Aims: (a) to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and (b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and (b1) to promote the development of significant mineral resources, and (c) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources, and (d) to establish a gateway assessment process for certain mining and petroleum (oil and gas) development: (i) to recognise the importance of agricultural resources, and (ii) to ensure protection of strategic agricultural land and water resources, and (iii) to ensure a balanced use of land by potentially competing industries, and (iv) to provide for the sustainable growth of mining, petroleum and agricultural industries.	The site is located within a Mines Subsidence District and there are known mineral resources in the area. Referrals to relevant Government Authorities will be undertaken in accordance with the Gateway Determination.

Table 3 – SEPP Assessment

6. Is the planning proposal consistent with applicable Ministerial Directions (s.117 directions)?

The proposal has been considered against the relevant Ministerial Section 117 Directions as summarised below. The full assessment of these Directions is contained within the Attachments of this proposal.

No.	Direction	Applicable	Consistent
Employment & Resources			
1.1	Business & Industrial Zones	N	N/A
1.2	Rural Zones	N	N/A
1.3	Mining, Petroleum Production and Extractive Industries	Y	TBD
1.4	Oyster Aquaculture	N	N/A
1.5	Rural Lands	N	N/A

No.	Direction	Applicable	Consistent
Environment & Heritage			
2.1	Environmental Protection Zones	Y	N
2.2	Coastal Protection	N	N/A
2.3	Heritage Conservation	Y	Y
2.4	Recreation Vehicle Areas	Y	Y
Housing, Infrastructure & Urban Development			
3.1	Residential Zones	Y	Y
3.2	Caravan Parks and Manufactured Home Estates	Y	Y
3.3	Home Occupations	Y	Y
3.4	Integrating Land Use & Transport	Y	Y
3.5	Development Near Licensed Aerodromes	Y	Y
3.6	Shooting Ranges	N	N/A
Hazard & Risk			
4.1	Acid Sulfate Soils	N	N/A
4.2	Mine Subsidence and Unstable Land	Y	TBD
4.3	Flood Prone Land	N	N/A
4.4	Planning for Bushfire Protection	Y	TBD
Regional Planning			
5.1	Implementation of Regional Strategies	N	N/A
5.2	Sydney Drinking Water Catchments	N	N/A
5.3	Farmland of State and Regional Significance on the NSW Far North Coast	N	N/A
5.4	Commercial and Retail Development along the Pacific Highway, North Coast	N	N/A
5.8	Sydney's Second Airport: Badgery's Creek:	N	N/A
5.10	Implementation of Regional Plans	Y	Y
Local Plan Making			
6.1	Approval and Referral Requirements	Y	Y

No.	Direction	Applicable	Consistent
6.2	Reserving Land for Public Purposes	Y	Y
6.3	Site Specific Provisions	Y	Y
Metropolitan Planning			
7.1	Implementation of A Plan for Growing Sydney	N	N/A
7.2	Implementation of Greater Macarthur Land Release Investigation	N	N/A

Table 4 – S117 Ministerial Direction Compliance

Section C – Environmental, Social and Economic Impact

7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

Flora and Fauna

Addressed under Part 3 Section A (1) above.

8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

Bushfire

Addressed under Appendix 01B Ministerial Section 117 Directions- Direction 4.4 – Planning for Bushfire Protection

Mineral Resources - Extraction & Subsidence

Addressed under Appendix 01B Ministerial Section 117 Directions- Direction 4.2 – Mine Subsidence & Unstable Land

Aboriginal and European Cultural Heritage Items

Addressed under Appendix 01B Ministerial Section 117 Directions- Direction 2.3 – Heritage Conservation

Contaminated Land

Addressed under Part 3 Section B (5) – see SEPP 55 Assessment

Flooding and Drainage

Addressed under Part 3 Section A (1)

9. Has the planning proposal adequately addressed any social and economic impacts?

Social Issues

The proposal will eventually result in a group of additional residential lots where the immediate surrounding area yet to be developed for this purpose. The site is well located with regard to access to services.

Section D – State and Commonwealth Interests

10. Is there adequate public infrastructure for the planning proposal?

Traffic and Transport

The proposal will result in a slightly higher lot yield within a much larger subdivision proposal in an area that has been identified for residential development.

Services (Water, Sewer, Gas & Electricity)

All services are available nearby with the capacity to service the site.

11. What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

Consultation with the following agencies is proposed, based on the identified triggers and site constraints:

Agency	Trigger
Mine Subsidence Board	Mine Subsidence District
NSW Rural Fire Service	Bushfire Prone Land
NSW Trade and Investment - Minerals and Petroleum	Potential for future mineral extraction
Office of Environment & Heritage (Planning)*	Rezoning of E2 land

Table 5 – Proposed Agency Consultation List

* NOTE: Section 34A of the EP&A Act requires the RPA to consult with the Director-General (Secretary) of the Department of Environment, Climate Change and Water (OEHS) if, in the opinion of the RPA, critical habitat or threatened species, populations or ecological communities, or their habitats may be adversely affected by the proposed instrument.

- The consultation is to commence after a Gateway Determination is issued unless the Regulations specify otherwise.
- The period for consultation is 21 days unless agreed differently between the RPA & the DG or by the Regulations.

Part 4 Mapping

Figures 1 and 2 provide indicative mapping at this point of the proposal. Comprehensive mapping will be provided for public exhibition.

Part 5 Community Consultation

The proposal will be made available for Choose days for community/agency consultation and undertaken in accordance with any determinations made by the Gateway.

It is expected that the proposal will be made available at the following locations:

- Wyong Shire Administration Building, 2 Hely Street, Wyong
- Council's website.

Additionally, notification of the exhibition of the proposal has been provided to adjoining landholders prior to its commencement.

Part 6 Project Timeline

Action	Period	Start Date	End Date
Anticipated commencement date (date of Gateway Determination)	4 weeks	4/11/16	29/11/16
Anticipated timeframe for the completion of required technical information	3 months	29/11/16	1/3/17
Timeframe for government agency consultation (pre and post exhibition as required by Gateway determination)	3 weeks	1/3/17	21/3/17
Commencement and completion dates for public exhibition	4 weeks	5/4/17	3/5/17
Dates for public hearing (if required)	0	TBA	TBA
Timeframe for consideration of submissions	1 week	3/5/17	10/5/17
Timeframe for consideration of a proposal post exhibition	8 weeks	10/5/17	28/6/17
Date of submission to the Department to finalise LEP	1 week	28/6/17	5/7/17
Anticipated date RPA will make the plan	3 week	19/7/17	26/7/17
Anticipated date RPA will forward to the Department for notification	N/A	26/7/17	27/7/17

Table 6: Key Project Timeframes

Supporting Documentation

No.	Document
01 Assessment and Endorsement	
A.	Council Report and Minutes – 26 October 2016
B.	Section 117 Ministerial Direction Assessment
02 Land Use Provisions	
A.	Land Use Tables - Wyong LEP 2013
03 Agency Responses	
04 Mapping	
05 Supporting Studies	
A.	Stormwater Management Plan and Addendums
B.	Flora and Fauna Report
C.	Bushfire Report
D.	AHIMS Search

01

Assessment & Endorsement

01 A

Council Report & Resolution

Item No: 3.2
Title: Planning Proposal - 205 Johns Rd Wadalba
Department: Environment and Planning



26 October 2016 Ordinary Council Meeting

D12351115

Report Purpose:

The purpose of this report is to consider a planning proposal which seeks to rezone vacant land to R2 Low Density Residential.

This report recommends that Council submit a planning proposal to the Department of Planning and Environment (DP&E) for gateway determination.

Summary:

Applicant	Delroy Projects Pty Ltd
Owner	Ms S Haddad
Application Number	RZ/5/2016
Description of Land	205 Johns Road Wadalba - Part Lot 1 DP 306056
Current Zoning	E2 Environmental Conservation
Zoning proposed by applicant	R2 Low Density Residential
Site Area	3000 m ²
Existing Use	Vacant

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Recommendation:

- 1. That Council prepare a planning proposal to amend Wyong Local Environmental Plan 2013, to rezone part of Lot 1 DP 306056, 205 Johns Road Wadalba from E2 Environmental Conservation to R2 Low Density Residential, pursuant to Section 55 of the Environmental Planning and Assessment (EP&A) Act 1979,***
- 2. That Council forward the planning proposal to the Department of Planning and Environment requesting a gateway determination, as well as delegation for Council to finalise and make the draft Local Environmental Plan, pursuant to Section 56 (1) of the EP&A Act, 1979.***
- 3. That Council prepare and exhibit, subject to the gateway determination, an amendment to Wyong Development Control Plan 2013, Chapter 6.17 – Warnervale East/Wadalba North West to include appropriate Development Control Plan provisions.***

4. That Council undertake community and government agency consultation in accordance with the requirements of the gateway determination including the concurrent exhibition of the draft Development Control Plan.
5. That Council request a report be prepared outlining the results of the community and public authority consultation.

Background

Prior to December 2013 and the Gazettal of *Wyang Local Environmental Plan (WLEP) 2013*, the subject lot and surrounding land were zoned 2e (Urban Release Area Zone). The part of the subject lot that is the subject of this proposal was identified under *Wyang Development Control Plan (DCP) 2005 Chapter No. 49 - Warnervale East and Wadalba North West* as a "drainage line corridor".

Under *WLEP 2013* the subject site was zoned E2 Environmental Conservation as at the time the site was proposed to be used as a drainage corridor.

The Site

The site is located on the northern side of Johns Road Wadalba, approximately 7 kilometres north-east of Wyong Town Centre (Figure 1).



Figure 1 – Aerial Photo/Locality Map (site context)

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The site is bounded by a drainage reserve and vacant residentially zoned land to the west, Johns Road to the south, the "Homeland" caravan park to the east and an unmade section of Kamira Road to the north.

The part of the site proposed for rezoning is generally cleared land dominated by non-native vegetation (Figure 2). The site slopes gently from east to west. This part of the site is zoned E2 Environmental Protection under *Wyong LEP 2013* and the remainder of the lot is currently zoned R2 Low Density Residential under *Wyong LEP 2013*.

The site is identified in the *North Wyong Shire Structure Plan* as being within an existing urban area.

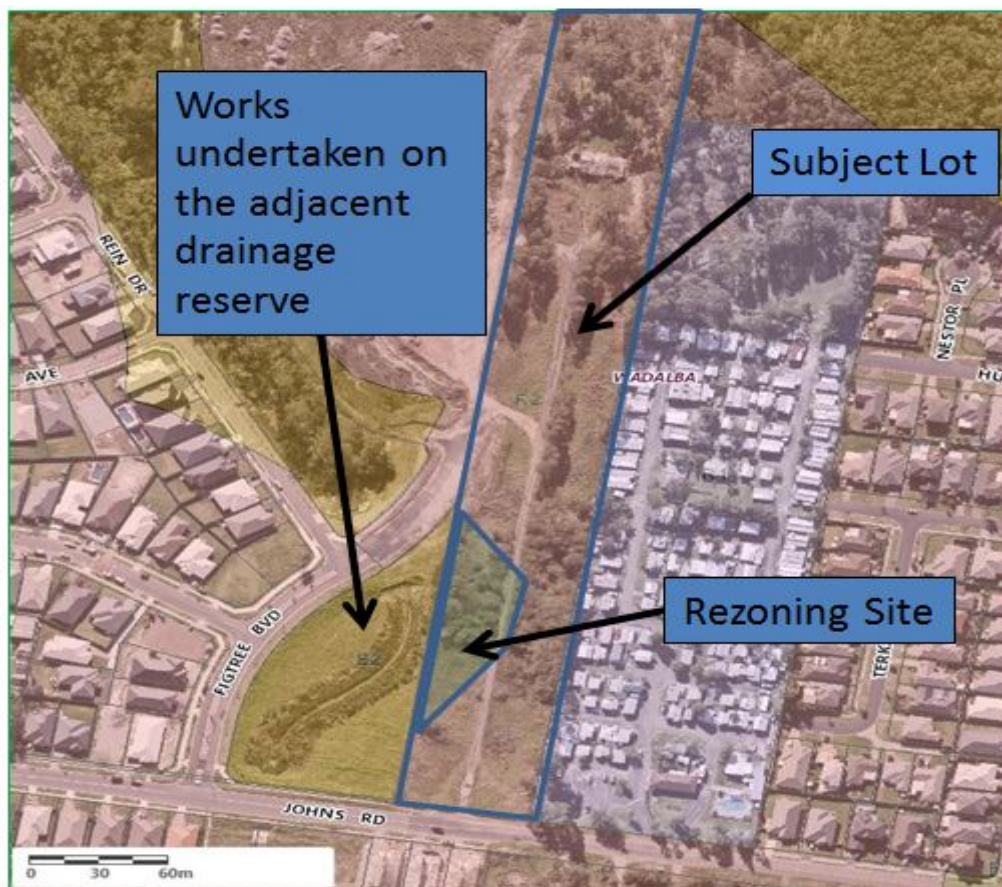


Figure 2 – Aerial Photo – Proposed rezoning site and surrounding sites

The Proposal

The application seeks to amend the land zoning and minimum lot size maps under *WLEP 2013*. It is proposed that the subject part lot be rezoned from the current E2 Environmental Conservation Zone to the R2 Low Density Residential Zone. It is also proposed that the minimum lot size map be altered to show this area as having a minimum lot size of 450m² to align with the provisions of the adjoining R2 zoned land.

The application provides documentation which demonstrates that the subject land is no longer required to be retained for drainage purposes, and is therefore suitable for residential land uses. This will be discussed further later in this report.

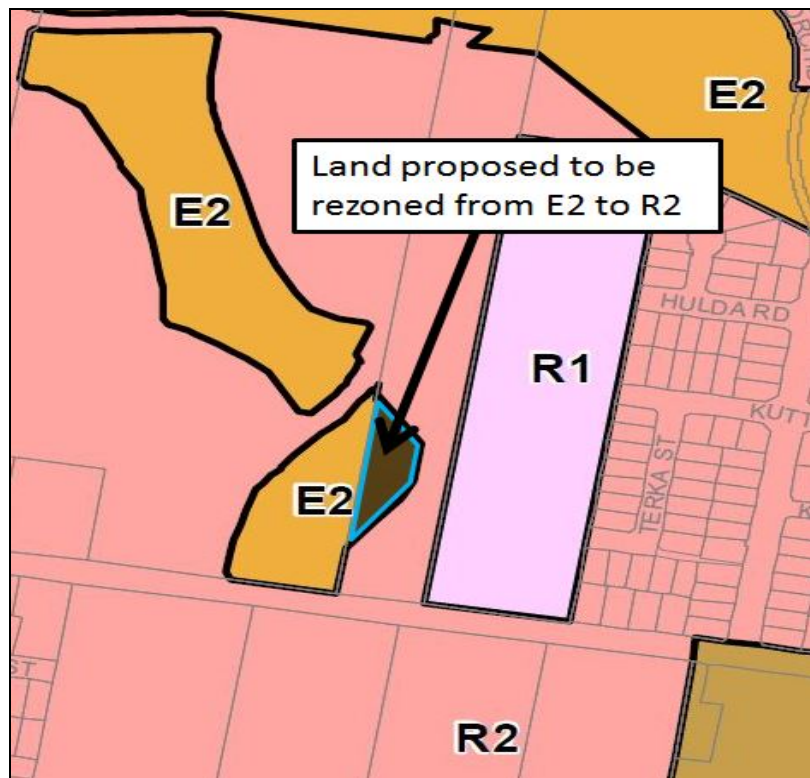


Figure 3 – Zoning Map extract, land that is proposed to be rezoned is edged in blue.

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Assessment

A preliminary assessment of the concept indicates the proposal has merit. The planning proposal has been informed by a series of preliminary studies relating to flooding, ecology and planning matters.

Stormwater & Flooding

The application is supported by the Stormwater Management Plan Addendum report prepared by ADW Johnson and dated 17 February 2016. This report indicates that the stormwater detention works undertaken in relation to DA/1580/2005 on the adjoining site provided additional stormwater detention which compensated also for development on the subject site. The drainage reserve land is now in the ownership of Council (see Figures 2 & 4).

Council's engineering staff have confirmed that there is adequate stormwater detention capacity and as such the subject land is no longer required for drainage corridor purposes.

Ecological Issues

The proposal is supported by a *Flora and Fauna Assessment Report – Proposed Rezoning Part Lot 1 DP 306056 Johns Road Wadalba (Conacher Consulting 2015)*. The report states that,

“the site consists of land where native vegetation has been removed and contains exotic grassland and coral tree thicket vegetation. The site does not form part of an area of native vegetation and does not provide a potential natural connective habitat for wildlife within the locality”.

There is no significant native vegetation on the site and the rezoning will not raise any significant ecological issues. (Figure 4) The assessment of the proposal by Council’s ecologist supported the preparation of a planning proposal.



Figure 4 - Extract from Conacher Flora and Fauna Report showing on-site vegetation and also showing the drainage works on the adjoining property

Zone Objectives

The relevant objectives for the E2 – Environmental Conservation Zone under *WLEP 2013* are:

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To protect endangered ecological communities, coastal wetlands and littoral rainforests.

The information provided and Council's assessment of the proposal indicate that the subject land does not have characteristics that are consistent with the objectives of the E2 zone.

The land has capacity to be developed in a similar manner to the surrounding R2 zoned land.

Policy Issues

The subject site is not identified in the *Wadalba Wildlife Corridor (WWC) Management Plan (2006)* as part of the Wadalba Wildlife Corridor, however is identified as such under *Wyong DCP 2013 – Chapter 6.17 Warnervale East/ Wadalba North West- Urban Release Areas*. In addition the land was not initially identified as part of the proposed Drainage Line Corridor identified in the *WWC Management Plan* and was only added to mapping under *Wyong DCP 2005* to accommodate issues with subdivision design that have now been overcome.

The mapping issues identified are proposed to be amended under a revision of *Wyong DCP 2013* as outlined in figure 5 below.

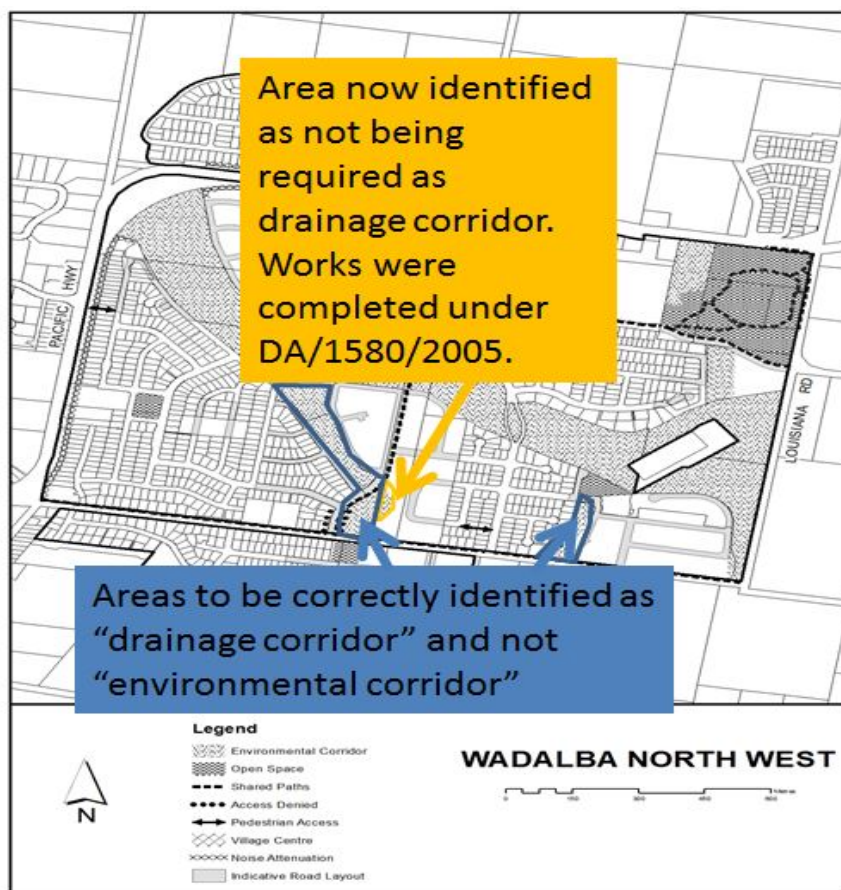


Figure 5 - Extract from Chapter 6.17 of Wyong DCP 2013 showing proposed changes

DRAFT

Other Considerations

The following additional matters will need to be considered as part of any future gateway determination granted:

- Bushfire
- Mineral Resources - Extraction & Subsidence
- Aboriginal and European Cultural Heritage
- Contaminated Land
- Social Issues
- Traffic and Transport
- Services (Water, Sewer, Gas & Electricity)
- State Environmental Planning Policies (SEPPs)
- Ministerial Section 117 Directions
- Strategic Planning Framework:
 - *Central Coast Regional Strategy*
 - *Draft Central Coast Regional Plan*
 - *North Wyong Shire Structure Plan*
 - *Wyong Community Strategic Plan*
 - *The Wyong Shire Settlement Strategy*

Statutory Compliance and Strategic Justification

In May 2016 DP&E issued guidance for merged councils on planning functions. In accordance with these guidelines, merged Councils are to continue to progress planning proposals with strategic merit. The proposal is considered to be of local significance, and provides "appropriately zoned land for housing" purposes.

The proposal is considered consistent with the Central Coast Regional Plan 2016 in that it delivers additional housing opportunities within the release areas.

The proposal has been assessed having regard for all State Environmental Planning Policies, Ministerial s.117 Directions and the relevant guidelines set out within the regional plans. The proposal is considered to be consistent with these considerations and suitable for forwarding to DP&E for a gateway determination.

Internal Consultation

Internal consultation for the planning proposal has included staff from the following units, with no objections raised to this stage of assessment:

- Development Assessment - Ecology;
- Development Engineering Assessment – Drainage and Flooding.

External Consultation

Government agency and public consultation requirements for the planning proposal will be detailed in the gateway determination and conducted accordingly. It is anticipated that the following agencies will need to be consulted:

- Mine Subsidence Board;
- Darkinjung Local Aboriginal Land Council;
- Guringai Tribal Link;
- NSW Trade and Investment - Minerals and Petroleum;
- NSW Office of Environment and Heritage;
- NSW Office of Water

Budget Impact

There are no immediate budget impacts as the assessment of the Planning Proposal is being funded by payment of a Phase 1 Rezoning Fee. Further assessment work conducted by Council staff and all of the required supporting technical studies will be funded by the proponent.

All infrastructure and services required to support the development will be required to be provided by the developer.

Conclusion

The proposal will provide for orderly and economic development of land that is no longer required for infrastructure purposes.

It is therefore considered that a planning proposal should be prepared and forwarded to DP&E for a gateway determination.

DRAFT

26 October 2016 Ordinary Council Meeting – Minutes Extract

3.2 Planning Proposal - 205 Johns Rd Wadalba

RESOLVED on the motion of Mr REYNOLDS:

- 392/16** *That Council prepare a planning proposal to amend Wyong Local Environmental Plan 2013, to rezone part of Lot 1 DP 306056, 205 Johns Road Wadalba from E2 Environmental Conservation to R2 Low Density Residential, pursuant to Section 55 of the Environmental Planning and Assessment (EP&A) Act 1979.*
- 393/16** *That Council forward the planning proposal to the Department of Planning and Environment requesting a gateway determination, as well as delegation for Council to finalise and make the draft Local Environmental Plan, pursuant to Section 56 (1) of the EP&A Act, 1979.*
- 394/16** *That Council prepare and exhibit, subject to the gateway determination, an amendment to Wyong Development Control Plan 2013, Chapter 6.17 – Warnervale East/Wadalba North West to include appropriate Development Control Plan provisions.*
- 395/16** *That Council undertake community and government agency consultation in accordance with the requirements of the gateway determination including the concurrent exhibition of the draft Development Control Plan.*
- 396/16** *That Council request a report be prepared outlining the results of the community and public authority consultation.*

DRAFT

01 B

**Desktop Assessment –
Ministerial Section 117
Directions**

Ministerial Section 117 Directions

Direction	Comment
Employment & Resources	
1.3 Mining, Petroleum Production and Extractive Industries	
Aims to ensure that the future extraction of State or regionally significant reserves of coal, other minerals, petroleum and extractive materials are not compromised by inappropriate development. Applies when a planning proposal would have the effect of prohibiting the mining of coal or other minerals, production of petroleum, or winning or obtaining of extractive materials, or restricting the potential of development resources of coal, other mineral, petroleum or extractive materials which are of State or regional significance by permitting a land use that is likely to be incompatible with such development.	Consistency - TBA The site is located within a Mines Subsidence District and there are known mineral resources in the area. Referrals to relevant Government Authorities will be undertaken in accordance with the Gateway Determination
Environment & Heritage	
2.1 Environmental Protection Zones	
Aims to protect and conserve environmentally sensitive areas. Applies when the relevant planning authority prepares a planning proposal. What a relevant planning authority must do if this direction applies A planning proposal must include provisions that facilitate the protection and conservation of environmentally sensitive areas. A planning proposal that applies to land within an environment protection zone or land otherwise identified for environment protection purposes in a LEP must not reduce the environmental protection standards that apply to the land (including by modifying development standards that apply to the land). This requirement does not apply to a change to a development standard for minimum lot size for a dwelling in accordance with clause (5) of Direction 1.5 "Rural Lands".	Inconsistent with Justification A planning proposal may be inconsistent with the terms of this direction if the provisions of the planning proposal that are inconsistent are justified by a study prepared in support of the planning proposal which gives consideration to the objectives of this direction. The proposal is supported by a <i>Flora and Fauna Assessment Report – Proposed Rezoning Part Lot 1 DP 306056 Johns Road Wadalba</i> (Conacher Consulting 2015). The report states that "the site consists of land cleared of native vegetation with exhibit grassland and coral tree thicket vegetation. The site does not form part of an area of native vegetation and does not provide a potential natural connective habitat for wildlife within the locality". The E2 zoning that came into force over the subject land under <i>Wyang LEP 2013</i>, 23 December 2013 to accommodate a drainage reserve which is no longer

Direction	Comment
	required. The objective of this direction is to “protect and conserve environmentally sensitive areas”. The land in question is not an environmentally sensitive area.
2.3 Heritage Conservation	
Aims to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance. Applies when the relevant planning authority prepares a planning proposal.	Consistent There are no identified European Heritage items or areas in the vicinity of the site. An Aboriginal Heritage Information Management System (AHIMS) search of the area provided with the application indicates no aboriginal sites or places in or near the location. It is noted that there are identified aboriginal sites or places approximately 500m to the east of the subject site around the base of Wadalba Hill. The Wadalba area has been the subject of studies commissioned by Council in 2000 and this work reviewed (with regard to the Wadalba Hill area) in 2009 and provided by proponents for the individual subdivision applications in the area. All evidence from this previous work would indicate that the AHIMS Search provided is accurate with regard to this site.
2.4 Recreational Vehicle Areas	
Aims to protect sensitive land or land with significant conservation values from adverse impacts from recreational vehicles. Applies when the relevant planning authority prepares a planning proposal.	Consistent The proposal is to provide a land use zone for residential development.
Housing, Infrastructure and Urban Development	
3.1 Residential Zones	
Aims to encourage a variety and choice of housing types to provide for existing and future housing needs, to make efficient use of existing infrastructure and services and ensure that new housing has	Consistent Under <i>Wyong LEP 2013</i> the R2 Low Density Residential zone provides for a variety of housing forms including small lot and dual occupancy

Direction	Comment
appropriate access to infrastructure and services, and to minimise the impact of residential development on the environmental and resource lands. Applies when a planning proposal affects land within an existing or proposed residential zone, and any other zone in which significant residential development is permitted or proposed to be permitted.	development in addition to traditional single dwelling houses. The provisions of <i>Wyong LEP 2013</i> and the conditions of any development consent issued will ensure that the land is adequately serviced for residential development.
3.2 Caravan Parks and Manufactured Home Estates	
Aims to provide for a variety of housing types and provide opportunities for caravan parks and manufactured home estates. Applies when the relevant planning authority prepares a planning proposal.	Consistent The existing zoning does not permit caravan parks.
3.3 Home Occupations	
Aims to encourage the carrying out of low impact small business in dwelling houses. Applies when the relevant planning authority prepares a planning proposal.	Consistent The proposal does not impact on the permissibility of home occupations.
3.4 Integrating Land Use & Transport	
Aims to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts to achieve: improving access to housing, jobs and services by walking, cycling and public transport; increasing choice of available transport and reducing transport on cars; reducing travel demand; supporting efficient and viable public transport services; and provide for efficient movement of freight. Applies when a planning proposal creates alters or moves a zone or provision relating to urban land, including land zoned for residential, business, industrial, village or tourist purposes.	Consistent The proposal will integrate with the established road and public transport system.
3.5 Development Near Licensed Aerodromes	
Aims to ensure the effective and safe operation of aerodromes, their operation is not compromised by development which constitutes an obstruction, hazard or potential hazard to aircraft flying in the vicinity, development for residential purposes or human occupation (within the ANEF contours between 20 & 25) incorporates appropriate	Consistency - TBA The site is in the vicinity of Warnervale Aerodrome. The site is beyond any noise exposure mapping for the aerodrome. The site is within an area where building above 15m

Direction	Comment
mitigation measures so that the development is not adversely affected by aircraft noise. Applies when a planning proposal creates, alters or removes a zone or provision relating to land in the vicinity of a licensed aerodrome.	in height "may impact upon airport operations". Development on the site will be a maximum of 2 storeys not exceed 15m in height.
Hazard & Risk	
4.2 Mine Subsidence & Unstable Land	
Aims to prevent damage to life, property and the environmental on land identified as unstable or potentially subject to mine subsidence. Applies when a planning proposal permits development on land which is within a mine subsidence district, or identified as unstable in a study or assessment undertaken by or on behalf of the relevant planning authority or other public authority and provided to the relevant planning authority.	Consistency – TBA The site is located within a Mines Subsidence District and there are known mineral resources in the area. Referrals to relevant Government Authorities will be undertaken in accordance with the Gateway Determination.
4.4 Planning for Bushfire Protection	
Aims to protect life, property and the environment from bushfire hazards, and encourage sound management of bushfire prone areas. Applies when a planning proposal affects or is in proximity to land mapped as bushfire prone land.	Consistency – TBA The site is identified as bushfire prone land. A <i>Bushfire Assessment Report (Conacher 2015)</i> considers the proposed rezoning site in conjunction with the surrounding subdivision and concludes that residential development would be appropriate subject to appropriate conditions.
Regional Planning	
5.10 Implementation of Regional Plans	
Aims to give legal effect to the vision, land use strategy, goals directions and actions contained in regional strategies.	Consistent Considered under Section B 3 of the Planning Proposal. The proposal is considered to be consistent with the relevant actions of the <i>Central Coast Regional Plan</i>.
Local Plan Making	
6.1 Approval and Referral Requirements	
Aims to ensure that LEP provisions encourage the	Consistent

Direction	Comment
efficient and appropriate assessment of development. Applies when the relevant planning authority prepares a planning proposal.	The planning proposal will not increase the need for referrals for development applications. Referral requirements will be similar to those that are have been undertaken for the development application for the residential development of the remainder of the lot, generally in accordance with <i>Section 91 of the Environmental Planning and Assessment Act 1979</i>.
6.2 Reserving Land for Public Purposes	
Aims to facilitate the provision of public services and facilities by reserving land for public purposes, and facilitate the removal of reservations of land for public purposes where land is no longer required for acquisition. Applies when the relevant planning authority prepares a planning proposal.	Consistent The subject land has previously been identified as a proposed drainage reserve to be dedicated to Council. Works undertaken within an adjoining drainage reserve mean that the land is no longer required for this purpose. Beyond the change in zoning the land that occurred through the introduction of <i>Wyong LEP 2013</i>, the land has not been subject to any formal reservation and the land has remained in private ownership. This reflects the uncertainty with regard to the final use of the land at the time. No removal or change to reservation is required.
6.3 Site Specific Provisions	
Aims to discourage unnecessarily restrictive site specific planning controls. Applies when the relevant planning authority prepares a planning proposal to allow particular development to be carried out.	Consistent While a Development Application is yet to be lodged for the subject site it is apparent that there will be an application lodged for residential subdivision as soon as possible. It is proposed that the relevant LEP mapping be updated only subsequent to this proposal and not additional development standards than currently exist will apply.

02

Land Use Tables

Land Use Tables

The *Wyong Local Environmental Plan (LEP) 2013* is the principal Environmental Planning Instrument applying to the subject land. The land is currently zoned E2 Environmental Conservation and it is proposed the land be rezoned R2 Low Density Residential. The land use tables, identifying the objectives, permissible and prohibited land uses for the existing and proposed zone is provided below:

Zone E2 Environmental Conservation

1 Objectives of zone

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.
- To protect endangered ecological communities, coastal wetlands and littoral rainforests.
- To enable development of public works and environmental facilities if such development would not have a detrimental impact on ecological, scientific, cultural or aesthetic values.

2 Permitted without consent

Nil

3 Permitted with consent

Eco-tourist facilities; Environmental facilities; Environmental protection works; Flood mitigation works; Recreation areas; Research stations; Roads; Water reticulation systems

4 Prohibited

Business premises; Hotel or motel accommodation; Industries; Multi dwelling housing; Recreation facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3

Zone R2 Low Density Residential

1 Objectives of zone

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To maintain and enhance the residential amenity and character of the surrounding area.
- To provide a residential character commensurate with a low density residential environment.

2 Permitted without consent

Home-based child care; Home occupations

3 Permitted with consent

Bed and breakfast accommodation; Boarding houses; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Car parks; Child care centres; Community facilities; Dual occupancies; Dwelling houses; Emergency services facilities; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Health consulting rooms; Home businesses; Home industries; Information and education facilities; Jetties; Neighbourhood shops; Places of public worship; Recreation areas; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Shop top housing; Water recycling facilities; Water reticulation systems; Water storage facilities

4 Prohibited

Any development not specified in item 2 or 3

05

Studies

05 A

Stormwater Management Plan Information



Ref: 190216 JO/ND

17th February 2016

General Manager
Wyong Shire Council
PO Box 20
WYONG NSW 2259

Dear Sir/Madam,

**RE: STORMWATER MANAGEMENT PLAN
PROPOSED SUBDIVISION
LOT 1, DP 306059, JOHNS ROAD
& LOT 137, DP1194748, FIGTREE BOULEVARD
WADALBA**

ADW Johnson has been engaged by Delroy Projects to provide an addendum report on the stormwater management for the proposed subdivision at the abovementioned address to accompany a development application. This report is to be read in conjunction with a previous report *Stormwater Management Plan (SMP) (Feb, 2008)* prepared to Johnson Partners (now ADW Johnson) and the SWMP addendum dated 12th June 2014 prepared by ADW Johnson.

1.0 BACKGROUND

A number of reports have been prepared previously to discuss stormwater detention and flooding within the stormwater channel known as Watercourse 13 (Azzura Consulting Report), as various properties within the catchment have been developed.

As part of the development of Lot 2602 in DP 1043825, several stormwater controls were constructed to comply with the water detention and flooding requirements for the catchment. An addendum letter report was prepared on 12th June 2014 for the development of Lot 2606 to demonstrate how the proposed design complied with the conditions of consent.

The 2008 report and 2014 addendum can be found in **Appendix A**.

ADW JOHNSON PTY LIMITED

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Hunter Region

7/335 Hillsborough Road, Warners Bay NSW 2282
Ph. 02 4978 5100
Fax. 02 4978 5199
Video. 02 4954 3948
Email. hunter@adwjohnson.com.au

www.adwjohnson.com.au

2.0 PROPOSED DEVELOPMENT

The proposed development is a three (3) stage subdivision consisting of 79 residential lots. The development includes the continuation of the existing Figtree Boulevard currently terminated at the southern boundary of the site. Stages 1 and 2 are to the east and Stage 3 to the west of Figtree Boulevard. The development drains to an existing drainage reserve to the southwest of the site by means of a proposed stormwater network outlined in Section 5 of this report. Refer to **Exhibit 1** for the concept layout.

3.0 EXISTING DETENTION CONTROLS

The proposed stormwater detention controls for the catchment were documented in both *The SMP (Feb, 2008)* and the subsequent 2014 addendum report. These reports detail the modelling and results of the detention provided by a series of culverts at road crossings and a constructed berm across the channel. The culverts and the berm have been sized to successfully reduce the peak post-developed flow to less than or equal to the peak predeveloped flows for all storm event up to and including the 100yr ARI.

As part of this assessment, the subject site was included in the contributing catchment assuming full development. As the existing stormwater detention controls have been sized to cater for the proposed subdivision, no further detention for the development site is required.

4.0 FLOODING

As part of the development of Lot 2606, it was required to demonstrate that the proposed works did not increase flood levels on adjoining properties. Due to the configuration of the channel and Figtree Boulevard culvert crossing, it was decided to construct a berm along the eastern boundary of the property to direct flow into the culvert and contain the 1% flood flows within the property.

As shown in **Appendix A**, the flood extents, as a result of the proposed works, do not encroach on the proposed development site and hence, the regrading of the site to be above the flood level will not affect the existing flood storage or flood levels within the channel.

The proposed roads levels adjacent to the channel have been set above the 100yr ARI flood level identified in the addendum report to provide flood free access to the development. The lot levels have been set to be a minimum 500mm above the 100yr water surface level in accordance to Wyong Shire Council specification.

5.0 PROPOSED STORMWATER INFRASTRUCTURE

A stormwater drainage concept plan has been prepared to demonstrate how the stormwater runoff for the proposed development and the upstream catchments is captured and transported to the receiving waters. Refer to **Exhibit 2** for the Stormwater Management Plan.

The proposed development utilises a pit and pipe network to convey the runoff from the development and upstream catchments before discharging to the adjacent drainage reserve.

The pit and pipe network will be designed to cater for the minor storm event (1 in 5yr ARI) without any surcharging within the system and minimising flow widths and ponding. The road network will be designed to cater for the major storm event (1 in 100yr ARI).

It is proposed to capture roof runoff for each of the future dwellings via the use of rainwater tanks for reuse for outdoor landscaping and toilet flushing. Overflow from the rainwater tanks will be conveyed to the stormwater system via an overflow pipe. In accordance with WSC's requirements, each of the tanks are expected to have a first flush system installed to improve stormwater runoff quality prior to being discharged from the site.

Flows within the pit and pipe network will be treated by GPTs to remove gross pollutants before being discharged into the drainage channel.

The proposed stormwater network allows for four (4) stormwater connection points along the eastern boundary for the neighbouring proposed development's stormwater network to connect into. The location and size of three (3) connection lines have been designed to cater for the flows from the proposed stormwater network in the neighbouring development as outlined in the plan 20575-EA02-B provided by Trehy Ingold Neate. The remaining connection is located at the geographical low point of the site between lots 106 and 107.

6.0 CONCLUSION

The proposed stormwater system has been designed to safely convey the minor and major flows from within the development to the receiving waters without adversely impacting downstream properties and infrastructure.

The stormwater detention for the proposed development has been catered for in the existing downstream infrastructure.

The proposed development has no adverse impacts on flooding as the 1% flows have already been contained within the adjoining property without any flood storage or flow within the subject site.

Whilst water quality is provided by downstream regional works additional treatment is proposed via first flush devices on rainwater tanks and gross pollutant traps.

We trust this information is sufficient for Council to determine the Development Application acceptable in regards to stormwater management for the proposed development site.

Yours faithfully,

A handwritten signature in cursive script, appearing to read 'Jaxon O'Shea'.

Jaxon O'Shea
Civil Engineer
ADW JOHNSON
Central Coast



SITE PLAN
1:1250 A3

LEGEND

-
- PROPOSED LOT BOUNDARY
 STAGE 1 BOUNDARY
 STAGE 2 BOUNDARY
 STAGE 3 BOUNDARY
 PROPOSED SEWER PIPE
 EXISTING KERB LINE

drawing title:

EXHIBIT 1:
PROPOSED
DEVELOPMENT

location: **JOHNS ROAD &
FIGTREE BOULEVARD
WADALBA**

council: WYONG SHIRE COUNCIL

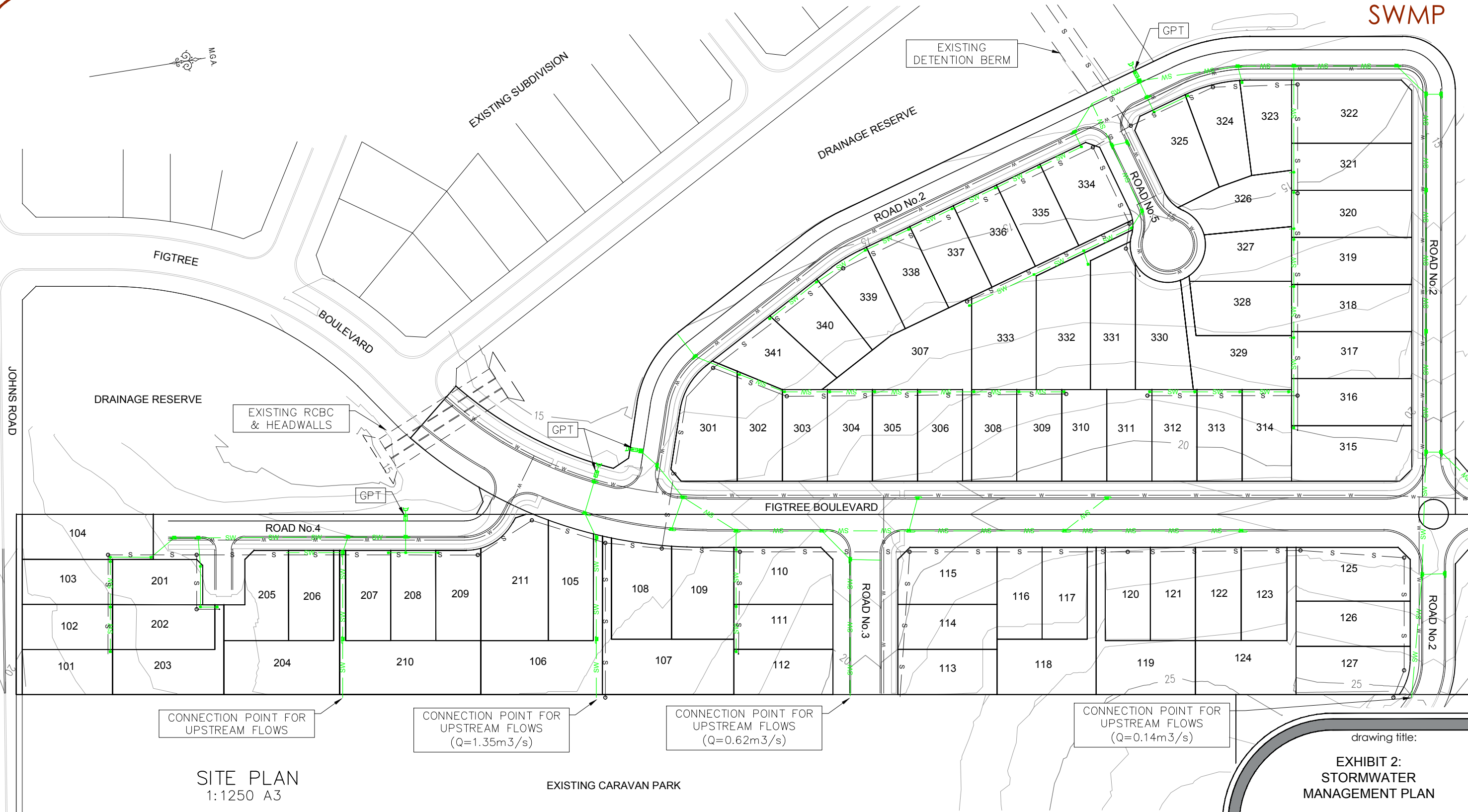
dwg ref: 190216-EX-01

client: **DELROY
PROJECTS**



central coast office ph: (02) 4305 4300
hunter office ph: (02) 4978 5100

www.adwjohanson.com.au



SITE PLAN
1:1250 A3

EXISTING CARAVAN PARK

LEGEND

—

PROPOSED LOT BOUNDARY

—

MAJOR CONTOURS

—

MINOR CONTOURS

—

PROPOSED KERB LINE

— W —

PROPOSED WATERMAIN

— S —

PROPOSED SEWER PIPE

— SW —

PROPOSED STORMWATER PIPE

PROPOSED HEADWALL OUTLET

PROPOSED LINTEL

PROPOSED GPT

PROPOSED PIT

CONTOUR INTERVAL = 0.5m

drawing title:
**EXHIBIT 2:
STORMWATER
MANAGEMENT PLAN**

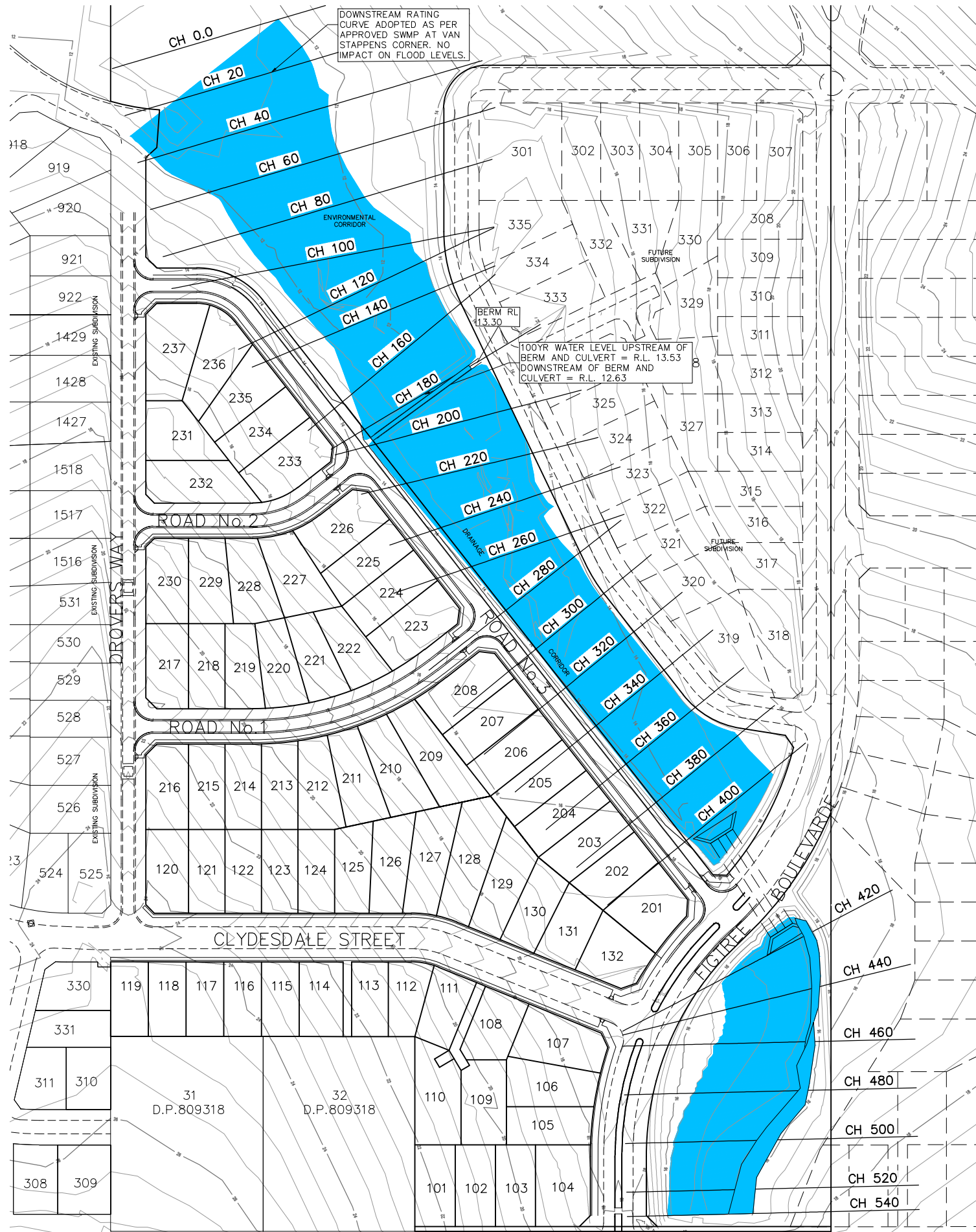
JOHNS ROAD &
FIGTREE BOULEVARD
WADALBA

council: WYONG SHIRE COUNCIL

dwg ref: 190216-EX-02

client:
**DELROY
PROJECTS**

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LEGEND

- PROPOSED LOT BOUNDARY
- EXISTING LOT BOUNDARY
- FUTURE LOT BOUNDARY
- PROPOSED KERB
- EXISTING ROAD
- FUTURE KERB

☐ ORIGIN OF LEVELS
BENCH MARK
P.M. 21152
E 356953.472
N 6317417.299
R.L. 22.137 A.H.D.

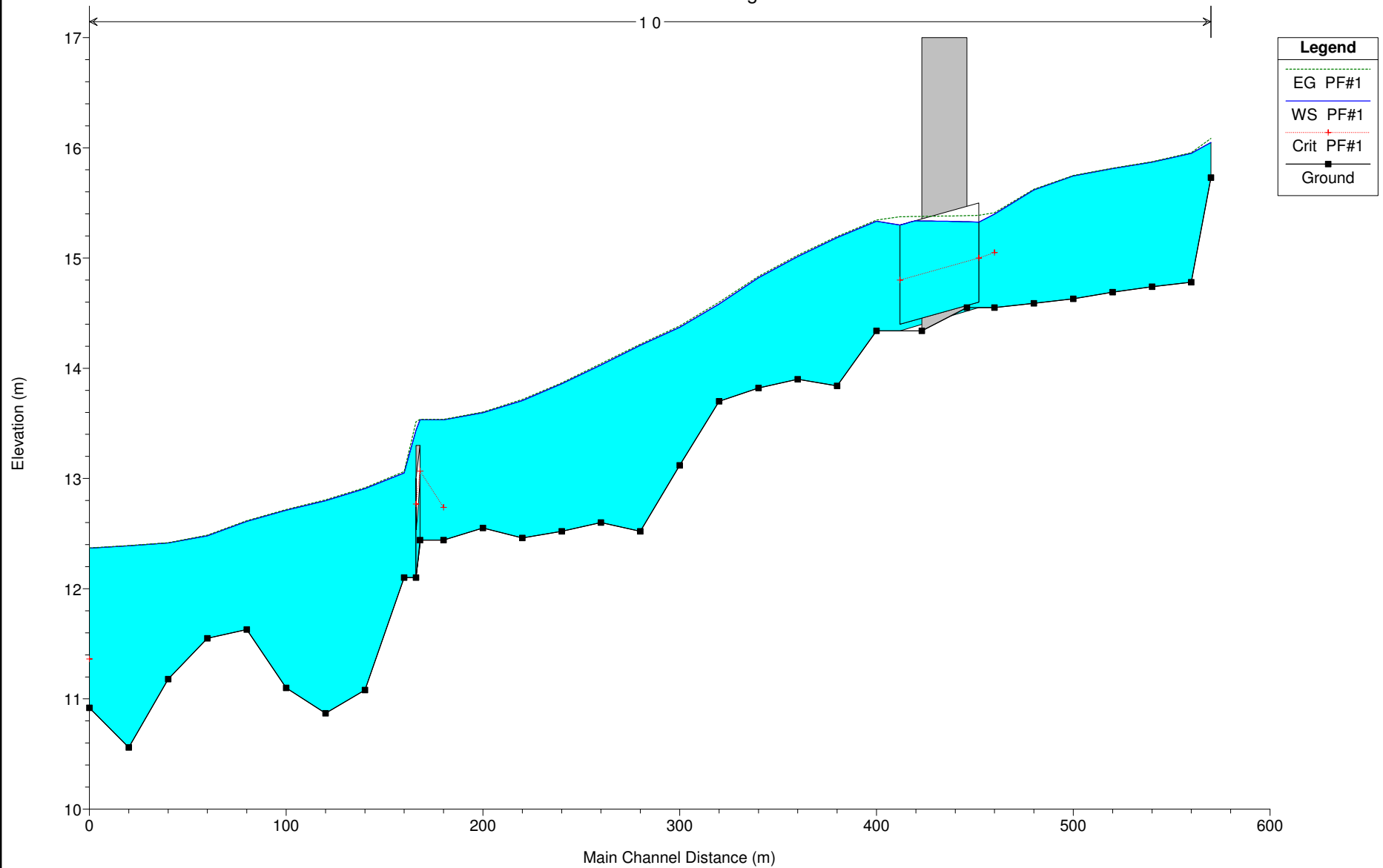
FLOOD EXTENTS 100YR A.R.I. NOTES:-

1. THE FLOOD EXTENTS SHOWN ON THIS PLAN ARE FOR THE 100YR A.R.I. STORM EVENT. FLOWS HAVE BEEN APPLIED FROM APPROVED SWMP FOR DEVELOPMENT.
2. HEC-RAS MODELLING SOFTWARE HAS BEEN USED TO DETERMINE FLOOD EXTENTS AS PER THE APPROVED SWMP.
- 3.
4. MANNING'S 'n' ADOPTED FOR HEC-RAS MODEL 0.15.
5. THIS PLAN SHOWS THE 100YR A.R.I. FLOOD EXTEND WHICH HAVE BEEN CALCULATED BASED ON ALL DEVELOPMENT WORKS AS SHOWN ON ADW JOHNSON DEVELOPMENT DRAWINGS REFERENCE: 10935 STAGE 1 & 2 DA/1580/2005/B. THIS INCLUDES THE PROPOSED CONSTRUCTED CHANNEL BETWEEN JOHNS ROAD AND FIGTREE BOULEVARD. THE PROPOSED CULVERTS UNDER FIGTREE BOULEVARD AND THE PROPOSED BERM AND CULVER LOCKED AT APPROX. CH 180.0.
6. FIGTREE BOULEVARD CULVERTS
WATER LEVEL AT CULVERTS UPSTREAM = R.L. 15.37
WATER LEVEL AT CULVERTS DOWNSTREAM = R.L. 15.37
ROAD LEVEL ABOVE CULVERTS =RL 16.85

RiverSta	Q Total (m3/s)	W.S. Elev (m)
540	8.56	16.08
520	8.56	16
500	8.56	15.94
480	8.56	15.9
460	15.76	15.86
440	15.76	15.79
420	15.76	15.61
410	Culvert	
400	15.76	15.33
380	15.76	15.19
360	15.76	15.01
340	15.76	14.82
320	15.76	14.58
300	15.76	14.37
280	15.76	14.21
260	15.76	14.03
240	15.76	13.86
220	15.76	13.71
200	15.76	13.6
182	Culvert	
180	15.76	13.53
160	17.92	13.05
140	17.92	12.91
120	17.92	12.8
100	17.92	12.71
80	17.92	12.61
60	17.92	12.48
40	17.92	12.42
20	17.92	12.39
0	17.92	12.37



REV. A B C D E		DATE 31/03/14 17/04/14 28/05/14 30/5/14 12/06/14		AMENDMENT PRELIMINARY ISSUE UPDATED FLOOD LEVELS AND NOTES MANNINGS 'n' UPDATED. GENERAL AMENDMENTS COUNCIL COMMENTS TABLE ADJUSTED		DESIGN M.L. M.L. M.L. M.L.		DRAWN K.T. M.L. M.L. M.L.		CHECKED N.D. M.L. N.D.		APPROVED N.D. N.D.		SCALES 0 10 20 30 40 A1 A3 1:1000 1:2000				CLIENT WADALBA CENTRAL DEVELOPMENTS		PROPERTY DESCRIPTION DA:1580 2005/B PROPOSED SUBDIVISION OF LOT 2602 D.P. 1043825 JOHNS ROAD WADALBA		PROJECT PROPOSED SUBDIVISION PLAN TITLE 100 YR A.R.I. FLOOD EXTENTS		PROJECT No. 10935(2) -		DISCIPLINE SK		NUMBER 002		REV. E											
DESIGN FILE S:\150192\DESIGN\120\150192.project														ALL DIMENSIONS ARE IN METRES. DO NOT SCALE																											
Plotted By: \$(GETVAR,??)														Plot Date: 12/06/14 - 10:29														Cad File: S:\10935\10935(2)\Drawings\ENG\10935(2)-SK-002-C.dwg													





Ref: 10935(2) ML/BM

12th June 2014

The General Manager
Wyong Shire Council
PO Box 20
WYONG NSW 2259

Attention: Chris Slater

Dear Chris,

**RE: DA 1580/2005
STAGES 1 & 2 OF STAGE 1F - FIGTREE BOULEVARDE, WADALBA**

Approximately 13 hectares of existing rural land is to be developed for use as a residential housing estate within the Wadalba Release Area. Wadalba Central Developments are proposing a development comprising approximately 104 residential lots and associated drainage reserve / environmental corridor land parcels. The property has a development consent – DA No. 1580/2005/A.

Based on analysis undertaken the design of the developments stormwater infrastructure satisfies DA 1580/2005/A with regard to stormwater consent conditions:

- **Condition 20. The design surface level of the residential lots is at least 0.75m above the 100 year flood level.**

The "100 year flood extents" plan provided shows the top water level for the 100 year storm event. This plan details parameters used in the HEC-RAS model including Mannings "n", boundary conditions, peak flows and provides an analysis of both the proposed culvert crossing Figtree Boulevard as well as the culvert and berm located within the drainage reserve.

- **Condition 23. The proposed development has no significant effect on the downstream flooding regime.**

For this hydrological analysis the XP RAFTS flood routing model used in the Azzura flood study was adopted and modified to assess the effect of the development on the hydrological regime of the watercourse in accordance with the approved Stormwater Management Plan.

Both pre developed and post developed scenarios were assessed. For this analysis it was assumed that the upstream and adjoining developments are fully developed, with only the

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video. 02 43054374
email. coast@adwjohnson.com.au

hunter region

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subject 'development' impervious percentage changed to appropriately model the pre and post scenarios in accordance with the approved Stormwater Management Plan.

Upstream of the Figtree Blvd culverts and the proposed berm and culvert located within the drainage corridor, stormwater detention storage is generated. To assess the effect of the culverts and related storage area on the developed peak discharges, a XP RAFTS model was analysed.

The catchment delineation, Mannings "n" as well as initial and continuing losses utilised were identical to the approved stormwater management plan.

The 2, 5, 10, 20, 50 & 100 year ARI peak discharges from the catchments 113.03 and 113.07 are presented in Table 1 for the pre, post, and post with culverts scenarios.

Peak Discharges for Catchment 113.03

ARI	Catchment 113.03		
	Pre Developed Peak Discharge (m ³ /s)	Post Developed Peak Discharge (m ³ /s)	Post Developed with Culverts Peak Discharge (m ³ /s)
2	8.5	9.0	7.45
5	12.0	12.6	10.5
10	14.0	14.7	12.26
20	16.7	17.5	14.5
50	18.9	19.7	16.6
100	21.4	22.3	19.47

Peak Discharges for Catchment 113.07

ARI	Catchment 113.07		
	Pre Developed Peak Discharge (m ³ /s)	Post Developed Peak Discharge (m ³ /s)	Post Developed with Culverts Peak Discharge (m ³ /s)
2	10.7	11.5	9.84
5	14.9	15.8	13.62
10	17.1	18.3	15.76
20	20.3	21.6	18.52
50	23.3	24.6	21.37
100	26.2	27.7	24.73

- **Condition 25.** The Figtree Blvd crossing is not overtopped in the 100 year ARI flood event.

The HEC-RAS model shows that the Figtree Boulevard is not overtopped during the 100 year flood event. The road level is approximately RL 17.0 with the 100 year water level in the culverts being RL 15.33.

- **Condition 27. The proposed development does not increase the flood extents on the adjacent property.**

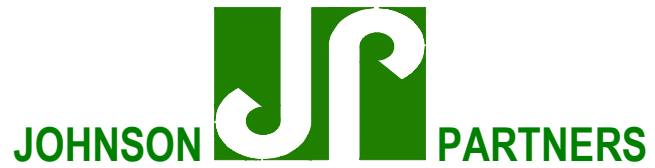
The HEC-RAS model shows that the neighbouring property to the east of the proposed development remains flood free within the 100 year storm event.

Should you require clarification of any issue or have any other enquiries in relation to this application, please do not hesitate to contact me on 4305 4300, or by e-mail on markl@adwjohnson.com.au.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Mark Littlefield'.

Mark Littlefield
ADW JOHNSON
Central Coast



Stormwater Management Plan

PROPOSED SUBDIVISION OF
WESTMINSTER WEST
LOT 2602 DP 1043825
JOHNS ROAD, WADALBA

For Westminster Development Pty Ltd



February 2008

Prepared by:

JOHNSON PARTNERS (NSW) Pty Ltd.
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Executive Summary

Approximately 13 hectares of existing rural land is to be developed for use as a residential housing estate within the Wadalba release area. Westminster Homes are proposing a development comprising approximately 104 residential lots and associated drainage reserve / environmental corridor land parcels. The property has a development consent – DA No. 1580/2005/A.

Westminster Development Pty Ltd has engaged Johnson Partners to prepare a Stormwater Management Strategy which satisfies the DA 1580/2005/A stormwater consent conditions.

The methodology was to manage all stormwater within the limits of the development in order to maintain receiving waters in their current state. Given the constraints placed on the development by existing topography, proposed development layout and soil conditions, recommendations have been made as to the preferred management strategies.

Based on analysis undertaken the design of the developments stormwater infrastructure satisfies DA 1580/2005/A with regard to stormwater consent conditions:

- Condition 20. The design surface level of the residential lots is at least 0.75m above the 100 year flood level.
- Condition 23. The proposed development has no significant effect on the downstream flooding regime.
- Condition 25. Figtree Blvd and Clydesdale Rd crossing are not overtopped in the 100 year ARI flood event.
- Condition 27. The proposed development does not increase the flood extents on the adjacent property.

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1.0 Introduction

1.1 Background

Approximately 13 hectares of existing rural land is to be developed for use as a residential housing estate within the Wadalba release area. Westminster Homes are proposing a development comprising approximately 104 residential lots and associated drainage reserve / environmental corridor land parcels. The property has a development consent – DA No. 1580/2005/A.

The subject site is located on the northern side of Johns Road in Wadalba, immediately to the east of Settler's Reach Estate, approximately 7 kilometres north of the township of Wyong. The Wadalba Wildlife Corridor (WWC) is to the north and downstream of the proposed development site. **Figure 1** shows the location of the subject site.

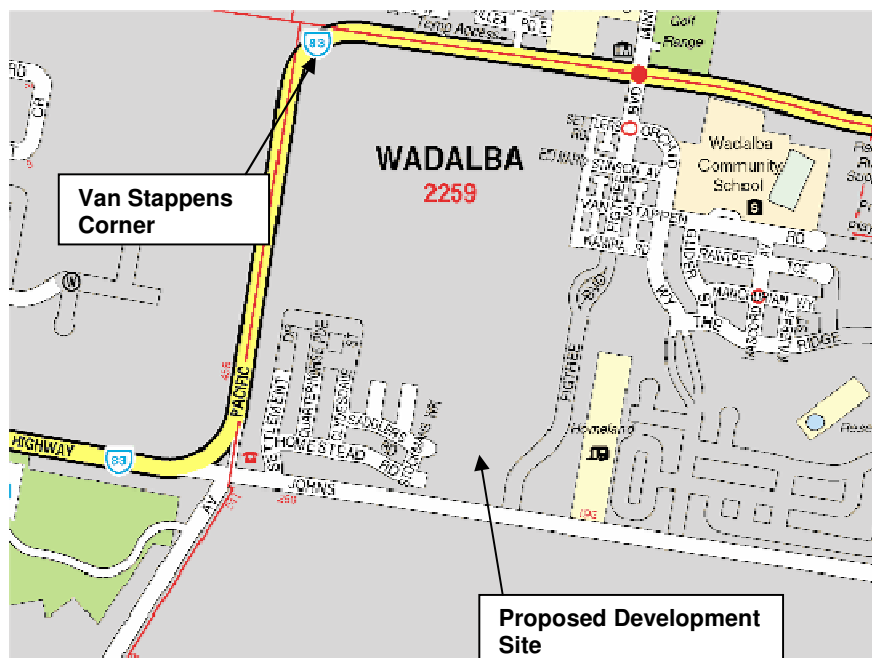


Figure 1 – Site Location Plan

The 'subject' site slopes generally towards the existing drainage line running through the middle of the proposed subdivision in a north-west to south-east direction. The drainage line, known as Watercourse 13 (Azzurra Consulting Report), traverses the development site, then passes through the WWC towards Van Stappens Corner, adjacent to the Pacific Highway.

Watercourse 13 conveys stormwater runoff from the catchment upstream of Johns Road. Previous flood studies in the area by Willings and Partners in (1991), Azzurra Consulting in (2005) and subsequent analysis of Van Stappens Corner by Johnson Partners (2005), provide information in regard to the predicted stormwater flows and flooding regime affecting the site.

1.2 Objectives

The stormwater management strategy aims to design a system for the Construction Certificate submission which satisfies the DA 1580/2005/A stormwater consent conditions, and are summarised below:

- C23. The provision of a stormwater system with water quality control features are required to treat the stormwater runoff in accordance with Wyong Council Development Control Plan 67 must ensure;
 - that there is no increase in the time of concentration of stormwater flows from the site to Van Stappens Corner culvert crossing at the Pacific Hwy.
 - the provision of temporary On Site Detention (OSD) to limit the post development flows leaving the site to pre developed levels for storm events up to the 100 Year Average Recurrence Interval (ARI) event.
 - that the stormwater treatment objectives of the Wadalba Wildlife Corridor Management Plan are considered, in particular management actions:
 - B12 Stormwater Structure Management
 - B13 Stormwater Quality
- C25. The construction of all drainage reserve road crossing to be flood free for the 100 Year ARI.
- C27. Plans demonstrating that the extent of flooding has not been increased on the adjoining property to the east.

2.0 Catchment Conditions

2.1 Topography

The 'subject' site generally slopes at approximately 5% towards an existing drainage line running through the middle of the development in a south-east to north-west direction. For the purposes of clarity, the sections of the subdivision either side of this drainage line will now be referred to as the south-western and north-eastern portions of the site.

2.2 Soils

The soil landscapes are detailed within the WWC Management plan as being Woodbury's Bridge soil landscape on the ridges and down the slopes towards the corridor, and Wyong soil landscapes within the lower and flats of the WWC.

2.3 Vegetation

The south-western portion of the site is generally either cleared and is best described as "disturbed land" or covered in scattered vegetated best described as an "open forest" vegetation community.

The north-eastern portion of the site is more heavily vegetated and is described as both an "open forest" or "swamp forest". This description is also representative of the drainage line bisecting the two portions of the site.

3.0 Site Development

3.1 Proposed Development

The layout for the proposed residential subdivision is shown in Figure 2. The proposed development involves the subdivision of lot 2602 DP 1043825 into 104 residential allotments, ranging in size from 475 square metres to 1,350 square metres, with an average allotment size of approximately 620 square metres. In addition, 1 allotment for road widening along Johns Road is to be created, as well as 2 allotments containing drainage reserves either side of Figtree Boulevard and Clydesdale Road, and 1 allotment for the Wadalba Environmental Corridor to the north of Clydesdale Road.

As part of the development, the Johns Road culverts will be augmented, as identified in Council's Warnervale / Wadalba Contributions Plan. Due to service clashes and the associated depth of the proposed culverts underneath Johns Rd, substantial tail out works within the development drainage corridor are required. Refer to the Johnson Partners construction certificate design plans for the scope of this work.

3.2 Requirements

The proposed subdivision has an approved DA – 1580/2005/A, with specific conditions of consent with regard to stormwater, as discussed in section 1.2. This report will document the management options implemented to satisfy the DA conditions, in the following sections:

- 4.0 Hydrological Analysis. This chapter will assess the hydrological regime for the pre and post development scenarios, with recommendations made with regard to the management options used to limit the stormwater flows from the development to pre development levels.
- 5.0 Hydraulic Analysis. A hydraulic assessment will be undertaken to assess the development impact on the 100 Year Average Recurrence Interval (ARI) flood extents within the development site.
- 6.0 Stormwater Quality Management Plan. The management plan for the stormwater quality will be outlined.



Figure 2 – Development Layout

4.0 Hydrological Analysis

Previous flood studies in the area by Willings and Partners in (1991), Azzurra Consulting in (2005) and subsequent analysis of Van Stappens Corner by Johnson Partners (2005) provide information in regard to the predicted stormwater flows and flooding regime affecting the site. Azzurra Consulting (2005) "Wadalba West Floodplain Assessment Review of the Watercourse 13 & 14" nominates the developments drainage line as Watercourse 13.

For this hydrological analysis the XP RAFTS flood routing model used in the Azzurra flood study was adopted and modified to assess the effect of the development on the hydrological regime of Watercourse 13.

Both pre developed and post developed scenarios will be assessed. For this analysis it was assumed that the upstream and adjoining developments are fully developed, with only the subject 'development' impervious percentage changed to appropriately model the pre and post scenarios.

4.1 XP-RAFTS Catchment Delineation

The catchment plan from the Azzurra (2005) flood study was adopted. Refer to **Appendix A – Catchment Diagram**, for delineation of the catchments.

The catchment boundaries, 113.01 and 113.02, line up with the proposed developments drainage channel road crossings, Figtree Blvd and Clydesdales Rd. **Figure 2** shows the layout of the road crossing. The box culverts configurations for the road crossing are summarized in **Table 1**.

Table 1 – Road Crossing Culverts Configuration

Road	Box Culverts Size
Johns Rd	Twin 2.7m wide x 0.6m deep
Figtree Blvd	Triple 3.6m wide x 0.9m deep
Clydesdale Rd	Triple 4.2m wide x 0.9m deep

Catchment 113.03 is at the downstream end of the development and Catchment 113.07 is at Van Stappens Corner adjacent to the Pacific Hwy culvert crossing. These catchments will be used to evaluate the effectiveness of the management options in maintaining the post development discharge to pre development levels.

4.2 XP-RAFTS Modelling Parameters

The modelling parameters used in the Azzura study were assessed as appropriate and are as follows:

4.2.1 Mannings 'n'

Mannings 'n' is the subcatchment roughness factor; this value is adjusted to represent the different response of rural and urbanised catchments, impervious and pervious surfaces. Table 2 shows the adopted 'n' values.

Table 2 – XP-RAFTS Mannings 'n' Values

Parameter	Catchment Condition	Value
Mannings 'n'	Impervious	0.015
	Pervious	0.025

4.2.2 Losses

XP-RAFTS modelling was undertaken using the standard initial and continuing loss model. The values of initial and continuing losses are generally intuitive and are often used for urbanised catchments. Initial and Continuing losses adopted are as follows:

- Pervious Catchment
 - Initial Loss 10.0mm
 - Continuing Loss 2.5mm/hr
- Impervious Catchment
 - Initial Loss 1.5mm
 - Continuing Loss 0.0mm/hr

4.3 Discharge Estimates

4.3.1 Pre and Post Development

Peak discharges were estimated for each of the subcatchments for both the pre and post developed catchments for storms Average Recurrence Interval (ARI) of 2, 5, 10, 20, 50 and 100 years. Storm durations ranging from 10 minute to 24 hours were used to determine the critical storm for each subcatchment.

Upstream of the Figtree Blvd and Clydesdale Rd culverts, stormwater detention storage is generated. To assess the effect of the culverts and related storage area on the developed peak discharges, a XP RAFTS model was analysed.

As discussed in section 3.1, substantial tail out works in the developments drainage corridor is required for the augmentation of the Johns Rd culverts. The excavation and regrading of the drainage corridor has significantly increased the storage areas at each road crossing.

4.3.2 Discharge Estimates

The 2, 5, 10, 20, 50 & 100 year ARI peak discharges from the catchments 113.03 and 113.07 are presented in Table 3 & 4 for the pre, post, and post with culverts scenarios. The Time to Peak discharge results, for both catchments and each scenario, are presented in Table 5 & 6.

Table 3 – Peak Discharges for Catchment 113.03

ARI	Catchment 113.03		
	Pre Developed Peak Discharge (m ³ /s)	Post Developed Peak Discharge (m ³ /s)	Post Developed with Culverts Peak Discharge (m ³ /s)
2	8.5	9.0	8.6
5	12.0	12.6	11.6
10	14.0	14.7	12.2
20	16.7	17.5	15.6
50	18.9	19.7	17.4
100	21.4	22.3	19.4

Table 4 – Peak Discharges for Catchment 113.07

ARI	Catchment 113.07		
	Pre Developed Peak Discharge (m ³ /s)	Post Developed Peak Discharge (m ³ /s)	Post Developed with Culverts Peak Discharge (m ³ /s)
2	10.7	11.5	10.9
5	14.9	15.8	14.7
10	17.1	18.3	16.6
20	20.3	21.6	19.4
50	23.3	24.6	21.9
100	26.2	27.7	24.3

Table 5 – Time to Peak for Catchment 113.03

ARI	Catchment 113.03		
	Pre Developed Time to Peak (mins)	Post Developed Time to Peak (mins)	Post Developed with Culverts Time to Peak (mins)
2	39	44	46
5	39	44	47
10	39	44	48
20	39	44	48
50	39	44	48
100	39	44	49

Table 6 – Time to Peak for Catchment 113.07

ARI	Catchment 113.07		
	Pre Developed Time to Peak (mins)	Post Developed Time to Peak (mins)	Post Developed with Culverts Time to Peak (mins)
2	68	68	70
5	68	68	70
10	68	68	71
20	68	68	72
50	68	68	72
100	68	68	72

4.4 Discussions

The modelling undertaken shows that the inclusion of the road crossing and associated culverts will reduce the peak discharge associated with the post development conditions to below the pre developed levels for the 5, 10, 20, 50 and 100 year ARI Storm Event, at both the downstream end of the development, and at Van Stappens Corner adjacent to the Pacific Hwy.

In the 2 year ARI event there is insignificant 2% increase in peak discharge at Van Stappens Corner. As post developed peak discharges are below pre developed levels in the majority storm, the inclusion of the road crossings and culverts is an acceptable and cost effective solution for reducing the discharge from the development.

The analysis indicates that in the post development scenario with the box culverts included, the 100 year ARI peak discharge of 24.3m³/s approaching Van Stappens Corner, occurs 72 minutes from the start of the storm. In pre developed conditions, the 100 year ARI peak discharge of 26.2m³/s occurs 68 mins from the start of the storm.

Therefore, by virtue of constructing the road crossing and culverts, the proposed development does not increase the rate of discharge, nor significantly alter the time to peak at Van Stappens corner. As such, the proposed development has no detrimental effect on the downstream flooding regime and therefore satisfies consent condition 23 of DA 1580/2005/A.

5.0 Hydraulic Analysis

The model used for the flood reporting was HEC RAS Version 3.1.3. HEC RAS is universally accepted as an accurate flood modelling tool for determining peak flood levels within open channels and river systems. There is the option to model culverts, bridges and other crossings in the model.

The critical parameters of the simulation are the peak flow adopted, flow regime, cross sections information, boundary conditions and Mannings' 'n' roughness coefficients.

5.1 Channel Representation

To assess the 100 Year ARI flood extents in the pre and post development conditions, two HEC RAS models were analysed. In the pre developed model the Watercourse 13 cross sections were extracted from the existing survey.

In the post developed scenario the cross sections for the channel were extracted from the design surface of the development. This design surface is a model of the design surface levels that incorporates the drainage corridor excavation and regrading required for the Johns Rd culvert augmentation, proposed development road formation and associated batters in the drainage corridor.

The Watercourse 13 road crossing and associated culverts at Johns Rd, Figtree Blvd and Clydesdale Rd were modelled in the post development scenario.

For both HEC RAS models the cross sections were extracted every 20 metres. For a true representation of the flood regime on the development site the models were extended upstream of the Johns Rd culverts and downstream to Van Stappens Corner.

Refer to Appendix B for location of the modelled cross sections.

5.2 Flow Regime

The model was configured for a steady state flow regime with 100 Year ARI peak flows. The hydrological analysis 100 year ARI peak catchments discharge for the pre developed and post developed with culvert scenario were entered into the relevant HEC RAS model and are presented in Table 7.

Table 7 – HEC RAS Pre and Post Developed Models Peak 100 Year ARI Discharges

Catchment	Pre Developed Peak Discharge (m ³ /s)	Post Developed with Culverts Peak Discharge (m ³ /s)
113.00	8.6	8.6
113.01	17.7	17.9
113.02	19.2	19.5
113.03	21.3	19.3
113.04	23.0	20.8
113.05	23.9	21.8
113.06	25.6	23.7
113.07	26.2	24.3

The models were simulated for a 'sub-critical' flow regime, to conservatively predict the flood level.

5.3 Boundary Conditions

The downstream boundary condition was set to a rating curve of the Van Stappens Corner culverts detention storage / flow relationship. As the downstream boundary is approximately 1000m past the development extent, it will not impact on the development flood levels.

For the upstream boundary condition, upstream of Johns Rd, it was conservatively adopted as normal depth with a 1% bed slope.

5.4 Mannings' 'n'

The Mannings' 'n' roughness coefficients adopted for the channel are as follows:

- Channel Mannings' n – 0.07
- Overbank Mannings' n – 0.1

5.5 Results

The results of the HEC RAS model simulation for both scenarios are presented in Table 8. Appendix B & C shows the Plan of Flood Extents and the HEC RAS longitudinal flow profile results.

Table 8 – HEC RAS Model Flood Level Results for Pre and Post Development Scenario

Cross Section	100 Year ARI Pre Developed Flood Level	100 Year ARI Post Developed Flood Level
1510	17.4	15.76
1480	16.79	15.59
1460	16.31	15.48
1440	15.9	15.34
1420	15.55	15.23
1415	Figtree Blvd Culvert	
1350	14.82	14.65
1340	14.74	14.58
1320	14.63	14.46
1300	14.47	14.35
1280	14.31	14.22
1260	14.11	14.09
1240	13.99	13.95
1220	13.8	13.83
1200	13.65	13.72
1180	13.50	13.63
1170	Clydesdale Rd Culvert	
1130	12.93	12.93
1120	12.84	12.83
1100	12.64	12.62
1080	12.54	12.52
1060	12.43	12.41
1040	12.27	12.27
1020	12.09	12.09

5.6 Discussion

The results show that the Watercourse 13 post developed 100 Year ARI flood extents are contained within the development boundaries. Upstream of the Figtree Blvd road crossing, the stormwater runoff is conveyed within the development boundaries.

As such, the proposed development has no detrimental effect on the flooding regime on the property to the east and therefore satisfies consent condition 27 of DA 1580/2005/A.

The post development longitudinal flow profile demonstrates that the Figtree Blvd and Clydesdale Rd crossings are not overtopped in the 100 Year ARI flow events, and therefore satisfy consent condition 25 of DA 1580/2005/A.

The design surface levels for the residential lots, adjacent to the drainage corridor, were assessed against the 100 year ARI post developed with culverts flood levels. All lots were at least 0.75m above the adjacent flood level. As such, Condition 20 of DA 1580/2005/ is satisfied as the lot levels incorporate the minimum 0.6m freeboard.

6.0 Stormwater Quality Management Strategy

To protect the downstream environment, the stormwater treatment objectives of the Wadalba Wildlife Corridor Management Plan described in management actions B12 and B13, have been addressed. The management strategy utilised to treat the stormwater generated from the development is described below. Refer to Johnson Partners Engineering Plans for details on the location and configuration of the treatment devices.

6.1 Post Development Treatment Devices

It is proposed to use source control rainwater tanks on each lot to treat the roof runoff; grass lined swales along the perimeter roads with one way crossfall, inline GPTs to remove gross pollutants and end of line vegetated pond to treat the stormwater before it enters the Wadalba Wildlife Corridor.

6.1.1 Rainwater Tanks

Rainwater tanks will provide at source quality and quantity control. All new development within the area must satisfy BASIX requirements on stormwater management. Therefore all new dwellings within the development will require rainwater tanks.

6.1.2 Grassed Lined Swales

The grass lined swale will pretreat the stormwater runoff from the perimeter roads with one way cross fall, before discharging into the vegetated pond.

6.1.3 Gross Pollutant Traps

Inline Propriety Gross pollutant traps will be installed on all major piped drainage system (Lines 8, 6, 1), prior to the stormwater discharging into the drainage corridors. These stormwater lines collect the majority of the road runoff which is not treated by the swales.

6.1.4 Vegetated Permanent Pond

The permanent vegetated pond is located upstream of the Clydesdale Rd culverts. This basin will provide treatment via sedimentation of suspended solids and associated nutrients. The vegetated pond has a surface area of approximately 1000m² and a permanent pond depth of 0.6m.

7.0 Discussion

Based on the analyses undertaken the design of the developments stormwater infrastructure satisfies DA 1580/2005/A with regard to the stormwater consent conditions as summarised below:

- The proposed development does not increase the rate of discharge nor significantly alter the time to peak at Van Stappens corner. As such, the proposed development has no detrimental effect on the downstream flooding regime and therefore satisfies consent condition 23 of DA 1580/2005/A.
- The proposed development has no detrimental effect on the flooding regime on the property to the east and therefore satisfies consent condition 27 of the DA.
- Figtree Blvd and Clydesdale Rd crossing are not overtopped in the 100 Year ARI flow events and therefore satisfy consent condition 25 of the DA.
- The design surface level of the residential lots is at least 0.75m above the 100 year flood level, which is greater than the required 0.6m freeboard. Consequently condition 20 of the DA is satisfied.

8.0 References

Conacher Travers Pty Ltd (2005) *Wadalba Wildlife Corridor Management Plan* Final Draft to Wyong Shire Council

Institute of Engineers – Australia's National Committee on Water Engineering (2005) *DRAFT Australian Runoff Quality*

Wyong Shire Council DCP 67 (1997) – Engineering Requirements for Development

HEC RAS Reference Manual – US Army Corps of Engineers

XPRAFTS Reference Manual – XP Software.

Azzura Consulting (2005) "Wadalba West Floodplain Assessment Review of the Watercourse 13 & 14"

05 B

Flora and Fauna Assessment



FLORA AND FAUNA ASSESSMENT REPORT

PROPOSED REZONING

**PART LOT 1 DP 306056
JOHNS ROAD
WADALBA**

**OCTOBER 2015
REF: 5085**

FLORA AND FAUNA ASSESSMENT REPORT

PROPOSED REZONING

**PART LOT 1 DP 306056
JOHNS ROAD
WADALBA**

OCTOBER 2015

Conacher Consulting Pty Ltd

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PREFACE

This Flora and Fauna Assessment Report has been prepared by *Conacher Consulting* to identify the flora and fauna characteristics of land within Part Lot 1 DP 306056, Johns Road, Wadalba.

This report provides an assessment of the habitats present and the potential for the proposed activity to significantly impact on threatened species, populations or ecological communities listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environment Protection & Biodiversity Conservation Act 1999* (EP&BC Act).

PROJECT TEAM

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APPENDIX 2 ENVIRONMENTAL PLANNING & ASSESSMENT ACT (1979) SECTION 5(A) ASSESSMENT

SECTION 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Conacher Consulting has been engaged to prepare a Flora and Fauna Assessment Report for a proposed development within Part Lot 1 DP 306056, Johns Road, Wadalba.

This Report has been prepared to identify the flora and fauna characteristics of the site and to determine whether or not a Species Impact Statement should be prepared for development according to the provisions of Section 5(A) of the *Environmental Planning & Assessment Act 1979* (EP&A Act) and the *Threatened Species Conservation Act 1995* (TSC Act).

This report also provides an assessment of whether a referral is required for impacts to threatened and migratory biodiversity listed under the *Environment Protection & Biodiversity Conservation Act 1999* (EP&BC Act).

The subject site is located within the Wadalba Urban Release Area which is subject to a deemed concurrence agreement issued by the NSW Department of Environment and Conservation (now Office of Environment and Heritage) under Clause 64 of the Environmental Planning and Assessment Regulation (2000), for any impacts under the *Threatened Species Conservation Act* (1995).

The deemed concurrence agreement identifies that an assessment of the habitat and corridor values of the naturally vegetated areas within the Wadalba Urban Release Area have been undertaken and areas for conservation (the proposed Wadalba Wildlife Corridor) and areas which could be developed without impacting on conservation values were determined.

This report relies on current updated surveys and several previous detailed reports completed for the Wadalba Urban Release Area and extracts relevant results pertaining to the subject site. Reports utilised in the compilation of this report are listed within the References section of this report.

1.2 SITE CHARACTERISTICS

The planning and cadastral details of the subject site are provided in Table 1.1 while Table 1.2 summarises the geographical characteristics of the site.

TABLE 1.1 SITE DETAILS	
Location	Part Lot 1 DP 306056, Johns Road, Wadalba
Subject Site Area	Approximately 0.3 hectares
Local Government Area	Wyong
Existing Land Use	Vacant land
Proposed development	Rezoning for future residential development

1.3 PROPOSED DEVELOPMENT

The development being assessed in this Report is the rezoning of the subject site from E2 Environmental Conservation to R2 Low Density Residential to enable future residential development.

SECTION 2

FLORA CHARACTERISTICS

2.1 THREATENED FLORA SPECIES

A search of the Bionet Atlas of NSW Wildlife (NSW OEH 2015) was undertaken to identify records of threatened flora species listed within the *TSC Act* (1995) and the *EP&BC Act* (1999), located within 10 km of the site. This allowed for a specific search for threatened flora to be undertaken determining if any threatened flora species were present within the subject site. Details on threatened flora species as listed in Schedules 1 and 2 of the *TSC Act* (1995) and the *EP&BC Act* (1999) with a known or possible occurrence within the local area are provided in Table 2.1.

TABLE 2.1 THREATENED FLORA SPECIES OF THE AREA				
SPECIES	TSC ACT	EPBC ACT	GROWTH FORM AND HABITAT REQUIREMENTS	COMMENTS
<i>Acacia bynoeana</i>	E	V	Erect or spreading shrub to 0.3m high growing in heath and dry sclerophyll open forest on sandy soils. Often associated with disturbed areas such as roadsides.	No suitable habitat present.
<i>Angophora inopina</i>	V	V	Small tree in open sclerophyll forest growing on deep sandy soils with associated lateritic outcrops.	No suitable habitat present.
<i>Caladenia tessellata</i>	E	V	Terrestrial orchid. Grassy Sclerophyll woodland on clay-loam or sandy soils.	No suitable habitat present.
<i>Callistemon linearifolius</i>	V	-	Shrub to 4m high. Grows in Sclerophyll Forest in moist gullies on coast and adjacent ranges.	No suitable habitat present.
<i>Corunastylis</i> sp. Charmhaven	CE	CE	Terrestrial orchid. Recorded in heathy low woodland and mown heathland habitats at Charmhaven on the Gorokan Soil Landscape. Associated species include <i>Allocasuarina littoralis</i> , <i>Kunzea ambigua</i> , <i>Leptospermum juniperinum</i> , <i>Melaleuca nodosa</i> , <i>Callistemon linearis</i> and <i>Schoenus brevifolius</i> .	No suitable habitat present.
<i>Cryptostylis hunteriana</i>	V	V	Saprophytic orchid. Grows in moist sandy soil in heath and sedgeland and coastal forest communities of Scribbly Gum, Bloodwood, Brown Stringy Bark and Smooth-barked Apple in moist to dry clay loam.	No suitable habitat present.
<i>Eucalyptus camfieldii</i>	V	V	Stringybark to 10 m high. Grows in coastal shrub heath and woodlands on sandy soils derived from alluviums and Hawkesbury sandstone.	No suitable habitat present.
<i>Genoplesium insigne</i>	CE	CE	A terrestrial orchid. Associated with <i>Themeda australis</i> . Occurs in heathland amongst sedges, or forest amongst shrubs from Charmhaven to Wyong. Flowers Aug – Sept.	No suitable habitat present.

TABLE 2.1 THREATENED FLORA SPECIES OF THE AREA				
SPECIES	TSC ACT	EPBC ACT	GROWTH FORM AND HABITAT REQUIREMENTS	COMMENTS
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	V	V	Open to erect shrub to 1 metre. Grows in heathy woodland on light clayey soils and may have an affinity with disturbance margins (NSW NPWS 2002).	No suitable habitat present.
<i>Maundia triglochinos</i>	V	-	Perennial herb. Grows in swamps, creeks or shallow freshwater 30 - 60 cm deep on heavy clay with low nutrients.	No suitable habitat present.
<i>Melaleuca biconvexa</i>	V	V	Tall shrub. Grows in wetlands adjoining perennial streams and on the banks of those streams, generally within the geological series known as the Terrigal Formation.	No suitable habitat present.
<i>Prostanthera askania</i>	E	E	Erect shrub. Grows in sclerophyll forest on ridges in or adjacent to Rainforest.	No suitable habitat present.
<i>Rutidosia heterogama</i>	V	V	Small perennial herb to 30cm tall. It Grows on moist sites in open forest and in sedgeland/heathland within shrubby open forest and woodland and at 860–1040m above sea level on granitic substrates in podzolic and lithosolic soils. Has been recorded from disturbed locations on roadsides.	No suitable habitat present.
<i>Syzygium paniculatum</i>	V	V	Grows in subtropical and littoral rainforest on sandy soil.	No suitable habitat present.
<i>Tetratheca juncea</i>	V	V	Prostrate shrub to 1 m high. Grows in dry sclerophyll forest and heath.	No suitable habitat present.
<i>Thelymitra</i> sp. <i>adorata</i>	CE	-	Grows in spotted gum ironbark forest, Flowers September to October.	No suitable habitat present.
CE = Critically Endangered E = Endangered Species V = Vulnerable Species *Species added to Schedules of TSC Act post December 2004				

The subject site is highly disturbed and does not contain suitable habitat for threatened flora species.

2.2 ENDANGERED FLORA POPULATIONS & ECOLOGICAL COMMUNITIES

2.2.1 Endangered Flora Populations

Details of the endangered populations known to occur within the local government area are provided in Table 2.2.

TABLE 2.2 ENDANGERED POPULATIONS OF THE AREA		
Endangered Population	Habitat Requirements	Comments
<i>Eucalyptus oblonga</i> DC. at Bateau Bay, Forrester's Beach and Tumby Umbi in the Wyong local government area.	Dry open forest with infertile sandy soils on sandstone (NSW OEH 2013).	No suitable habitat present.
<i>Eucalyptus parramattensis</i> C. Hall. subsp. <i>parramattensis</i> in Wyong and Lake Macquarie local government areas.	Sandy alluvium within floodplain vegetation which also supports <i>Eucalyptus robusta</i> (Swamp mahogany), <i>E. tereticornis</i> (Forest Red Gum), <i>Corymbia. gummifera</i> (Sydney Bloodwood) as well as <i>Melaleuca</i> (Paperbark) species (NSW OEH 2013).	No suitable habitat present.

No endangered populations were observed within the subject site.

2.2.2 Endangered Ecological Communities

Details regarding the habitat attributes and indicative species for the endangered ecological communities known to be present in the local government area are provided in Table 2.3.

TABLE 2.3 ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	TSC Act	EPBC Act	Habitat Requirements	Comments
Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions (CS)	E	V	Geology / Soils: Estuarine mud flats. Topography: Intertidal zone on the shores of estuaries and lagoons. Characteristic Species: <i>Sarcocornia quinqueflora</i> , <i>Sporobolus virginicus</i> , <i>Juncus kraussii</i> and <i>Baumea juncea</i> .	No suitable habitat present.
Coastal Upland Swamp in the Sydney Basin Bioregion (CUS)	E	E	Geology / Soils: Periodically waterlogged acidic soils on Hawkesbury Sandstone. Topography: Impermeable sandstone plateaus in the headwater valleys of streams and on sandstone benches with abundant moisture seepage. Characteristic Species: Highly diverse and variable, includes scrubs, heaths, sedgelands and fernlands.	No suitable habitat present.

TABLE 2.3 ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	TSC Act	EPBC Act	Habitat Requirements	Comments
Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregion (FWCF)	E	-	Geology / Soils: Silts, muds or humic loams. Topography: Depressions, flats, drainage lines, backswamps, lagoons and lakes associated with coastal floodplains. Characteristic Species: Composition is variable and dependent on water regime. May include amphibious grasses and sedges, emergent floating herbs and tall sedges and floating and submerged aquatic herbs.	No suitable habitat present.
Littoral Rainforest in the NSW North Coast, Sydney Basin and South East Corner Bioregions (LR)	E	CE	Geology / Soils: Sand dunes and on soils derived from underlying rocks Topography: Located near the sea on coastal dunes, headland or riparian habitats. Characteristic Species: Comprises the <i>Cupaniopsis anacardioides</i> - <i>Acmena</i> spp. alliance of Floyd (1990).	No suitable habitat present.
Low Woodland with Heathland on Indurated Sand at Norah Head	E	-	Geology / Soils: Indurated (hardsetting) sands with a range of local variation in drainage conditions. Topography: low rolling sandy hills – east of Wilfred Barrett Drive near Norah Head. Characteristic Species: <i>Eucalyptus camfieldii</i> , <i>Corymbia gummifera</i> , <i>Melaleuca</i> spp. <i>Lambertia formosa</i> , <i>Acacia longifolia</i> , <i>Banksia oblongifolia</i> and <i>Allocasuarina distyla</i> .	No suitable habitat present.
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions (LLR)	E	CE	Geology / Soils: High nutrient geological substrates, notably basalts and fine-grained sedimentary rocks. Topography: Coastal plains and plateaux, footslopes and foothills up to 600m ASL and within the Sydney basin below 350m ALS Characteristic Species: Principally encompasses the following groupings of Floyd (1990): <i>Argyrodendron trifoliatum</i> alliance (suballiances 1, 5 & 6); <i>Dendrocnide excelsa</i> - <i>Ficus</i> spp. alliance (suballiances 14 & 15); and <i>Drypetes australasica</i> – <i>Araucaria cunninghamii</i> alliance (suballiances 21 & 22).	No suitable habitat present.

TABLE 2.3 ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	TSC Act	EPBC Act	Habitat Requirements	Comments
River-Flat Eucalypt Forest on Coastal Floodplains of the North Coast, Sydney basin and South East Corner bioregions (REFCF)	E	-	Geology / Soils: Silts, clay-loams and sandy loams. Topography: Periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. Characteristic Species: Eucalypt canopy with species belonging to the genus <i>Angophora</i> or the sections <i>Exsertaria</i> or <i>Transversaria</i> of the genus <i>Eucalyptus</i>. Has low abundance of <i>E. robusta</i>, <i>Casuarina</i> and <i>Melaleuca</i> species and a groundcover of soft-leaved forbs and grasses.	No suitable habitat present.
Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions (SOFF)	E	-	Geology / Soils: Waterlogged or periodically inundated grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline. Topography: Flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. Characteristic Species: <i>Casuarina glauca</i>.	No suitable habitat present.
Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (SSFCF)	E	-	Geology / Soils: Waterlogged or periodically inundated humic clay loams and sandy loams. Topography: Alluvial flats and drainage lines associated with coastal floodplains. Characteristic Species: <i>Eucalyptus robusta</i>, <i>E. longifolia</i>, <i>E. botryoides</i>, <i>Melaleuca quinquenervia</i> and <i>M. ericifolia</i>.	No suitable habitat present.
Sydney Freshwater Wetlands in the Sydney Basin Bioregion (SFW)	E	-	Geology / Soils: Generally on the Warriewood and Tuggerah Soil Landscapes. Topography: Freshwater swamps in swales and depressions on sand dunes and low nutrient sandplain sites in coastal areas. Characteristic Species: <i>Eleocharis sphacelata</i>, <i>Baumea juncea</i>, <i>B. rubiginosa</i>, <i>B. articulata</i>, <i>Gahnia sieberiana</i>, <i>Ludwigia peploides</i> and <i>Persicaria</i> sp.	No suitable habitat present.

TABLE 2.3 ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	TSC Act	EPBC Act	Habitat Requirements	Comments
Themeda Grasslands on Seacliffs and Coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions (TGSCB)	E	-	Geology / Soils: Found on a range of substrates including old sand dunes above cliffs and on basalt headlands, and less frequently on sandstone. Topography: Seacliffs and coastal headlands. Characteristic Species: <i>Themeda australis</i> .	No suitable habitat present.
Key to TSC Act and EP&BC Act Status Ext = Extinct P. Ext = Presumed Extinct CE = Critically Endangered E = Endangered V = Vulnerable Species * = Preliminary determination / Provisional listing				

No endangered ecological communities were observed within the subject site.

2.3 VEGETATION SURVEY METHODOLOGY

Literature Review

- A review of available literature for the area was undertaken to obtain reference material and background information for this study. These documents are listed in the References section of this Report.
- Comprehensive surveys within the Wadalba Urban Release Area have been undertaken by Council's independent consultant (DEC 2004), Conacher Travers (2003) between September 2001 and August 2003, Andrews Neil, Willing & Partners, LesryK Environmental Consultants between 1991 and 1999 and by *Conacher Environmental Group* in 2007, 2008 and 2009.

Aerial Photograph Interpretation

- Aerial photographs at 1:25,000 scale were utilised to identify the extent of vegetation with respect to the site and surrounding areas.

Field Survey

- A field survey which consisted foot traverses within vegetated areas was conducted according to Cropper (1993) to identify the occurrence of flora species and the extent and location of vegetation communities present across the subject site.
- The subject site was surveyed in conjunction with the adjoining allotment to the west.
- A meander transect was undertaken throughout the site and on the adjoining lands on 14 August 2015 with observation and recording of all species occurring with 2 m.
- Specimens of plants not readily identified in the field were collected for identification.
- Specimens of plants tentatively identified as threatened species are sent to the Sydney Royal Botanic Gardens for confirmation of the identification.
- All vascular plants were identified using keys and nomenclature in Harden (1994), Harden and Murray (2000) and Harden (2002). Wherever they were known, changes to nomenclature and classification have been incorporated into the results.

Vegetation Community Nomenclature

- Native vegetation communities were classified and described according to the dominant floristics and the structural formation of the dominant vegetative growth form according to the definitions provided by Walker and Hopkins (1990).
- Corresponding units of available vegetation mapping are identified where available.
- Corresponding Endangered Ecological Communities listed on both the *TSC Act* (1995) and *EP&BC Act* (1999) are also provided if relevant.

Seasonality

The subject site does not contain suitable habitat for cryptic seasonally detectable threatened flora species.

2.4 FLORA SPECIES AND VEGETATION COMMUNITY DESCRIPTIONS

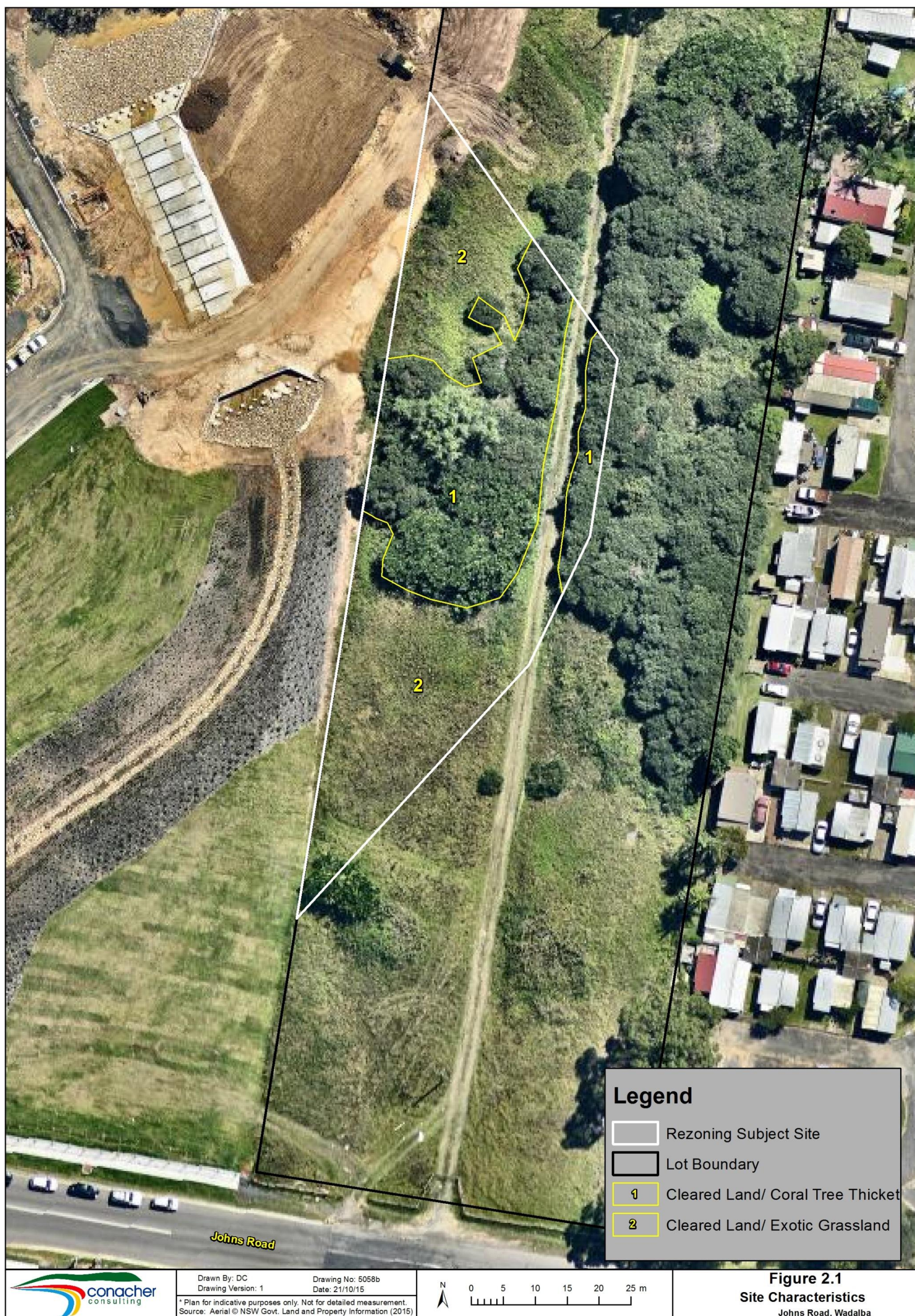
The vegetation within the subject site consists of Cleared Land dominated by areas of exotic grassland and coral tree thickets as shown in Figure 2.1. The flora species observed within the site are listed in Table 2.4.

TABLE 2.4 FLORA SPECIES OBSERVED WITHIN THE SUBJECT SITE		
Family	Scientific Name	Common Name
Upper Stratum		
Arecaceae	<i>Arecaceae sp*</i>	
Faboideae	<i>Erythrina crista-galli*</i>	Cockspur Coral Tree
Faboideae	<i>Erythrina x sykesii*</i>	Coral Tree
Lauraceae	<i>Cinnamomum camphora*</i>	Camphor Laurel
Salicaceae	<i>Salix sp.</i>	Willow
Mid Stratum		
Apocynaceae	<i>Asclepias curassavica*</i>	Redhead Cottonbush
Apocynaceae	<i>Gomphocarpus fruticosus*</i>	Narrow Leaf Cotton Bush
Asteraceae	<i>Senecio pterophorus*</i>	African Daisy
Caesalpinioideae	<i>Senna pendula var glabrata*</i>	
Oleaceae	<i>Ligustrum sinense*</i>	Small-leaved Privet
Phytolaccaceae	<i>Phytolacca octandra*</i>	Inkweed
Rosaceae	<i>Rosa rubignosa*</i>	Sweet Briar
Rosaceae	<i>Rubus anglocandicans*</i>	Blackberry
Solanaceae	<i>Solanum mauritianum*</i>	Wild Tobacco
Verbenaceae	<i>Lantana camara*</i>	Lantana
Lower Stratum		
Alliaceae	<i>Agapanthus praecox*</i>	African Lily
Apiaceae	<i>Hydrocotyle bonariensis*</i>	Pennywort
Araeaceae	<i>Zantedeschia aethiopica*</i>	White Arum Lily
Asphodelaceae	<i>Aloe sp.*</i>	Aloe
Asteraceae	<i>Bidens pilosa*</i>	Cobbler's Pegs
Asteraceae	<i>Cirsium vulgare*</i>	Spear Thistle
Asteraceae	<i>Conyza sumatrensis*</i>	Tall Fleabane

TABLE 2.4 FLORA SPECIES OBSERVED WITHIN THE SUBJECT SITE		
Family	Scientific Name	Common Name
Asteraceae	<i>Facelis retusa</i> *	Annual Trampweed
Asteraceae	<i>Senecio madagascariensis</i> *	Fireweed
Asteraceae	<i>Sonchus asper</i> *	Prickly Sowthistle*
Cannaceae	<i>Canna indica</i> *	Indian Shot
Caryophyllaceae	<i>Cerastium glomeratum</i> *	Mouse-ear Chickweed
Commelinaceae	<i>Tradescantia fluminensis</i> *	Wandering Jew
Cyperaceae	<i>Cyperus polystachyos</i>	-
Dennstaedtiaceae	<i>Hypolepis muelleri</i>	Harsh Ground Fern
Dennstaedtiaceae	<i>Pteridium esculentum</i>	Bracken
Faboideae	<i>Medicago polymorpha</i> *	Burr Medic
Faboideae	<i>Trifolium repens</i> *	White Clover
Fumariaceae	<i>Fumaria muralis</i> *	Wall Fumitory
Juncaceae	<i>Juncus usitatus</i>	Common Rush
Liliaceae	<i>Leucojum aestivum</i> *	Snowflake
Lomariopsidaceae	<i>Nephrolepis cordifolia</i> *	Fish-bone Fern
Poaceae	<i>Andropogon virginicus</i> *	Whisky Grass
Poaceae	<i>Briza maxima</i> *	Quaking Grass
Poaceae	<i>Pennisetum clandestinum</i> *	Kikuyu
Polygonaceae	<i>Persicaria hydropiper</i>	Water Pepper
Polygonaceae	<i>Rumex crispus</i> *	Curled Dock
Solanaceae	<i>Solanum chenopoides</i> *	Whitelip Nightshade
Urticaceae	<i>Urtica incisa</i>	Stinging Nettle
Verbenaceae	<i>Verbena bonariensis</i> *	Purpletop
Climbers		
Apocynaceae	<i>Araujia sericifera</i> *	Moth Vine
Apocynaceae	<i>Parsonsia straminea</i>	Common Silkpod
Asteraceae	<i>Senecio angulatus</i> *	-
Basellaceae	<i>Anredera cordifolia</i> *	Madiera Vine
Caprifoliaceae	<i>Lonicera japonica</i> *	Japanese Honeysuckle
Faboideae	<i>Vicia sativa</i> *	Common Vetch
Key Species name ^{TS} = Threatened Species * = Introduced Species		

2.5 LOCATION AND DISTRIBUTION OF ADJOINING AND CONTIGUOUS HABITATS

The site consists of land cleared of native vegetation with exotic grassland and coral tree thicket vegetation. The site does form part of an area of native vegetation and does not provide a potential natural connective habitat for wildlife within the locality.



SECTION 3

FAUNA AND FAUNA HABITATS

3.1 THREATENED FAUNA SPECIES

A search of the Bionet Atlas of NSW Wildlife (NSW OEH 2015) was conducted for threatened fauna species listed within the *TSC Act* (1995) and the *EP&BC Act* (1999), recorded within 10 km of the subject site. This revealed a number of threatened species that have been recorded in the area. Details on threatened fauna species as listed in Schedule 1 and 2 of the *TSC Act* (1995) and the *EP&BC Act* (1999) with a known or possible occurrence within the local area are provided in Table 3.1.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	TSC Act	EPBC Act	Preferred Habitat	Comments
Green and Golden Bell Frog <i>Litoria aurea</i>	E	V	Breeding habitat consists of shallow (<1m) ponds or slowly moving waterways which undergo disturbance regimes such as fluctuating water flow or inflow of saline water with both areas of open water and dense low vegetation (NSW NPWS 1999).	No suitable habitat present.
Green-thighed Frog <i>Litoria brevipalmata</i>	V	-	Found in rainforests and open forests within or at the edge of streams, swamps, lagoons, dams and ponds (NSW OEH 2013).	No suitable habitat present.
Wallum Froglet <i>Crinia tinnula</i>	V	-	Found in acidic paperbark swamps and wallum country with dense groundcover. Breeds in temporary and permanent pools and ponds of high acidity (Cogger 2000).	No suitable habitat present.
Stuttering Frog <i>Mixophyes balbus</i>	E	V	Inhabits freshwater streams in undisturbed rainforest and wet sclerophyll forest (NSW OEH 2013).	No suitable habitat present.
Giant Barred Frog <i>Mixophyes iteratus</i>	E	E	Forages and shelters in deep, damp leaf litter in rainforests, moist eucalypt forest and nearby dry eucalypt forest near permanent flowing water (Anstis 2002).	No suitable habitat present.
Red-crowned Toadlet <i>Pseudophryne australis</i>	V	-	Prefers sandstone areas, breeds in grass and debris beside non-perennial creeks or gutters. Shelters under logs and rocks in non-breeding periods (NSW OEH 2013).	No suitable habitat present.
Stephens' Banded Snake <i>Hoplocephalus stephensii</i>	V	-	A nocturnal and partly arboreal species that inhabits open and closed forest communities sheltering under bark, in hollows and under exfoliating slabs of granite (Cogger 2000).	No suitable habitat present.
Australasian Bittern <i>Botaurus poiciloptilus</i>	E	E	Inhabits shallow freshwater or brackish wetlands with tall dense beds of reeds, sedges or rush species and swamp edges.	No suitable habitat present.
Black Bittern <i>Ixobrychus flavicollis</i>	V	-	Prefers permanent freshwater wetlands with tall, dense vegetation (Lindsey 1992).	No suitable habitat present.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	TSC Act	EPBC Act	Preferred Habitat	Comments
Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	E	-	Prefers shallow, permanent, freshwater terrestrial wetlands, and surrounding marginal vegetation, including swamps, floodplains, watercourses and billabongs, freshwater meadows, wet heathland, farm dams and shallow floodwaters and adjacent habitats. Also forages within estuaries and along intertidal shorelines, such as saltmarshes, mudflats and sandflats, and mangrove vegetation (Marchant and Higgins 1990).	No suitable habitat present.
Square-tailed Kite <i>Lophoictinia isura</i>	V	-	Utilises mostly coastal and sub-coastal open forest, woodland or lightly timbered habitats and inland habitats along watercourses and mallee that are rich in passerine birds.	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Little Eagle <i>Hieraaetus morphnoides</i>	V	-	Inhabits a variety of habitats including woodland open forest, partially cleared areas, along watercourses and around wetlands (Marchant and Higgins 1993).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Eastern Osprey <i>Pandion cristatus</i>	V	-	Utilises water bodies including coastal waters, inlets, lakes, estuaries and offshore islands with a dead tree for perching and feeding.	No suitable habitat present.
Bush Stone-curlew <i>Burhinus grallarius</i>	E	-	Utilises open forests, savannah woodlands, dune scrub, savannah and mangrove fringes (Marchant and Higgins 1993).	No suitable habitat present.
Comb-crested Jacana <i>Irediparra gallinacea</i>	V	-	Deep and permanent vegetation-choked tropical and warm temperate wetlands (Marchant and Higgins 1993).	No suitable habitat present.
Rose-crowned Fruit-Dove <i>Ptilinopus regina</i>	V	-	Occurs in dense rainforests with a substantial understorey where it feeds entirely on fruit (Higgins and Davies 1996).	No suitable habitat present.
Wompoo Fruit-Dove <i>Ptilinopus magnificus</i>	V	-	Inhabits large undisturbed patches of lowland, adjacent highland rainforest and moist eucalypt forests feeding on fruit (Higgins and Davies 1996).	No suitable habitat present.
Superb Fruit-dove <i>Ptilinopus superbus</i>	V	-	Rainforests and adjacent mangroves, eucalypt forests and scrubland with native fruits. Distribution Limit - N-Border Ranges National Park. S-Bateman's Bay.	No suitable habitat present.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	TSC Act	EPBC Act	Preferred Habitat	Comments
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	-	Prefers wetter forests and woodlands from sea level to > 2000m on Divide, timbered foothills and valleys, timbered watercourses, coastal scrubs, farmland and suburban gardens (Higgins 1999).	No suitable habitat present.
Glossy Black- Cockatoo <i>Calyptorhynchus lathamii</i>	V	-	Open forests with Allocasuarina species and hollows for nesting. Distribution Limit - N-Tweed Heads. S-South of Eden.	No suitable habitat present.
Little Lorikeet <i>Glossopsitta pusilla</i>	V	-	Inhabits forests and woodlands feeding mostly on nectar and pollen particularly in profusely-flowering eucalypts (Courtney and Debus 2006).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Swift Parrot <i>Lathamus discolor</i>	E	E	Within NSW inhabits eucalypt forests and woodlands with winter flowering eucalypts (Saunders and Tzaros 2011).	No suitable habitat present.
Powerful Owl <i>Ninox strenua</i>	V	-	Mature forests containing large hollows for breeding & densely vegetated gullies for roosting (Higgins 1999).	No suitable habitat present.
Barking Owl <i>Ninox connivens</i>	V	-	Inhabits principally woodlands but also open forests and partially cleared land and utilises hollows for nesting (Higgins 1999).	Suitable habitat present. Not observed during surveys.
Masked Owl <i>Tyto novaehollandiae</i>	V	-	Open forest & woodlands with cleared areas for hunting and hollow trees or dense vegetation for roosting (Higgins 1999).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Sooty Owl <i>Tyto tenebricosa</i>	V	-	Tall, dense, wet forests containing trees with very large hollows for roosting and breeding (Higgins 1999).	No suitable habitat present.
Painted Honeyeater <i>Grantiella picta</i>	V	-	Found in open forest, woodland and scrubland feeding on mistletoe fruits (Higgins <i>et al.</i> , 2001).	No suitable habitat present.
Regent Honeyeater <i>Anthochaera phrygia</i>	CE	E	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts (Higgins <i>et al.</i> , 2001).	No suitable habitat present.
Varied Sittella <i>Daphoenositta chrysoptera</i>	V	-	Prefers open eucalypt woodlands and forests, mallee, inland acacia, coastal tee-tree scrubs, parks and gardens (Higgins and Peter 2002).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name <i>Scientific Name</i>	TSC Act	EPBC Act	Preferred Habitat	Comments
Flame Robin <i>Petroica phoenicea</i>	V	-	Upland moist Eucalypt forests and woodlands during breeding season, disperses to open lowland habitats during winter (Higgins and Peter 2002).	Suitable habitat present. Not observed during surveys.
New Holland Mouse <i>Pseudomys novaehollandiae</i>	-	V	Within NSW occurs in a variety of structural vegetation types including heathland and woodland, dry sclerophyll forest with a dense shrub layer and on vegetated sand dunes (Wilson and Laidlaw 2003).	No suitable habitat present.
Eastern Chestnut Mouse <i>Pseudomys gracilicaudatus</i>	V	-	In NSW the Eastern Chestnut Mouse is mostly found, in low numbers, in heathland and is most common in dense, wet heath and swamps (NSW OEH 2015).	No suitable habitat present.
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	E	Inhabits a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Shelters in hollow-bearing trees, fallen logs, small caves and rock crevices (NSW NPWS 1999).	No suitable habitat present.
Southern Brown Bandicoot (eastern) <i>Isodon obesulus obesulus</i>	E	E	Utilises a range of habitats containing thick ground cover - open forest, woodland, heath, cleared land, urbanised areas and regenerating bushland (NSW OEH 2013).	No suitable habitat present.
Koala <i>Phascolarctos cinereus</i>	V	V	Inhabits both wet & dry eucalypt forest on high nutrient soils containing preferred feed trees (Reed <i>et al.</i> , 1991).	No suitable habitat present.
Yellow-bellied Glider <i>Petaurus australis</i>	V	-	Inhabits tall mature eucalypt forests with high nectar producing species and shelters in large hollow bearing trees (Goldingay and Kavanagh 1991).	No suitable habitat present.
Squirrel Glider <i>Petaurus norfolcensis</i>	V	-	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and coastal forest with heath understorey. Shelters in tree hollows (Suckling 1995).	No suitable habitat present.
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	V	V	Found in a variety of habitats including rainforest, mangroves, paperbark swamp, wet and dry open forest and cultivated areas. Forms camps commonly found in gullies and in vegetation with a dense canopy (Tidemann 1995).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name <i>Scientific Name</i>	TSC Act	EPBC Act	Preferred Habitat	Comments
Yellow-bellied Sheathtail-bat <i>Saccolaimus flaviventris</i>	V	-	Inhabits wet and dry sclerophyll forest, open woodland, shrubland, mallee, grassland and desert. Roosts in tree hollows (Churchill 2008).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Eastern Freetail-bat <i>Mormopterus norfolkensis</i>	V	-	Inhabits eucalypt forest and woodland on the coastal side of the Great Dividing Range. Roosts in tree hollows, under bark and in various man-made structures (Churchill 2008).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	V	V	Warm-temperate to subtropical dry sclerophyll forest and woodland. Roosts in caves, tunnels and tree hollows in colonies (Churchill 2008).	Suitable habitat present. Not observed during surveys.
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	V	-	Inhabits wet sclerophyll forest, open forest, rainforest and coastal mallee. Roosts mostly in roosts in hollow trunks of eucalypts but also in caves and man-made structures (Churchill 2008).	Suitable habitat present. Not observed during surveys.
Eastern Bentwing-bat <i>Miniopterus schreibersii oceanensis</i>	V	-	Inhabits rainforest, wet and dry sclerophyll forest, open woodland, Melaleuca forests and open grassland. Roosts in caves and man-made structures.	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Little Bentwing-bat <i>Miniopterus australis</i>	V	-	Inhabits rainforest, vine thicket, wet and dry melaleuca swamps and coastal forests. Roosts in caves, man-made structures such as abandoned mines and buildings and occasionally banana trees and tree hollows (Churchill 2008).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
Southern Myotis <i>Myotis macropus</i>	V	-	Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water.	No suitable habitat present.
Greater Broad-nosed Bat <i>Scoteanax rueppellii</i>	V	-	Inhabits moist gullies in mature coastal forest, rainforest, open woodland, Melaleuca swamp woodland, wet and dry sclerophyll forest, cleared areas with remnant trees and tree-lined creeks in open areas. Roosts in tree hollows, cracks and fissures in trunks and dead branches, under exfoliating bark, and in man-made structures (Churchill 2008).	Suitable habitat present. Observed within the Wadalba Urban Release study area during previous surveys.
CE = Critically Endangered E = Endangered Species V = Vulnerable Species				

No threatened fauna species were observed within the subject site during current surveys.

The following threatened fauna species with suitable habitat present have been recorded within the Wadalba Urban Release Area during previous surveys and have suitable habitat present within the subject site:

- Little Eagle (*Hieraaetus morphnoides*);
- Square-tailed Kite (*Lophoictinia isura*);
- Little Lorikeet (*Glossopsitta pusilla*);
- Varied Sittella (*Daphoenositta chrysoptera*).
- Masked Owl (*Tyto novaehollandiae*);
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*);
- Eastern Freetail-bat (*Mormopterus norfolkensis*);
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*);
- Little Bentwing-bat (*Miniopterus australis*); and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

Assessments of impact significance for the threatened fauna species listed under the *EPBC Act* (1999) and/or the *TSC Act* (1995), considered to have suitable habitat present within the subject, are provided as Appendices 1 & 2 and summarised in Section 4 of this Report.

3.2 ENDANGERED FAUNA POPULATIONS

There are no endangered fauna populations within the local government area.

3.3 FAUNA HABITATS

The site contains land cleared of native vegetation dominated by exotic grassland and Coral Tree thicket vegetation. The site provides suitable habitats for fauna species capable of utilising highly disturbed and modified environments, particularly highly mobile type species.

No hollow bearing trees were observed within the subject site.

3.4 FAUNA SURVEY METHODOLOGY

In order to detect the possible occurrence of threatened fauna species specific methods targeting these species were employed.

Literature Review

- Review of local resource documents;
- A search of the Bionet Atlas of NSW Wildlife (NSW OEH 2015) was undertaken to identify records of threatened fauna species located within 10 km of the site. This enabled the preparation of a predictive list of threatened fauna species that could possibly occur within the habitats found on the site.

Previous Fauna Surveys

Comprehensive surveys for fauna species across the Wadalba Urban Release study area were undertaken by Council's independent consultant (DEC 2004) and Conacher Travers (2003) between 2001 and 2003. Additional surveys were also undertaken by Lesryk Environmental Consultants, Frank Lemckert between 1998 and 1999 and *Conacher Environmental Group* between 2007 and 2010.

Previous fauna surveys undertaken incorporated the following methodologies:

- Nocturnal spotlighting;
- Arboreal trapping (Type A and B Elliott Traps);
- Terrestrial trapping (Type A and B Elliott Traps);

- Hair tubes;
- Bat echolocation call detection;
- Harp traps;
- Amphibian searches;
- Habitat searches;
- Playback of recorded owl calls;
- Diurnal and nocturnal bird surveys;
- Stagwatching hollow bearing trees.

A summary of total survey effort undertaken expended during previous surveys is provided in Table 3.2.

TABLE 3.2 FAUNA SURVEY EFFORT WITHIN THE WADALBA STAGE 2EB STUDY AREA	
Survey Methods Utilised	Total
Arboreal Trapping (trap nights)	692
Terrestrial Trapping (trap nights)	580
Spotlighting (hrs)	31.45
Threatened Fauna Call Playback (hrs)	9
Harp Net (trap nights)	4
Microbat Sonar Call Detection (hrs)	20.33
Habitat Search (hrs)	136.25
Diurnal Bird Census (hrs)	136.5
Hair Tubes (trap nights)	584
Cage Trapping	8
Stagwatch	95

Current Fauna Surveys

Current fauna surveys which consisted of diurnal fauna searches and a habitat assessment were conducted by *Conacher Consulting* to determine the current condition and extent of fauna habitats present, and the likely presence of threatened fauna species. A hollow bearing tree assessment was undertaken. Dates, duration and weather conditions for current fauna surveys are as follows:

- 14 August 2015 1.5 hrs (0900-1030), 15°C, light wind, no rain.
- 24 September 2015 0.5 hrs (1015-1045), 15°C, light wind, no rain.
- 21 October 2015 0.5hrs (1400-1430), 29°C, E wind, survey immediately prior to afternoon thunderstorm

3.5 FAUNA OBSERVED

Fauna species observed within the Wadalba Urban Release Area are listed in Table 3.3. The following fauna species listed as threatened within the *TSC Act* (1995), which have been observed within the Wadalba Urban Release Area during previous surveys and have suitable habitat present within the subject site:

- Square-tailed Kite (*Lophoictinia isura*);
- Little Eagle (*Hieraaetus morphnoides*);
- Little Lorikeet (*Glossopsitta pusilla*);
- Masked Owl (*Tyto novaehollandiae*);
- Varied Sittella (*Daphoenositta chrysoptera*).
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*);
- Eastern Freetail-bat (*Mormopterus norfolkensis*);
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*);
- Little Bentwing-bat (*Miniopterus australis*); and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

The following fauna species listed as threatened within the *EP&BC Act* (1999) were observed within the Wadalba Urban Release Area during previous surveys and have suitable habitat present:

- Grey-headed Flying-fox (*Pteropus poliocephalus*).

The following fauna species listed as migratory within the *EP&BC Act* (1999) were observed within the Wadalba Urban Release Area during previous surveys and have suitable habitat present:

- Rainbow Bee-eater (*Merops ornatus*);
- Fork-tailed Swift (*Apus pacificus*);
- White-throated (Needletail *Hirundapus caudacutus*);
- Rufous Fantail (*Rhipidura rufifrons*);
- Black-faced Monarch (*Monarcha melanopsis*); and
- Cattle Egret (*Ardea ibis*).

TABLE 3.3 FAUNA SPECIES OBSERVED WITHIN THE WADALBA URBAN RELEASE STUDY AREA		
Common Name	Scientific Name	Species Observed during Site Inspection
Amphibians		
Brown-striped Frog	<i>Limnodynastes peronii</i>	
Spotted Grass Frog	<i>Limnodynastes tasmaniensis</i>	
Bibron's Toadlet	<i>Pseudophryne bibronii</i>	
Red-backed Toadlet	<i>Pseudophryne coriacea</i>	
Common Eastern Froglet	<i>Crinia signifera</i>	
Smooth Toadlet	<i>Uperoleia laevisgata</i>	
Bleating Tree Frog	<i>Litoria dentata</i>	
Eastern Dwarf Tree Frog	<i>Litoria fallax</i>	
Freycinet's Frog	<i>Litoria freycineti</i>	
Broad-palmed Frog	<i>Litoria latopalmata</i>	
Peron's Tree Frog	<i>Litoria peronii</i>	
Tyler's Tree Frog	<i>Litoria tyleri</i>	
Verreaux's Frog	<i>Litoria verreauxii</i>	
Lesueur's Frog	<i>Litoria lesueuri</i>	
Reptiles		
Eastern Snake-necked Turtle	<i>Chelodina longicollis</i>	
Jacky Lizard	<i>Amphibolurus muricatus</i>	
Lace Monitor	<i>Varanus varius</i>	
Robust Ctenotus	<i>Ctenotus robustus</i>	
Northern She-oak Skink	<i>Cyclodomorphus michaeli</i>	X
Dark-flecked Garden Sunskink	<i>Lampropholis delicata</i>	
Pale-flecked Garden Sunskink	<i>Lampropholis guichenoti</i>	
Three-toed Skink	<i>Saiphos equalis</i>	
Eastern Water-skink	<i>Eulamprus quoyii</i>	
Eastern Blue-tongue	<i>Tiliqua scincoides</i>	
Red-naped Snake	<i>Furina diadema</i>	
Black-bellied Swamp Snake	<i>Hemiaspis signata</i>	
Red-bellied Black Snake	<i>Pseudechis porphyriacus</i>	
Birds		
Brown Quail	<i>Coturnix ypsilophora</i>	

TABLE 3.3
FAUNA SPECIES OBSERVED WITHIN THE
WADALBA URBAN RELEASE STUDY AREA

Common Name	Scientific Name	Species Observed during Site Inspection
Crested Pigeon	<i>Ocyphaps lophotes</i>	X
Wonga Pigeon	<i>Leucosarcia picata</i>	
Purple Swamphen	<i>Porphyrio porphyrio</i>	
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	
Australian Pelican	<i>Pelecanus conspicillatus</i>	
Masked Lapwing	<i>Vanellus miles</i>	
Australian White Ibis	<i>Threskiornis molucca</i>	
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	
White-faced Heron	<i>Egretta novaehollandiae</i>	
White-necked Heron	<i>Ardea pacifica</i>	
Australian Wood Duck	<i>Chenonetta jubata</i>	X
Black Swan	<i>Cygnus atratus</i>	
Pacific Black Duck	<i>Anas superciliosa</i>	
Chestnut Teal	<i>Anas castanea</i>	
Grey Teal	<i>Anas gracilis</i>	
Grey Goshawk	<i>Accipiter novaehollandiae</i>	
Brown Goshawk	<i>Accipiter fasciatus</i>	
Wedge-tailed Eagle	<i>Aquila audax</i>	
Little Eagle ^{TS1}	<i>Hieraaetus morphnoides</i>	
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	
Whistling Kite	<i>Haliastur sphenurus</i>	
Black-shouldered Kite	<i>Elanus axillaris</i>	
Pacific Baza	<i>Aviceda subcristata</i>	
Australian Hobby	<i>Falco longipennis</i>	
Brown Falcon	<i>Falco berigora</i>	
Nankeen Kestrel	<i>Falco cenchroides</i>	X
Southern Boobook	<i>Ninox novaeseelandiae</i>	
Powerful Owl ^{TS1}	<i>Ninox strenua</i>	
Eastern Barn Owl	<i>Tyto javanica</i>	
Masked Owl ^{TS1}	<i>Tyto novaehollandiae</i>	
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	X
Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>	
Little Lorikeet ^{TS1}	<i>Glossopsitta pusilla</i>	
Yellow-tailed Black-Cockatoo	<i>Calyptorhynchus funereus</i>	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	X
Long-billed Corella	<i>Cacatua tenuirostris</i>	
Little Corella	<i>Cacatua sanguinea</i>	
Galah	<i>Eolophus roseicapillus</i>	X
Australian King-Parrot	<i>Alisterus scapularis</i>	X
Crimson Rosella	<i>Platycercus elegans</i>	
Eastern Rosella	<i>Platycercus eximius</i>	X
Swift Parrot ^{TS1 / TS2}	<i>Lathamus discolor</i>	
Tawny Frogmouth	<i>Podargus strigoides</i>	

TABLE 3.3
FAUNA SPECIES OBSERVED WITHIN THE
WADALBA URBAN RELEASE STUDY AREA

Common Name	Scientific Name	Species Observed during Site Inspection
Australian Owlet-nightjar	<i>Aegotheles cristatus</i>	
Dollarbird	<i>Eurystomus orientalis</i>	
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	X
Sacred Kingfisher	<i>Todiramphus sanctus</i>	
Rainbow Bee-eater^M	<i>Merops ornatus</i>	
White-throated Nightjar	<i>Eurostopodus mystacalis</i>	
White-throated Needletail^M	<i>Hirundapus caudacutus</i>	
Fork-tailed Swift^M	<i>Apus pacificus</i>	
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	
Shining Bronze-Cuckoo	<i>Chalcites lucidus</i>	
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	
Pheasant Coucal	<i>Centropus phasianinus</i>	
Welcome Swallow	<i>Hirundo neoxena</i>	X
Grey Fantail	<i>Rhipidura albiscapa</i>	
Rufous Fantail^M	<i>Rhipidura rufifrons</i>	
Willie Wagtail	<i>Rhipidura leucophrys</i>	
Black-faced Monarch^M	<i>Monarcha melanopsis</i>	
Rose Robin	<i>Petroica rosea</i>	
Eastern Yellow Robin	<i>Eopsaltria australis</i>	
Golden Whistler	<i>Pachycephala pectoralis</i>	
Rufous Whistler	<i>Pachycephala rufiventris</i>	
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	
Magpie-lark	<i>Grallina cyanoleuca</i>	
Eastern Whipbird	<i>Psophodes olivaceus</i>	X
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	
Cicadabird	<i>Coracina tenuirostris</i>	
Australasian Figbird	<i>Sphecotheres vieilloti</i>	
Spotted Quail-thrush	<i>Cinclosoma punctatum</i>	
White-throated Gerygone	<i>Gerygone albogularis</i>	
Weebill	<i>Smicrornis brevirostris</i>	
Striated Thornbill	<i>Acanthiza lineata</i>	
Yellow Thornbill	<i>Acanthiza nana</i>	
Brown Thornbill	<i>Acanthiza pusilla</i>	
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>	
White-browed Scrubwren	<i>Sericornis frontalis</i>	
Southern Emu-wren	<i>Stipiturus malachurus</i>	
Superb Fairy-wren	<i>Malurus cyaneus</i>	X
Variegated Fairy-wren	<i>Malurus lamberti</i>	
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>	
Dusky Woodswallow	<i>Artamus cyanopterus</i>	
Varied Sittella^{TS1}	<i>Daphoenositta chrysoptera</i>	
White-throated Treecreeper	<i>Cormobates leucophaea</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	

TABLE 3.3
FAUNA SPECIES OBSERVED WITHIN THE
WADALBA URBAN RELEASE STUDY AREA

Common Name	Scientific Name	Species Observed during Site Inspection
Spotted Pardalote	<i>Pardalotus punctatus</i>	X
Silvereye	<i>Zosterops lateralis</i>	
White-naped Honeyeater	<i>Melithreptus lunatus</i>	
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>	
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>	
Lewin's Honeyeater	<i>Meliphaga lewinii</i>	
Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>	X
Bell Miner	<i>Manorina melanophrys</i>	
Noisy Miner	<i>Manorina melanocephala</i>	X
Noisy Friarbird	<i>Philemon corniculatus</i>	
Australasian Pipit	<i>Anthus novaeseelandiae</i>	
Double-barred Finch	<i>Taeniopygia bichenovii</i>	
Red-browed Finch	<i>Neochmia temporalis</i>	
Olive-backed Oriole	<i>Oriolus sagittatus</i>	
Spangled Drongo	<i>Dicrurus bracteatus</i>	
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>	
White-winged Chough	<i>Corcorax melanorhamphos</i>	
Pied Currawong	<i>Strepera graculina</i>	
Pied Butcherbird	<i>Cracticus nigrogularis</i>	X
Grey Butcherbird	<i>Cracticus torquatus</i>	X
Australian Magpie	<i>Cracticus tibicen</i>	X
Australian Raven	<i>Corvus coronoides</i>	X
Northern Mallard*	<i>Anas platyrhynchos</i>	
Rock Dove*	<i>Columba livia</i>	
Striated Pardalote	<i>Pardalotus striatus</i>	
Cattle Egret^M	<i>Ardea ibis</i>	
Spotted Dove*	<i>Streptopelia chinensis</i>	X
Red-whiskered Bulbul*	<i>Pycnonotus jocosus</i>	
House Sparrow*	<i>Passer domesticus</i>	
Common Myna*	<i>Sturnus tristis</i>	
Common Starling*	<i>Sturnus vulgaris</i>	
Mammals		
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>	
Brown Antechinus	<i>Antechinus stuartii</i>	
Common Dunnart	<i>Sminthopsis murina</i>	
Northern Brown Bandicoot	<i>Isodon macrourus</i>	
Long-nosed Bandicoot	<i>Perameles nasuta</i>	
Common Brushtail Possum	<i>Trichosurus vulpecula</i>	
Common Ringtail Possum	<i>Pseudocheirus peregrinus</i>	
Squirrel Glider^{TS1}	<i>Petaurus norfolcensis</i>	
Sugar Glider	<i>Petaurus breviceps</i>	
Common Wombat	<i>Vombatus ursinus</i>	
Swamp Wallaby	<i>Wallabia bicolor</i>	

TABLE 3.3
FAUNA SPECIES OBSERVED WITHIN THE
WADALBA URBAN RELEASE STUDY AREA

Common Name	Scientific Name	Species Observed during Site Inspection
Red-necked Wallaby	<i>Macropus rufogriseus</i>	
Bush Rat	<i>Rattus fuscipes</i>	
Swamp Rat	<i>Rattus lutreolus</i>	
House Mouse *	<i>Mus musculus</i>	
Black Rat *	<i>Rattus rattus</i>	
Rabbit *	<i>Oryctolagus cuniculus</i>	X
Brown Hare *	<i>Lepus capensis</i>	
Horse *	<i>Equus caballus</i>	
European cattle *	<i>Bos taurus</i>	
Goat *	<i>Capra hircus</i>	
Fox *	<i>Vulpes vulpes</i>	X
Cat *	<i>Felis catus</i>	
Dog *	<i>Canis lupus familiaris</i>	
Large Forest Bat	<i>Vespadelus darlingtoni</i>	
Grey-headed Flying-fox ^{TS1 / TS2}	<i>Pteropus poliocephalus</i>	
Eastern Horseshoe-bat	<i>Rhinolophus megaphyllus</i>	
Yellow-bellied Sheathtail-bat ^{TS1}	<i>Saccolaimus flaviventris</i>	
White-striped Freetail-bat	<i>Tadarida australis</i>	
Eastern Freetail-bat ^{TS1}	<i>Mormopterus norfolkensis</i>	
Undescribed Freetail Bat	<i>Mormopterus "Species 1"</i>	
Gould's Long-eared Bat	<i>Nyctophilus gouldi</i>	
Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>	
Little Bentwing-bat ^{TS1}	<i>Miniopterus australis</i>	
Eastern Bentwing-bat ^{TS1}	<i>Miniopterus schreibersii oceanensis</i>	
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	
Chocolate Wattled Bat	<i>Chalinolobus morio</i>	
Greater Broad-nosed Bat ^{TS1}	<i>Scoteanax rueppellii</i>	
Eastern Broad-nosed Bat	<i>Scotorepens orion</i>	
Eastern Forest Bat	<i>Vespadelus pumilus</i>	
Little Forest Bat	<i>Vespadelus vulturnus</i>	
Key		
Species name ^{TS1} = Threatened Species (TSC Act 1995)		
Species name ^{TS2} = Threatened Species (EPBC Act 1999)		
* = Introduced Species		

SECTION 4

ASSESSMENTS AND CONCLUSION

4.1 ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT (1999) ASSESSMENT

The *Environment Protection and Biodiversity Conservation Act*, (1999) requires that Commonwealth approval be obtained for certain actions. The Act provides an assessment and approvals systems for actions that have a significant impact on matters of National Environment Significance (NES). These may include:-

- Wetlands protected by international treaty (the Ramsar Convention);
- Nationally listed threatened species and ecological communities;
- Nationally listed migratory species.

Actions are projects, developments, undertakings, activities, series of activities or alteration of any of these. An action that needs Commonwealth approval is known as a controlled action. A controlled action needs approval where the Commonwealth decides the action would have a significant effect on a NES matter.

Where a proposed activity is located in an area identified to be of NES, or such that it is likely to significantly affect threatened species, ecological communities, migratory species or their habitats, the matter needs to be referred to the Australian Government Department of the Environment (AGDE).

The following assessment in accordance with the EP&BC Act Policy Statement 1.1 *Significant Impact Guidelines* (AGDE 2013) is provided:

i. Are there any Matters of National Environmental Significance located in the area of the proposed action?

A search of the Protected Matters Search Tool (AGDE 2015) was conducted for EPBC Listed threatened and migratory species recorded within 10 km of the subject site.

Threatened Species

The subject site does not contain suitable habitat for threatened flora species listed within the *EPBC Act* (1999).

There is suitable habitat present within the subject site for the following threatened fauna species listed within the *EP&BC Act* (1999):

- Grey-headed Flying-fox (*Pteropus poliocephalus*); and
- Large-eared Pied Bat (*Chalinolobus dwyeri*)

The Grey-headed Flying-fox have been observed during previous surveys within the Wadalba Urban Release Area, however were no roost or camps sites were observed within the subject site during surveys.

Nationally Listed Threatened Ecological Communities

No threatened ecological communities, listed within the *EP&BC Act* (1999), were observed within or adjoining the subject site during surveys.

Nationally Listed Migratory Species

The following migratory species listed within the *EP&BC Act* (1999), have been observed within the Wadalba Urban Release Area during previous surveys:

- Rainbow Bee-eater (*Merops ornatus*);

- Fork-tailed Swift (*Apus pacificus*);
- White-throated Needletail (*Hirundapus caudacutus*);
- Rufous Fantail (*Rhipidura rufifrons*);
- Black-faced Monarch (*Monarcha melanopsis*); and
- Cattle Egret (*Ardea ibis*).

These species were not observed within the subject site during current surveys.

It is considered that there is not suitable habitat present for other locally occurring migratory fauna species listed within the *EPBC Act* (1999).

ii. Considering the proposed action at its broadest scope, is there potential for impacts on Matters of National Environmental Significance?

The proposal will require the removal of a relatively small area of predominantly exotic vegetation which provides potential foraging habitat for nationally listed locally occurring threatened fauna and migratory species.

iii. Are there any proposed measures to avoid or reduce impacts on Matters of National Environmental Significance?

Yes, the DEC (2004) have identified that an assessment of the habitat and corridor values of the naturally vegetated areas within the Wadalba Urban Release Area have been undertaken and areas for conservation (the proposed Wadalba Wildlife Corridor) and areas which could be developed without impacting on conservation values have been determined. The identified wildlife corridor areas under the agreement are required to be transferred to Council ownership and management in accordance with the Wadalba Wildlife Corridor Management Plan (Conacher Travers 2006).

The proposed development is consistent with the deemed concurrence agreement development and conservation areas.

iv. Are any impacts of the proposed action on Matters of National Environmental Significance likely to be significant impacts?

Assessments in accordance with the EP&BC Act Policy Statement 1.1 *Significant Impact Guidelines* (AGDE 2013) are provided in Appendix 1 for nationally listed threatened and migratory species observed within the Wadalba Urban Release Area.

These assessments have concluded that the proposal is not likely to have a significant impact on the threatened or migratory species listed within the *EP&BC Act* (1999) which were observed.

With regard to nationally listed threatened species with suitable habitat present, which were not observed during surveys, it is considered that the proposal is not likely to:

- lead to a long-term decrease in the size of an important population of a species;
- reduce the area of occupancy of an important population;
- fragment an existing important population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a threatened species becoming established in the threatened species' habitat;
- introduce disease that may cause a species to decline; or
- interfere with the recovery of the species.

The following reasons are provided:

- The proposed development area is relatively small in area;
- The areas of proposed habitat loss are relatively disturbed;

- Areas for conservation (the proposed Wadalba Wildlife Corridor) and areas which could be developed without impacting on conservation values have been previously determined; and
- The nationally listed threatened species have not been recorded within the subject site.

CONCLUSION

It is considered that a referral of this project to the Australian Government Department of the Environment is not required as the proposed action is not likely to have a significant impact on a matter of National Environmental Significance.

4.2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT (1979)

The *Environmental Planning and Assessment Act* (1979) is a state applicable act administered by the NSW State Government. Section 5(A) of the *EP&A Act* 1979 provides seven factors (referred to as the assessment of significance or 7 part test) which must be taken into account by a consent authority in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities or their habitats, listed within the *Threatened Species Conservation Act* (1995).

An assessment of significance has been undertaken for threatened species, populations and ecological communities listed within the *TSC Act* (1995), observed or with suitable habitat contained within the subject site which are not covered under the deemed concurrence agreement issued by DEC (2004). The assessment is provided in Appendix 2 of this report and results of the assessment are summarised below.

TSC Act Listed Threatened Species

No threatened flora species listed within the *TSC Act* (1995) were observed within the subject site during surveys.

The following threatened fauna species with suitable habitat present have been observed within the study area during surveys:

- Square-tailed Kite (*Lophoictinia isura*);
- Little Eagle (*Hieraaetus morphnoides*);
- Little Lorikeet (*Glossopsitta pusilla*);
- Masked Owl (*Tyto novaehollandiae*);
- Varied Sittella (*Daphoenositta chrysoptera*).
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*);
- Eastern Freetail-bat (*Mormopterus norfolkensis*);
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*);
- Little Bentwing-bat (*Miniopterus australis*); and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

The subject site is located within the Wadalba Urban Release Area where designated areas are subject to a deemed concurrence agreement issued by the NSW Department of Environment and Conservation (now Office of Environment and Heritage) under Clause 64 of the *Environmental Planning and Assessment Regulation* (2000), for any impacts under the *Threatened Species Conservation Act* (1995)

the DEC (2004) have identified that an assessment of the habitat and corridor values of the naturally vegetated areas within the Wadalba Urban Release Area have been undertaken and areas for conservation (the proposed Wadalba Wildlife Corridor) and areas which could be developed without impacting on conservation values have been determined.

The development proposed is in accordance with the deemed concurrence agreement and is considered not likely to have a significant impact on threatened species listed within the *TSC Act* (1995).

TSC Act Listed Threatened Populations

No threatened populations were observed within the subject site;

The proposed development is not likely to have a significant impact on threatened populations listed within the *TSC Act* (1995).

TSC Act Listed Threatened Ecological Communities

No threatened ecological community were observed within the subject site;

The proposed development is not likely to have a significant effect on threatened ecological communities listed within the *TSC Act* (1995);

4.3 STATE ENVIRONMENTAL PLANNING POLICIES

SEPP 14 – Coastal Wetlands

The subject site is not included within an area mapped as a wetland in SEPP 14.

SEPP 26 – Littoral Rainforest

The subject site is not included within an area mapped as a littoral rainforest in SEPP 26.

SEPP 44 - Koala Habitat Protection

The subject site was assessed for activity by Koalas using the following methods:

- i. A search of the BioNet Atlas of NSW Wildlife (NSW OEH 2015) was undertaken to identify records of Koalas in the area;
- ii. The site was surveyed on foot with any species of Koala food trees being inspected for signs of Koala usage. Trees were inspected and identified for presence of Koalas, scratch and claw marks on the trunk and scats around the base of each tree. The proportion of any trees showing signs of Koala use was calculated for the whole of the site. Additionally the location and density of droppings if found were documented;
- iii. Koalas were also targeted during spotlight surveys;
- iv. Identification and assessment of the density of tree species listed as Koala food trees in State Environmental Planning Policy No. 44 - Koala Habitat Protection was undertaken across the site.

TABLE 4.1 SEPP-44 KOALA FEED TREE SPECIES (From SEPP-44 Schedule 2)			
Scientific Name	Common Name	Observed On Site	Percentage within survey plots
<i>Eucalyptus tereticornis</i>	Forest Red Gum	No	0%
<i>Eucalyptus microcorys</i>	Tallowwood	No	0%
<i>Eucalyptus punctata</i>	Grey Gum	No	0%
<i>Eucalyptus viminalis</i>	Ribbon or Manna Gum	No	0%
<i>Eucalyptus camaldulensis</i>	River Red Gum	No	0%
<i>Eucalyptus haemastoma</i>	Broad-leaved Scribbly Gum	No	0%
<i>Eucalyptus signata</i>	Scribbly Gum	No	0%
<i>Eucalyptus albens</i>	White Box	No	0%
<i>Eucalyptus populnea</i>	Bimble Box or Poplar Box	No	0%
<i>Eucalyptus robusta</i>	Swamp Mahogany	No	0%

No Koala food tree species as listed on Schedule 2 of State Environmental Planning Policy No. 44 - Koala Habitat Protection (SEPP 44) were observed within the subject site. Therefore the site does not contain potential koala habitat as defined by SEPP 44.

No Koalas were observed during the fauna survey and no evidence of Koala habitation, such as scats, claw and scratch marks, were located on the site. Therefore the subject site is considered to not form core koala habitat as defined by SEPP 44.

4.4 SPECIFIC LOCAL GOVERNMENT AREA ASSESSMENTS

The subject site is located within the Wadalba Urban Release Area and is subject to the requirements of the deemed concurrence agreement and the Wadalba Wildlife Corridor Management Plan (Conacher Travers 2006).

4.5 CONCLUSIONS

Based on the detailed field survey and information provided in this report it is concluded that:

- i. No threatened flora species were observed within the subject site;
- ii. The following threatened fauna species have been observed within the Wadalba Urban Release Area during previous surveys and have suitable habitat present:
 - Square-tailed Kite (*Lophoictinia isura*);
 - Little Eagle (*Hieraaetus morphnoides*);
 - Little Lorikeet (*Glossopsitta pusilla*);
 - Masked Owl (*Tyto novaehollandiae*);
 - Varied Sittella (*Daphoenositta chrysoptera*).
 - Grey-headed Flying-fox (*Pteropus poliocephalus*);
 - Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*);
 - Eastern Freetail-bat (*Mormopterus norfolkensis*);
 - Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*);
 - Little Bentwing-bat (*Miniopterus australis*); and
 - Greater Broad-nosed Bat (*Scoteanax rueppellii*).
- iii. No endangered populations were observed within the subject site during surveys;
- iv. No endangered ecological communities were observed within the subject site during surveys;
- v. The following species listed as migratory within the *EP&BC Act* (1999), were observed within the Wadalba Urban Release Area during previous surveys:
 - Rainbow Bee-eater (*Merops ornatus*);
 - Fork-tailed Swift (*Apus pacificus*);
 - White-throated (Needletail *Hirundapus caudacutus*);
 - Rufous Fantail (*Rhipidura rufifrons*)
 - Black-faced Monarch (*Monarcha melanopsis*); and
 - Cattle Egret (*Ardea ibis*).
- vi. The proposed development is not likely to have a significant effect on threatened species, populations or ecological communities or their habitats, listed within the *TSC Act* (1995);
- vii. A Species Impact Statement is not required for the proposed development;
- viii. A referral to the Australian Government Department of the Environment is considered not necessary.

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APPENDIX 1

**ENVIRONMENTAL PROTECTION AND BIODIVERSITY CONSERVATION ACT
(1999)
SIGNIFICANT IMPACT ASSESSMENT**

ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT (1999) SIGNIFICANT IMPACT ASSESSMENT

Criteria identified within the EPBC Act Policy Statement 1.1 *Significant Impact Guidelines* (AGDE 2013), have been addressed below to determine whether there is a real chance or possibility, that the proposed action is likely to have a significant impact on threatened species, migratory species and/or threatened ecological communities observed within the subject site.

1.1 EPBC Act Listed Threatened Species

The following threatened fauna species, listed within the *EPBC Act* (1999), were observed within the study area:

- Swift Parrot (*Lathamus discolor*); and
- Grey-headed Flying-fox (*Pteropus poliocephalus*).

Swift Parrot (*Lathamus discolor*)

Endangered Species Important Population Criteria

Questions (in bold) to determine whether the proposal is likely to have a significant impact on an endangered species are as follows:

Lead to a long-term decrease in the size of an important population of the species;

The subject site does not contain suitable habitat for this species.

This species is highly mobile and nomadic, while the proposal may result in a small reduction in foraging habitat within the subject site, there are larger areas of suitable habitat for this species within the locality and the Wadalba Wildlife Corridor area.

It is therefore considered that the proposal is not likely to lead to the long-term decrease in the size of an important population of the Swift Parrot.

Reduce the area of occupancy of an important population;

The subject site does not contain suitable habitat for this species.

It is therefore considered that the proposal is not likely to reduce the area of occupancy of an important population.

Fragment an existing important population into two or more populations;

Due to the mobile nature of this species and the fact that it is nomadic and migratory it is considered that the proposed development is not of a type that is likely to result in the fragmentation an existing important population into two or more populations.

Adversely affect habitat critical to the survival of a species;

There has currently been no critical habitat for this species declared under the *EPBC Act* (1999) or listed within a recovery plan for this species.

The subject site does not contain suitable habitat for this species.

Furthermore the proposal is not likely to adversely affect an area necessary for the long term maintenance of the species essential to the survival of the species or an area necessary to maintain genetic diversity and long term evolutionary development or an area necessary for the reintroduction of populations or recovery of the species, critical to the survival of the species.

Therefore the proposed action is not likely to adversely affect habitat critical to the survival of this species.

Disrupt the breeding cycle of a population;

The Swift Parrot is a migratory species that breeds in Tasmania and its offshore islands in summer (Schodde & Tidemann, 1986).

It is therefore considered that the proposal will not disrupt the breeding cycle of an important population of this species.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that a species is likely to decline;

The subject site does not contain suitable habitat for this species. There are larger areas of many different suitable habitat types that support this species within the locality and the Wadalba Wildlife Corridor area. It is therefore considered not likely that the proposed action will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat;

The proposed development is not of a type that is likely to result in the establishment in invasive species that are harmful to this species, becoming established in this species habitat.

Introduce disease that may cause the species to decline; or

The proposed development is not of a type that is likely to introduce disease that may cause this species to decline.

Interferes substantially with recovery of the species

The subject site does not contain suitable habitat for this species. It is considered that the proposed action is not likely to interfere substantially with the recovery of the species.

It is therefore considered that the proposal is not likely to have a significant impact on the Swift Parrot.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

With regard to the nationally listed vulnerable species observed within the site, several criteria must be assessed to satisfy the requirements of the *EPBC Act* (1999). Criteria identified within the EPBC Act Policy Statement 1.1 *Significant Impact Guidelines* (AGDE 2013), is required to determine whether there is a real chance or possibility, that the proposed action is likely to have a significant impact on a migratory species.

Vulnerable Species Important Population Criteria

For the purposes of assessment of a threatened species under the *EPBC Act* (1999) an assessment as to whether the species comprises an important population is required.

An “*important population*” is one that is necessary for a species’ long-term survival and recovery. Questions (**in bold**) to determine whether a population is an “*important population*” are as follows:

Whether the population has been identified within a recovery plan

A draft recovery plan exists for this species at state level (DECCW 2009). An important population of this species has not been identified as occurring within the subject site within any recovery plan.

Whether the population constitutes a key source population for breeding or dispersal

No Grey-headed Flying Fox roost or camp sites were observed within the subject site. It is considered that while the specimens observed foraging within the locality may be part of a larger population, they do not alone constitute a key source population for breeding or dispersal.

Whether the population constitutes a population necessary for maintaining genetic diversity

No Grey-headed Flying Fox roost or camp sites were observed within the subject site. It is considered that while the specimens observed foraging within the locality may be part of a larger population, they do not alone constitute a population necessary for maintaining genetic diversity.

Whether the population is at the limit of its known distribution

The Grey-headed Flying-fox is known to occupy the coastal lowlands and slopes of south-eastern Australia from Bundaberg to Geelong and are usually found at altitudes < 200 m. Areas of repeated

occupation extend inland to the tablelands and western slopes in northern New South Wales and the tablelands in southern Queensland. Sightings in inland areas of southern New South Wales and Victoria are uncommon. There are rare records of individuals or small groups west to Adelaide, north to Gladstone and south to Flinders Island (DECCW 2009).

This species is therefore not at the limit of its distribution within the subject site.

From the above information and details it is considered that the Grey-headed Flying-fox observed during surveys is not:

- Identified in a recovery plan for this species;
- A key source population for breeding or dispersal;
- A population necessary for maintaining genetic diversity;
- A population which is near this species range.

Therefore it is considered that the threatened species observed does not satisfy the criteria of an important population as identified by the AGDE (2013) guidelines.

Notwithstanding the above conclusions if the precautionary approach is adopted, further consideration as to whether the proposed action is likely to have a significant impact on this species needs to assess the significant impact criteria (AGDE 2013) for a vulnerable species.

Questions (in bold) to determine whether the proposal is likely to have a significant impact on an important population of a vulnerable species are as follows:

Lead to a long-term decrease in the size of an important population of a species;

This species utilised rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops (OEH 2014).

While the proposal may result in a small reduction in forging habitat within the subject site, there are larger areas of suitable habitat for this species within the locality and the Wadalba Wildlife Corridor area.

It is therefore considered that the proposal is not likely to lead to the long-term decrease in the size of an important population of the Grey-headed Flying-fox.

Reduce the area of occupancy of an important population;

The proposed development may require the removal of some potential habitat for this species, however there are larger areas of suitable habitat for this species within the locality and the Wadalba Wildlife Corridor area.

It is therefore considered that the proposal is not likely to reduce the area of occupancy of an important population.

Fragment an existing important population into two or more populations;

Due to the mobile nature of this species and the fact that it is nomadic and migratory it is considered that the proposed development is not of a type that is likely to result in the fragmentation an existing important population into two or more populations.

Adversely affect habitat critical to the survival of a species;

There has currently been no critical habitat for this species declared under the *EPBC Act* (1999) or listed within a recovery plan for this species.

Due to the presence of larger areas of suitable habitat for this species present within the locality it is considered that the subject site does not contain habitat necessary for foraging, breeding, roosting, or dispersal.

Furthermore the proposal is not likely to adversely affect an area necessary for the long term maintenance of the species essential to the survival of the species or an area necessary to maintain

genetic diversity and long term evolutionary development or an area necessary for the reintroduction of populations or recovery of the species, critical to the survival of the species.

Therefore the proposed action is not likely to adversely affect habitat critical to the survival of this species.

Disrupt the breeding cycle of an important population;

No Grey-headed Flying Fox roost or camp sites were observed within the subject site.

It is therefore considered that the proposal will not disrupt the breeding cycle of an important population of this species.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that a species is likely to decline;

There are larger areas of many different suitable habitat types that support this species within the locality. It is therefore considered not likely that the proposed action will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;

The proposed development is not of a type that is likely to result in the establishment in invasive species that are harmful to this species, becoming established in this species habitat.

Introduce disease that may cause the species to decline; or

The proposed development is not of a type that is likely to introduce disease that may cause this species to decline.

Interferes substantially with recovery of the species

It is considered that the proposed action is not likely to interfere substantially with the recovery of the species.

It is therefore considered that the proposal is not likely to have a significant impact on the Grey-headed Flying-fox.

1.2 EPBC Act Listed Threatened Ecological Communities

No threatened ecological communities, listed within the EPBC Act (1999), were observed within the subject site.

The proposal is not likely to have a significant impact on threatened ecological communities listed within the EPBC Act (1999).

1.3 EPBC Act Listed Migratory Species

The following migratory fauna species, listed within the EPBC Act (1999), were observed within the subject site:

- Rainbow Bee-eater (*Merops omatus*);
- Fork-tailed Swift (*Apus pacificus*);
- White-throated (Needletail *Hirundapus caudacutus*);
- Rufous Fantail (*Rhipidura rufifrons*);
- Black-faced Monarch (*Monarcha melanopsis*); and
- Cattle Egret (*Ardea ibis*).

Rainbow Bee-eater (*Merops omatus*)

Determining Important Habitat for a Migratory Species

For the purposes of assessment of a migratory species under the EPBC Act (1999) an assessment as to whether the site provides an area of important habitat is required. Questions (**in bold**) to determine whether the site provides an area of "*important habitat*" are as follows:

Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or

Due to the low numbers of this species observed and the presence of larger areas of suitable habitat within adjoining lands it is considered that the subject site does not support an ecologically significant proportion of the population of the species.

Habitat that is of critical importance to the species at particular life-cycle stages; and/or

The subject site is considered to provide potential foraging and roosting and breeding habitat for this species. The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). Larger areas of suitable habitat this species are present within the adjoining areas and therefore the subject site is considered to not be habitat that is of critical importance to the species at particular life-cycle stages.

Habitat utilised by a migratory species which is at the limit of the species range

This species is widespread across Australia (Higgins 1999). Therefore the subject site is considered to not contain habitat utilised by a migratory species which is at the limit of the species range.

Habitat within an area where the species is declining

The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). The population demographics for this species within the local area are not known. Further studies are required in order to ascertain whether the species is declining within the local area. These studies are beyond the scope of this assessment.

From the above information and details it is considered that the habitats for this species within the subject site are not:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
- Habitat that is of critical importance to the species at particular life-cycle stages; and/or
- Habitat utilised by a migratory species which is at the limit of the species range; or
- Habitat within an area where the species is declining.

Therefore it is considered that the habitat within the subject site for this migratory species does not satisfy the criteria of “*important habitat*” as identified by the DEWHA (2009).

Notwithstanding the above conclusions if the precautionary approach is adopted, further consideration as to whether the proposed action is likely to have a significant impact on this species needs to assess the significant impact criteria (DEWHA 2009) for a migratory species.

Significant impact Criteria

Questions (**in bold**) to determine whether the proposal is likely to have a significant impact on important habitat for a migratory species are as follows:

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species; or

While the proposal may result in a small reduction in suitable habitat for this species within the subject site, there are larger areas of suitable habitat for this species within the locality. Therefore it is considered that the proposed action is unlikely to substantially modify, destroy or isolate an area of important habitat for this species.

Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

The proposed action is not of a type of development that is likely to result in the establishment of an invasive species that is harmful to this species becoming established in an area of important habitat for this species.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species

According to Higgins (1999) this species is widespread across Australia with breeding records widespread and scattered on the east coast extending from near Cairns in Queensland south throughout Victoria. Populations in NSW move north for the austral winter. It is therefore considered that the modification of a relatively small amount of suitable habitat is not likely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is therefore considered that the proposal is not likely to have a significant impact on the Rainbow Bee-eater within the meaning of the *EPBC Act* (1999).

**Fork-tailed Swift (*Apus pacificus*);
Determining Important Habitat for a Migratory Species**

For the purposes of assessment of a migratory species under the *EPBC Act* (1999) an assessment as to whether the site provides an area of important habitat is required. Questions (**in bold**) to determine whether the site provides an area of “important habitat” are as follows:

Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or

Due to the presence of larger areas of suitable habitat within adjoining lands and the exclusively aerial nature of this species, it is considered that the subject site does not support an ecologically significant proportion of the population of the species.

Habitat that is of critical importance to the species at particular life-cycle stages; and/or

The subject site is considered to provide mainly foraging habitat for this species. The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). Larger areas of suitable foraging habitat for this species are present within the adjoining areas and therefore the subject site is considered to not be habitat that is of critical importance to the species at particular life-cycle stages.

Habitat utilised by a migratory species which is at the limit of the species range

This species is widespread and common in eastern and south-eastern Australia. In NSW it has been recorded in all coastal regions, extending inland to the western slopes of the great divide (EPBC 2010). Therefore the subject site is considered to not contain habitat utilised by a migratory species which is at the limit of the species range.

Habitat within an area where the species is declining

The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). The population demographics for this species within the local area are not known. Further studies are required in order to ascertain whether the species is declining within the local area. These studies are beyond the scope of this assessment.

From the above information and details it is considered that the habitats for this species within the subject site are not:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
- Habitat that is of critical importance to the species at particular life-cycle stages; and/or
- Habitat utilised by a migratory species which is at the limit of the species range; or
- Habitat within an area where the species is declining.

Therefore it is considered that the habitat within the subject site for this migratory species does not satisfy the criteria of “important habitat” as identified by the DEWHA (2009).

Notwithstanding the above conclusions if the precautionary approach is adopted, further consideration as to whether the proposed action is likely to have a significant impact on this species needs to assess the significant impact criteria (DEWHA 2009) for a migratory species.

Significant impact Criteria

Questions (**in bold**) to determine whether the proposal is likely to have a significant impact on important habitat for a migratory species are as follows:

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species; or

According to Higgins (1999) this species is exclusively aerial and occurs over most types of habitats. Therefore it is considered that the proposed action is unlikely to substantially modify, destroy or isolate an area of important habitat for this species.

Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

According to Higgins (1999) this species is exclusively aerial. It is therefore considered that the proposed action is not likely to result in the establishment of an invasive species that is harmful to this species becoming established in an area of important habitat for this species.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species

According to Higgins (1999) this species is exclusively aerial and occurs over most types of habitats. This species generally breeds in the northern hemisphere and return south during the non-breeding season.

It is therefore considered that the modification of a relatively small amount of foraging habitat is not likely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is therefore considered that the proposal is not likely to have a significant impact on the Fork-tailed Swift within the meaning of the *EPBC Act* (1999).

White-throated Needletail (*Hirundapus caudacutus*)

Determining Important Habitat for a Migratory Species

For the purposes of assessment of a migratory species under the *EPBC Act* (1999) an assessment as to whether the site provides an area of important habitat is required. Questions (**in bold**) to determine whether the site provides an area of "important habitat" are as follows:

Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or

Due to the presence of larger areas of suitable habitat within adjoining lands it is considered that the subject site does not support an ecologically significant proportion of the population of the species.

Habitat that is of critical importance to the species at particular life-cycle stages; and/or

The subject site is considered to provide mainly foraging habitat for this species. The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). Larger areas of suitable foraging habitat for this species are present within the adjoining areas and therefore the subject site is considered to not be habitat that is of critical importance to the species at particular life-cycle stages.

Habitat utilised by a migratory species which is at the limit of the species range

This species is widespread and common in eastern and south-eastern Australia. In NSW it has been recorded in all coastal regions, extending inland to the western slopes of the great divide (EPBC 2010). Therefore the subject site is considered to not contain habitat utilised by a migratory species which is at the limit of the species range.

Habitat within an area where the species is declining

The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). The population demographics for this species within the local area are not known. Further studies are required in order to ascertain whether the species is declining within the local area. These studies are beyond the scope of this assessment.

From the above information and details it is considered that the habitats for this species within the subject site are not:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
- Habitat that is of critical importance to the species at particular life-cycle stages; and/or
- Habitat utilised by a migratory species which is at the limit of the species range; or
- Habitat within an area where the species is declining.

Therefore it is considered that the habitat within the subject site for this migratory species does not satisfy the criteria of “*important habitat*” as identified by the DEWHA (2009).

Notwithstanding the above conclusions if the precautionary approach is adopted, further consideration as to whether the proposed action is likely to have a significant impact on this species needs to assess the significant impact criteria (DEWHA 2009) for a migratory species.

Significant impact Criteria

Questions (**in bold**) to determine whether the proposal is likely to have a significant impact on important habitat for a migratory species are as follows:

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species; or

According to Higgins (1999) this species is exclusively aerial and occurs over most types of habitats. Therefore it is considered that the proposed action is unlikely to substantially modify, destroy or isolate an area of important habitat for this species.

Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

According to Higgins (1999) this species is exclusively aerial. It is therefore considered that the proposed action is not likely to result in the establishment of an invasive species that is harmful to this species becoming established in an area of important habitat for this species.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species

According to Higgins (1999) this species is exclusively aerial and occurs over most types of habitats. This species generally breeds in the northern hemisphere and return south during the non-breeding season.

It is therefore considered that the modification of a relatively small amount of foraging habitat is not likely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is therefore considered that the proposal is not likely to have a significant impact on the White-throated Needletail within the meaning of the *EPBC Act* (1999).

Rufous Fantail (*Rhipidura rufifrons*)

Determining Important Habitat for a Migratory Species

For the purposes of assessment of a migratory species under the *EPBC Act* (1999) an assessment as to whether the site provides an area of important habitat is required. Questions (**in bold**) to determine whether the site provides an area of “important habitat” are as follows:

Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or

Due to the presence of larger areas of suitable habitat within adjoining lands it is considered that the subject site does not support an ecologically significant proportion of the population of the species.

Habitat that is of critical importance to the species at particular life-cycle stages; and/or

The subject site is considered to provide foraging and breeding habitat for this species. The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). Larger areas of suitable foraging habitat and breeding for this species are present within the adjoining areas and therefore the subject site is considered to not be habitat that is of critical importance to the species at particular life-cycle stages.

Habitat utilised by a migratory species which is at the limit of the species range;

This species is widespread along the eastern coast of Australia from Queensland to Victoria (Higgins *et al* 2006). Therefore the subject site is considered to not contain habitat utilised by a migratory species which is at the limit of the species range.

Habitat within an area where the species is declining.

The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). The population demographics for this species within the local area are not known. Further studies are required in order to ascertain whether the species is declining within the local area. These studies are beyond the scope of this assessment.

From the above information and details it is considered that the habitats for this species within the subject site are not:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
- Habitat that is of critical importance to the species at particular life-cycle stages; and/or
- Habitat utilised by a migratory species which is at the limit of the species range; or
- Habitat within an area where the species is declining.

Therefore it is considered that the habitat within the subject site for this migratory species does not satisfy the criteria of “*important habitat*” as identified by the DEWHA (2009).

Notwithstanding the above conclusions if the precautionary approach is adopted, further consideration as to whether the proposed action is likely to have a significant impact on this species needs to assess the significant impact criteria (DEWHA 2009) for a migratory species.

Significant impact Criteria

Questions (**in bold**) to determine whether the proposal is likely to have a significant impact on important habitat for a migratory species are as follows:

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate and area of important habitat for a migratory species;

While the proposal may result in a small reduction in suitable habitat for this species within the subject site, there are larger areas of suitable habitat for this species within the locality. An area of suitable habitat for this species will also be retained within the subject site. Therefore it is considered that the proposed action is not likely to substantially modify, destroy or isolate and area of important habitat for this species.

Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

The proposed action is not of a type of development that is likely to result in the establishment of an invasive species that is harmful to this species becoming established in an area of important habitat for this species.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is considered that the subject site and adjoining areas do not contain an ecologically significant proportion of the population of this species. It is therefore considered that the proposed development is not likely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is therefore considered that the proposal is not likely to have a significant impact on the Rufous Fantail within the meaning of the *EPBC Act* (1999).

Black-faced Monarch (*Monarcha melanopsis*)

Determining Important Habitat for a Migratory Species

For the purposes of assessment of a migratory species under the *EPBC Act* (1999) an assessment as to whether the site provides an area of important habitat is required. Questions (in bold) to determine whether the site provides an area of “important habitat” are as follows:

Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or

Due to the presence of larger areas of suitable habitat within adjoining lands it is considered that the subject site does not support an ecologically significant proportion of the population of the species.

Habitat that is of critical importance to the species at particular life-cycle stages; and/or

The subject site is considered to provide foraging and breeding habitat for this species. The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). Larger areas of suitable foraging habitat and breeding for this species are present within the adjoining areas and therefore the subject site is considered to not be habitat that is of critical importance to the species at particular life-cycle stages.

Habitat utilised by a migratory species which is at the limit of the species range;

This species is widespread along the eastern coast of Australia from Queensland to Victoria (Higgins *et al* 2006). Therefore the subject site is considered to not contain habitat utilised by a migratory species which is at the limit of the species range.

Habitat within an area where the species is declining.

The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). The population demographics for this species within the local area are not known. Further studies are required in order to ascertain whether the species is declining within the local area. These studies are beyond the scope of this assessment.

From the above information and details it is considered that the habitats for this species within the subject site are not:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
- Habitat that is of critical importance to the species at particular life-cycle stages; and/or
- Habitat utilised by a migratory species which is at the limit of the species range; or
- Habitat within an area where the species is declining.

Therefore it is considered that the habitat within the subject site for this migratory species does not satisfy the criteria of “important habitat” as identified by the DEWHA (2009).

Notwithstanding the above conclusions if the precautionary approach is adopted, further consideration as to whether the proposed action is likely to have a significant impact on this species needs to assess the significant impact criteria (DEWHA 2009) for a migratory species.

Significant impact Criteria

Questions (in bold) to determine whether the proposal is likely to have a significant impact on important habitat for a migratory species are as follows:

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate and area of important habitat for a migratory species;

While the proposal may result in a small reduction in suitable habitat for this species within the subject site, there are larger areas of suitable habitat for this species within the locality. An area of suitable habitat for this species will also be retained within the subject site. Therefore it is considered that the proposed action is not likely to substantially modify, destroy or isolate and area of important habitat for this species.

Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

The proposed action is not of a type of development that is likely to result in the establishment of an invasive species that is harmful to this species becoming established in an area of important habitat for this species.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is considered that the subject site and adjoining areas do not contain an ecologically significant proportion of the population of this species. It is therefore considered that the proposed development is not likely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is therefore considered that the proposal is not likely to have a significant impact on the Black-faced Monarch within the meaning of the *EPBC Act* (1999).

Cattle Egret (*Ardea ibis*)

Determining Important Habitat for a Migratory Species

For the purposes of assessment of a migratory species under the *EPBC Act* (1999) an assessment as to whether the site provides an area of important habitat is required. Questions (**in bold**) to determine whether the site provides an area of “important habitat” are as follows:

Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or

This species is widespread and common according to migrations, movements and breeding localities between approximately Bundaberg in Queensland from the coast south-west to Port Augusta South Australia (Marchant and Higgins 1990). It is considered that the proportion of the population of this species utilising the subject site is likely to be similar within the other areas of suitable habitat available within the region. It is therefore considered that the subject site does not support an ecologically significant proportion of the population of the species.

Habitat that is of critical importance to the species at particular life-cycle stages; and/or

The Cattle Egret is a partial migrant which winters in Australia and New Zealand, and travels to breeding colonies in south-east Queensland and north-east New South Wales, with some birds staying within wintering areas to breed (Marchant and Higgins 1990).

The subject site is considered to provide mainly foraging habitat for this species. The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). Larger areas of suitable habitat for this species are present within the locality and therefore the subject site is considered to not be habitat that is of critical importance to the species at particular life-cycle stages.

Habitat utilised by a migratory species which is at the limit of the species range

In Australia this species is widespread and common in north-eastern Western Australia, across the Top End, Northern Territory, and in south-eastern Australia from Bundaberg, Queensland to Port Augusta, South Australia, including Tasmania. Therefore the subject site is considered to not contain habitat utilised by a migratory species which is at the limit of the species range.

Habitat within an area where the species is declining

The subject site has not been registered as critical habitat for this species within the provisions of the *EPBC Act* (1999). The population demographics for this species within the local area are not known. Further studies are required in order to ascertain whether the species is declining within the local area. These studies are beyond the scope of this assessment.

From the above information and details it is considered that the habitats for this species within the subject site are not:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
- Habitat that is of critical importance to the species at particular life-cycle stages; and/or
- Habitat utilised by a migratory species which is at the limit of the species range; or
- Habitat within an area where the species is declining.

Therefore it is considered that the habitat within the subject site for this migratory species does not satisfy the criteria of “*important habitat*” as identified by the DEWHA (2009).

Notwithstanding the above conclusions if the precautionary approach is adopted, further consideration as to whether the proposed action is likely to have a significant impact on this species needs to assess the significant impact criteria (DEWHA 2009) for a migratory species.

Significant impact Criteria

Questions (**in bold**) to determine whether the proposal is likely to have a significant impact on important habitat for a migratory species are as follows:

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species; or

This species is mostly associated with disturbed agricultural grazing land habitats. While the proposal may result in a small reduction in suitable habitat for this species within the subject site, there are larger areas of suitable habitat for this species within the locality. Therefore it is considered that the proposed action is unlikely to substantially modify, destroy or isolate an area of important habitat for this species.

Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

The proposed action is not of a type of development that is likely to result in the establishment of an invasive species that is harmful to this species becoming established in an area of important habitat for this species.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species

According to Marchant and Higgins (1990) this species is widespread and common according to migrations, movements and breeding localities between approximately Bundaberg in Queensland from the coast south-west to Port Augusta South Australia. The range of the Cattle Egret has expanded to include every continent except Antarctica and is widely distributed across Australia. Genetically birds within Australia have come from Asian origins. The Cattle Egret is a partial migrant which winters in Australia and New Zealand, and travels to breeding colonies in south-east Queensland and north-east New South Wales, with some birds staying within wintering areas to breed. It is therefore considered that the modification of a relatively small amount of foraging habitat is not likely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is therefore considered that the proposal is not likely to have a significant impact on the Cattle Egret within the meaning of the *EPBC Act* (1999).

1.4 Determination of Impact Significance on EPBC Act Listed Threatened Species, Threatened Ecological Communities and Migratory Species.

It is considered that the proposal is not likely to have a significant impact on threatened species, threatened ecological communities or migratory species listed within the *EPBC Act* (1999).

It is considered that a referral of this project to AGDE is not required, as assessment in accordance with the criteria provided by AGDE (2013) has determined that the proposal is not likely to have a significant impact on a matter of national environmental significance.

APPENDIX 2

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT (1979) SECTION 5(A) ASSESSMENT

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT (1979) SECTION 5(A) ASSESSMENT

As identified in Section 5(A) of the *EP&A Act* 1979 the following matters need to be addressed to determine whether or not a significant effect on threatened species, populations or ecological communities or their habitats is likely to result from the proposed development.

1.1 ASSESSMENT OF SIGNIFICANCE / 7 – PART TEST

For the purposes of the following assessments the definitions of specific terminology and interpretations of the key terms used are as per the DECC (2007) Threatened species assessment guidelines. Further clarification is also provided where deemed appropriate.

- a) ***In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,***

FAUNA

Little Eagle (*Hieraaetus morphnoides*)

This species forages in a variety of habitats including woodland open forest, partially cleared areas, along watercourses and around wetlands, avoiding large areas of dense forest. This species nests in mature living trees in open forest, woodland and remnant areas including farmland and areas close to urban development (Marchant and Higgins 1993).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Square-tailed Kite (*Lophoictinia isura*)

The Square-tailed Kite inhabits the coastal forested and wooded lands of tropical and temperate Australia. The Square-tailed Kite is a specialist hunter of passerines, especially honeyeaters, and insects in the tree canopy, picking most prey items from the outer foliage (Marchant & Higgins 1993).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Little Lorikeet (*Glossopsitta pusilla*)

Little Lorikeets are distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Lorikeets are gregarious, usually foraging in small flocks, often with other species of lorikeet. They feed primarily on nectar and pollen in the tree canopy, particularly on profusely-flowering eucalypts, but also on a variety of other species including, melaleucas and mistletoes (Courtney & Debus 2006).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Swift Parrot (*Lathamus discolor*)

This species feeds mainly on nectar and lerp from eucalypt flowers, particularly Blue Gum (*Eucalyptus globulus*). On the mainland, the Swift Parrot congregates where winter flowering species such as Yellow Gum, Red Ironbark, Mugga Ironbark, Box Gums and Swamp Gum. This species also occurs within Blackbutt, Forest Red Gum, Swamp Mahogany and Spotted Gum dominated communities along the coast. The Swift Parrot is a migratory species that breeds in Tasmania and its offshore islands in summer. In late March almost the entire population migrates to mainland Australia spreading from Victoria through to central and coastal NSW and south east Queensland (Saunders and Tzaros 2011).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site does not contain suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Powerful Owl (*Ninox strenua*)

The Powerful Owl breeds in open or closed sclerophyll forests and woodlands, including wet sclerophyll forest and dry sclerophyll forest and woodlands. They nest in hollows in large old trees; usually living Eucalyptus, within or below canopy in stumps or broken-off trunks. Powerful Owls are sedentary within home ranges of about 1,000 hectares within open eucalypt, casuarina or Callitris pine forest and woodlands, though they often roost in denser vegetation, including rainforest or exotic pine plantations. Powerful Owls feed mainly on medium-sized arboreal marsupials (Higgins 1999).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site does not contain suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Barking Owl (*Ninox connivens*)

The Barking Owl utilises dry sclerophyll forests and woodlands of tropical, temperate and semi-arid zones, particularly those associated with watercourses, wetlands and forest edges. Nests in large hollows in live eucalypts, often near open country (Higgins 1999).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Masked Owl (*Tyto novaehollandiae*)

The Masked Owl is widespread through forests and woodlands. The Masked Owl is known to

utilise forest margins and isolated stands of trees within agricultural land. This species is often found in heavily disturbed forest where its prey of small and medium sized mammals can be readily obtained. The Masked Owl is dependent upon hollow bearing trees all year round requiring old mature trees with large hollows for breeding and as diurnal roosting sites (Higgins 1999).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Varied Sittella (*Daphoenositta chrysoptera*)

This species inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland (Higgins & Peter 2002).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Flame Robin (*Petroica phoenicea*)

This species inhabits upland wet to moist eucalypt forests and woodlands with an open understorey, often on ridges and slopes to 1800m above sea level during the spring-summer breeding season. During the autumn to winter non breeding season this species disperses to open lowland habitats including grasslands, farmland dry sclerophyll forests and woodlands (Higgins and Peter 2002).

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site. It is considered that the subject site contains suitable habitat for this species, however this species has not been observed within the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Squirrel Glider (*Petaurus norfolcensis*)

The Squirrel Glider inhabits dry sclerophyll forest and woodland nesting in small tree hollows. The presence of mature, hollow-bearing eucalypts is a critical characteristic of habitat occupied by Squirrel Gliders as they are utilised for nesting and breeding (Suckling, 1995).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site does not contain suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

Grey-headed Flying-foxes roost in camps during the day, which may contain tens of

thousands of individuals, and then disperse to surrounding areas to forage at night. This species inhabits a wide range of habitats including rainforest, mangroves, paperbark forests, wet and dry sclerophyll forests and urbanised and agricultural areas. Camps are commonly formed in gullies, typically not far from water and usually in vegetation with a dense canopy. Camps may also be formed in urban parkland areas (Tidemann 1995).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)

The Yellow-bellied Sheathtail-bat inhabits a wide variety of habitats from wet and dry sclerophyll forest, to open woodland, shrubland, mallee, grassland and desert. They fly fast and straight usually over the canopy, and lower over open spaces and at forest edges. This species roosts in large tree hollows (Churchill 2008).

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site. It is considered that the subject site contains suitable habitat for this species, however this species has not been observed within the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern Freetail Bat (*Mormopterus norfolkensis*)

The Eastern Freetail-bat utilises dry eucalypt forest and woodland on the coastal side of the Great Dividing Range. They show a preference for open spaces in woodland or forest, and are more active in the upper slopes of forest areas rather than in riparian zones. They also forage over large waterways. This species roosts in hollow trees (usually in hollow spouts), under exfoliating bark and in various man-made structures (Churchill 2008).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Large-eared Pied Bat (*Chalinolobus dwyeri*)

In the Sydney Basin this species is most commonly recorded in areas of high fertility soils in wet sclerophyll forest along the edges of sandstone escarpments. This species is also recorded in dry sclerophyll forest and woodlands, sub-alpine woodland, at the edges of rainforest, Callitris forest and within sandstone outcrop country. Large-eared Pied Bats roost in clusters in fairy martin nests and on the ceilings of caves, crevices in cliffs and mines in twilight areas (Churchill 2008).

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site. It is considered that the subject site contains suitable habitat for this species, however this species has not been observed within the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)

The Eastern False Pipistrelle inhabits wet sclerophyll forest, open forest, rainforest and coastal mallee. They generally prefer tall and wet forests where the trees are more than 20 metres high and the understorey is dense. This species predominantly roosts in hollow trunks of eucalypts, however have also been reported to roost in caves and old buildings (Churchill 2008).

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site. It is considered that the subject site contains suitable habitat for this species, however this species has not been observed within the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*)

Preferred habitats for this species include rainforest, wet and dry sclerophyll forest, open woodland, Melaleuca forests and open grassland. The Eastern Bentwing-bat forages high in forested areas from just above canopy height to many times canopy height. In more open areas such as grasslands, flight may be within a few metres of the ground. Eastern Bentwing-bats are cave dwellers, but will also roost in man-made structures such as road culverts and mines (Churchill 2008).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Little Bentwing-bat (*Miniopterus australis*)

The Little Bentwing-bat forages below the canopy within well-timbered areas including rainforest, vine thicket, wet and dry melaleuca swamps and coastal forests. This species is a cave dweller with individuals congregating during the summer months in maternity colonies and disperse during the winter. Other roost sites used by this species include abandoned mines, tunnels, stormwater drains and occasionally in buildings, banana trees and tree hollows (Churchill 2008).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Greater Broad-nosed Bat (*Scoteanax rueppellii*)

A wide variety of habitats are utilised by this species including moist gullies in mature coastal forest, rainforest, open woodland, Melaleuca swamp woodland, wet and dry sclerophyll forest, cleared areas with remnant trees and tree-lined creeks in open areas. The Greater Broad-nosed Bat forages about 5m from the edge of isolated trees, forest remnants or along forest crowns with a slow direct flight pattern. This species is known to roost in tree hollows,

cracks and fissures in trunks and dead branches, under exfoliating bark, as well as in man-made structures including roofs of old buildings (Churchill 2008).

This species has been observed within the Wadalba Urban Release Area during surveys. The subject site contains a relatively small area of suitable habitat for this species.

The Wadalba Urban Release Area deemed concurrence agreement applies to the subject site.

It is therefore considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

No flora or fauna specimens belonging to any endangered population were observed within the subject site. Therefore the proposed action will not have an adverse effect on the life cycle of any species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

c) *In the case of a critically endangered or endangered ecological community, whether the action proposed:*

i. Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

No endangered ecological communities are present within the subject site.

It is therefore considered that the proposed development is not likely to have an adverse effect on the extent of any ecological community such that its local occurrence is likely to be placed at risk of extinction.

ii. Is likely to substantially and adversely modify the composition such that its local occurrence is likely to be placed at risk of extinction,

No endangered ecological communities are present within the subject site.

It is therefore considered that the proposed development is not likely to substantially and adversely modify the composition such that the local occurrence of any ecological communities are likely to be placed at risk of extinction.

d) *In relation to the habitat of threatened species, populations or ecological community:*

i. The extent to which habitat is likely to be removed or modified as a result of the action proposed, and

The proposed development is likely to result in the removal or modification of approximately 0.3 hectares of land cleared of natural vegetation with exotic grassland and Coral Tree thickets.

ii. Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

The site consists of land cleared of native vegetation with exotic grassland and coral tree thicket vegetation. The site does form part of an area of native vegetation and does not provide a potential natural connective habitat for wildlife within the locality.

It is therefore considered that the proposed development is not likely to result in an area of habitat becoming fragmented or isolated from other areas of habitat as a result of the proposed action.

iii. The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality

The site consists of land cleared of native vegetation with exotic grassland and coral tree thicket vegetation. The site does form part of an area of native vegetation and does not provide a potential natural connective habitat for wildlife within the locality.

The DEC (2004) have identified that an assessment of the habitat and corridor values of the naturally vegetated areas within the Wadalba Urban Release Area have been undertaken and areas for conservation (the proposed Wadalba Wildlife Corridor) and areas which could be developed without impacting on conservation values have been determined.

It is therefore considered that the habitats proposed to be removed and modified within the subject site for the proposal are not important to the long-term survival of threatened species, populations or ecological communities in the locality.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

The subject site has not been classed as critical habitat within the provisions of the *Threatened Species Conservation Act* (1995). Therefore it is considered that the proposed development will not have an adverse effect on critical habitat either directly or indirectly.

f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

Recovery Plans

There are no recovery plans for the threatened species with suitable habitat present which are not covered by the deemed concurrence agreement issued by DEC (2004).

Threat Abatement Plans

The following threat abatement plans have been prepared by the NSW OEH:

- Bitou Bush and Boneseed Threat Abatement Plan;
- Predation by the Red Fox (*Vulpes vulpes*) Threat Abatement Plan; and
- Predation by *Gambusia holbrooki* (plague minnow) Threat Abatement Plan.

The proposal is considered to be not inconsistent with the objectives or actions identified within these plans.

g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

An assessment of the likely impact of the proposal on Key Threatening Processes listed following the issue of the deemed concurrence agreement (DEC 2004) are provided in Table A1.1.

TABLE A1.1 ASSESSMENT OF KEY THREATENING PROCESSES		
Key Threatening Processes Listed under the <i>TSC Act</i> (1995)	Likely to Occur as a Result of the Proposal	Impact or Occurrence Likely to be Mitigated or Reduced as a Result of the Proposal

TABLE A1.1 ASSESSMENT OF KEY THREATENING PROCESSES		
Key Threatening Processes Listed under the TSC Act (1995)	Likely to Occur as a Result of the Proposal	Impact or Occurrence Likely to be Mitigated or Reduced as a Result of the Proposal
Alteration of habitat following subsidence due to longwall mining	No	No
Anthropogenic climate change	No	No
Competition and habitat degradation by feral goats (<i>Capra hircus</i>)	No	No
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners	No	No
Herbivory and environmental degradation caused by feral deer	No	No
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	No	No
Invasion and establishment of exotic vines and scramblers	No	No
Invasion and establishment of Scotch broom (<i>Cytisus scoparius</i>)	No	No
Invasion and establishment of the cane toad (<i>Bufo marinus</i>)	No	No
Invasion of native plant communities by African Olive <i>Olea europaea</i> L. subsp. <i>cuspidata</i>	No	No
Invasion, establishment and spread of <i>Lantana camara</i>	No	No
Invasion of native plant communities by exotic perennial grasses	No	No
Invasion of the yellow crazy ant (<i>Anoplolepis gracilipes</i> (Fr. Smith)) into NSW	No	No
Loss of hollow-bearing trees	No	No
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	No	No
Predation and hybridisation of feral dogs (<i>Canis lupus familiaris</i>)	No	No

The proposal does not constitute, is not part of and is not likely to result in the operation of, or increase the impact of a key threatening process, with regard to the key threatening processes listed since the deemed concurrence agreement was issued (DEC 2004).

ASSESSMENT OF SIGNIFICANCE CONCLUSION

- i. The proposed development is not likely to have a significant effect on threatened species, populations or ecological communities or their habitats;
- ii. A Species Impact Statement is not required for the proposed development.

05 C

Bushfire Assessment Report



BUSHFIRE ASSESSMENT REPORT

**PROPOSED RESIDENTIAL SUBDIVISION
JOHNS ROAD**

WADALBA

**NOVEMBER 2015
REF: 5058**

BUSHFIRE ASSESSMENT REPORT

**PROPOSED RESIDENTIAL SUBDIVISION
JOHNS ROAD**

WADALBA

NOVEMBER 2015

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PREFACE

This document prepared by *Conacher Consulting Pty Ltd* provides an assessment of the bushfire attack potential and the necessary bushfire protection strategies for the proposed residential subdivision of land at Johns Road, Wadalba. Aspects considered in relation to the Bushfire Assessment Report include; vegetation type, slopes, water supplies, entry and egress access, provision of defendable space and construction standards for the proposed buildings.

Report Prepared by:

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SECTION 1 INTRODUCTION

1.1 INTRODUCTION

This Bushfire Assessment Report has been prepared by *Conacher Consulting Pty Ltd* for a proposed residential subdivision development of land at Johns Road, Wadalba.

The objectives of this Report are to:

- i) Detail the assessment of the site in relation to bushfire hazard and attack;
- ii) Address the relevant requirements of Planning for Bushfire Protection (Rural Fire Service, 2006);
- iii) Identify if the development complies with the aims and objectives of Planning for Bushfire Protection (RFS, 2006);
- iv) Prepare a Report that supplies the relevant information for the Rural Fire Service and Council prior to granting a Bushfire Safety Authority (RFS) or development approval (Council).

1.2 DESCRIPTION OF THE PROPERTY

The site has frontage to Johns Road along its southern boundary. Details regarding the subject site are provided in Table 1.1.

TABLE 1.1 SITE DETAILS	
Location	Johns Road Wadalba
Description	Lot 1 DP306056
Topographic Map	Wyong 1:25 000
Local Government Area	Wyong Shire Council
Existing Land Use	Vacant
Proposed Development	Residential Subdivision

1.3 PROPOSED DEVELOPMENT

The development being assessed in this report is a proposed subdivision for residential allotments of variable size including a residual lot for inclusion in the Wadalba Wildlife Corridor.

SECTION 2

BUSHFIRE ATTACK ASSESSMENT

2.1 BUSHFIRE ASSESSMENT CRITERIA

Bushfire Prone Land Map

Council's Bushfire Prone Land Map shows the vegetation within the northern parts of the subject site as Category 1 Vegetation. The remainder of the subject site is within a 100 metre wide Buffer area. The location of the site in relation to Council's Bushfire Prone Land Map. However due to ongoing vegetation clearing for residential lots and dwelling developments the current bushfire Prone Land Map is out dated and inaccurate.

Forest Fire Danger Index

The subject site is located within the Wyong Shire Council Local Government Area in the Greater Sydney Region. The Forest Fire Danger Index for the Greater Sydney Region is rated at 100 for use in determining asset protection zone requirements and categories for bushfire attack.

Vegetation Classification

The principal vegetation types affecting the bushfire hazard located within 140 metres of the proposed lots are outlined below:

North – Forest and grassland within Wadalba Wildlife Corridor.

South – Cleared vegetation, managed land in lots under construction.

East – Managed land and Forest.

West – Cleared areas within existing residential estate and remnant riparian vegetation along drainage reserve.

Development Category

The proposed development is classified as a 'residential subdivision' under Chapter 4 of Planning for Bushfire Protection (RFS, 2006). Development consent is required from the Council for subdivision and a Bushfire Safety Authority is required from the Rural Fire Service. Development Consent, or a Complying Development Certificate is then required for individual dwellings.

Planning for Bushfire Protection (RFS, 2006)

Due to the presence of Category 1 vegetation and 100 metre Buffer areas adjacent to the subject site on the Bushfire Prone Land Map the development application is required to include a Bushfire Assessment Report prepared in accordance with the requirements of Planning for Bushfire Protection (RFS, 2006).

State Legislation

This development is integrated development and is subject to Section 91 of the EP&A Act. Section 100 of the Rural Fires Act also applies to the proposed development as it is for a subdivision of land. This will require an application to the RFS for a Bushfire Safety Authority.

Adjoining and Surrounding Development

Existing residential development is located to the east and south. The land to the west has been cleared prior to construction of residential lots and roads. The Wadalba Wildlife Corridor is located to the north.

2.2 BUSHFIRE HAZARD ASSESSMENT - SUBDIVISION

For subdivision purposes an assessment of the bushfire attack in relation to the adjoining lands, vegetation and slope gradients is provided in Table 2.1.

TABLE 2.1 BUSHFIRE ATTACK ASSESSMENT - SUBDIVISION (from Table A2.4 PBP, 2006)					
Direction	Vegetation Classification (within 140m)	Effective Slope (within 100m)	Recommended Width of APZ (metres)		
			APZ	IPA	OPA
North/North East/North West	Forest	Upslope	20	10	10
South	Managed Land	0-5° downslope	NR	NR	NR
East	Managed Land and Forest	Upslope	20	10	10
West	Managed Land/Remnant Vegetation	0-5° downslope	10	10	--
NR = No Requirement as no bushfire hazard present					

2.3 BUSHFIRE ATTACK LEVELS – FUTURE DWELLINGS

A preliminary assessment in relation to building construction levels (Bushfire Attack Levels for AS3959-2009) for any future dwellings within the estate is provided in Table 2.2.

TABLE 2.2 BUSHFIRE ATTACK LEVEL ASSESSMENT (from Table 2.4.2 of AS3959-2009)							
Direction	Vegetation Classification (greatest threat within 140m)	Effective Slope (within 100m)	Recommended Distance from Bushfire Hazard (metres)				
			BAL Flame Zone	BAL-40	BAL-29	BAL-19	BAL-12.5
North/ North East/ North West	Forest	Upslope	<19	19-25	25-35	35-48	48-100
South	Managed Land	0-5° downslope	NR	NR	NR	NR	NR
East	Managed Land	Upslope	<19	19-25	25-35	35-48	48-100
West/ South-West	Managed Land/ Remnant Vegetation	0-5° downslope	<10	10-14	14-20	20-29	29-100
NR – No requirement as no bushfire hazard present within 100m BAL – Bushfire Attack Levels							

SECTION 3

BUSHFIRE PROTECTION MATTERS

3.1 ASSET PROTECTION ZONE AND BUSHFIRE HAZARD MANAGEMENT

For the proposed development it is recommended that bushfire Asset Protection Zones (APZs) are established and maintained as outlined below:

North/North East

An APZ of minimum 20 metres width is required. This APZ is to be provided on the adjoining land to the east under the management of Council.

The perimeter road to the north, north-west and north-east in conjunction with building line setbacks will provide an appropriate APZ to these directions.

South

No APZ required as land is being developed for residential lots.

East

No APZ required due to presence of reduced vegetation/managed land under Eucalypt tree canopy and residential land.

West

No APZ required within the subject site.

The whole of the area within the bushfire Asset Protection Zones (APZs) can be maintained as an Inner Protection Area (IPA) in accordance with the standards described in Section 4.1.3 of PBP (RFS, 2006). However the IPA is only required to be 10 metres wide with the remainder of the APZ managed to the standards of an outer protection area. The responsible party for the inspection and maintenance of the APZs will be the developer until such time as each allotment is sold, where upon the responsibility will then transfer to the new owners of the land on which the APZ is located.

3.2 FUTURE BUILDING CONSTRUCTION LEVELS

Any future dwellings proposed for the subject lots following subdivision will need to be assessed in relation to the Bushfire Attack Level (BAL) applicable to each lot in accordance with Table 2.2 which has provided a preliminary assessment in accordance with AS3959-1999 (Australian Standard – Construction of Buildings in Bushfire Prone Areas).

The initial assessment undertaken indicates that each lot contains an area where a future dwelling can be constructed between BAL 40 and 12.5 construction standards.

3.3 ACCESS

Section 4.1.3 of PBP (RFS 2006) outlines the requirements for public roads within a residential subdivision. The objective of the public road system in a bushfire emergency is stated in PBP (RFS 2006) as:

“To provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.”

The proposed development will provide suitable ingress and egress routes to enable the safe evacuation of residents while simultaneously enabling access for emergency services.

3.4 WATER SERVICES

The existing urban development in the local area has reticulated water mains. It is expected that the proposed development will extend the existing water reticulation from the surrounding infrastructure therefore a supplementary form of water supply will not be necessary for fire fighting purposes. This water supply arrangement is in compliance with '*Planning for Bushfire Protection, 2006*' in respect of water supply.

The reticulated water supply, fire hydrant spacing, sizing and pressure is to comply with the requirements of AS2419.1 – 2005. A certification or test report from the Water Supply Authority is to be provided to demonstrate that the requirements of AS2419.1-2005 can be achieved during a bushfire event.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 AIM AND OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

“The aim of Planning for Bushfire Protection is to use the NSW development assessment system to provide for the protection of human life and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, on site amenity and protection of the environment” (PBP pg 1).

The preparation of this Bushfire Assessment Report and subsequent assessment by Council and the Rural Fire Service ensures compliance with the aim of Planning for Bushfire Protection.

The following comments are provided in relation to satisfying the objectives of PBP.

Objective 1

- (i) *afford occupants of any building adequate protection from exposure to a bush fire;*

Measures have been identified which can be implemented within the proposed subdivision development in regard to the establishment and maintenance of bushfire Asset Protection Zones (APZs) – see Sections 2.2 and 3.1 of this document.

The combination of Construction Standards according to AS3959-2009 and separation from the hazard using APZs will afford occupants of any building adequate protection from exposure to a bush fire.

Objective 2

- (ii) *provide for a defensible space to be located around buildings;*

The establishment and maintenance of bushfire Asset Protection Zones (APZs) will provide a defensible space located around buildings.

Objective 3

- (iii) *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*

Appropriate separation will be provided by the establishment and maintenance of adequate APZs and described in Sections 2.2 and 3.1.

Other measures to be used in conjunction with the APZs include:

Construction Standards AS3959-2009;
Adequate Water Services – see Section 3.4.

These strategies in combination are required to prevent direct flame contact and material ignition.

Objective 4

- (iv) *ensure that safe operational access and egress for emergency service personnel and residents is available;*

Existing and proposed access and egress infrastructure is described in Section 3.3. This will ensure safe operational ingress for emergency services and also simultaneous safe egress for residents during a bushfire emergency.

Objective 5

- (v) *provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ);*

The requirements for management and maintenance of bushfire protection measures including fuel loads in the Asset Protection Zone (APZ) are provided in Section 3.1 of this document.

Objective 6

- (vi) *ensure that utility services are adequate to meet the needs of fire fighters (and others assisting in bush fire fighting)*

The adequacy of utility services such as water supply is discussed in Section 3.4 of this document. The utility services are adequate to meet the needs of fire fighters (and others assisting in bush fire fighting).

4.2 CONCLUDING COMMENTS

The 'Deemed to Comply' requirements for the proposed subdivision include bushfire Asset Protection Zones (APZs) of widths as identified in Table 2.1. These APZs are to be established and maintained as Inner Protection Areas (IPAs) in accordance with the standards described in Section 4.1.3 of PBP (RFS, 2006).

With the implementation of the combination of measures recommended, and outlined in Sections 2 and 3 of this report, the overall aims and objectives of Planning for Bushfire Protection (RFS, 2006) can be achieved for the proposed development.

4.3 RECOMMENDATIONS

The following recommendations are provided in relation to reducing the potential for loss of life and property by the impact of bushfire.

- i. Establish and maintain minimum width Asset Protection Zones (APZs) of 20 metres to the north, north east and north west.
- ii. All APZs should be maintained as described in Section 4.1.3 of PBP (RFS, 2006);
- iii. Regular inspections and maintenance of the APZs within the subject site is to be undertaken by the owners / managers (or their agents) according to PBP (RFS, 2006);
- iv. Construct future dwellings to the relevant construction standards in accordance with AS3959-2009.
- v. This report should be referred to the Rural Fire Service for their review and issue of a Bushfire Safety Authority.

REFERENCES

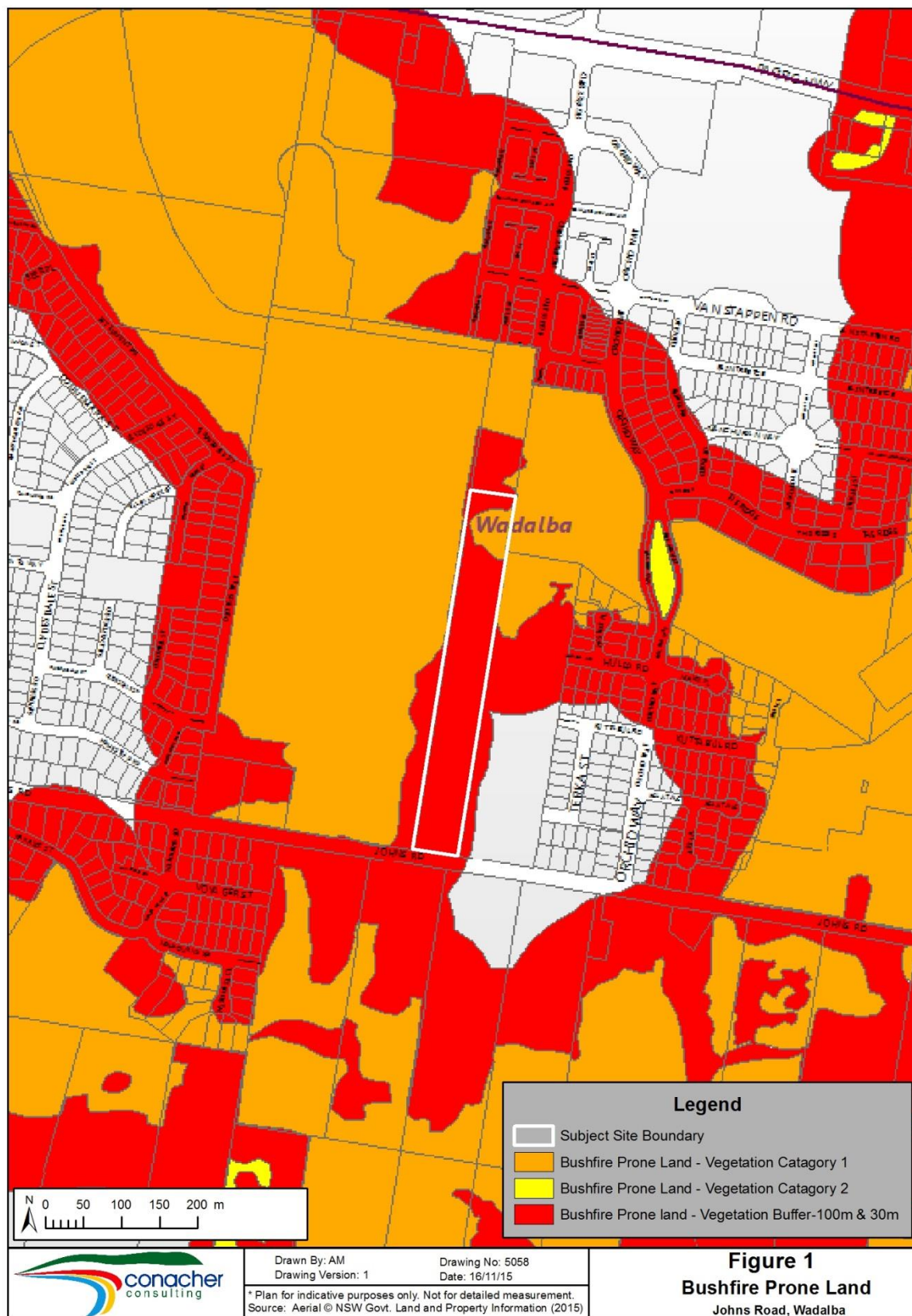
Rural Fire Service (2006) Planning for Bushfire Protection.

Standards Australia (2009) Australian Standard (AS3959-2009) Construction of Buildings in Bushfire Prone Areas.

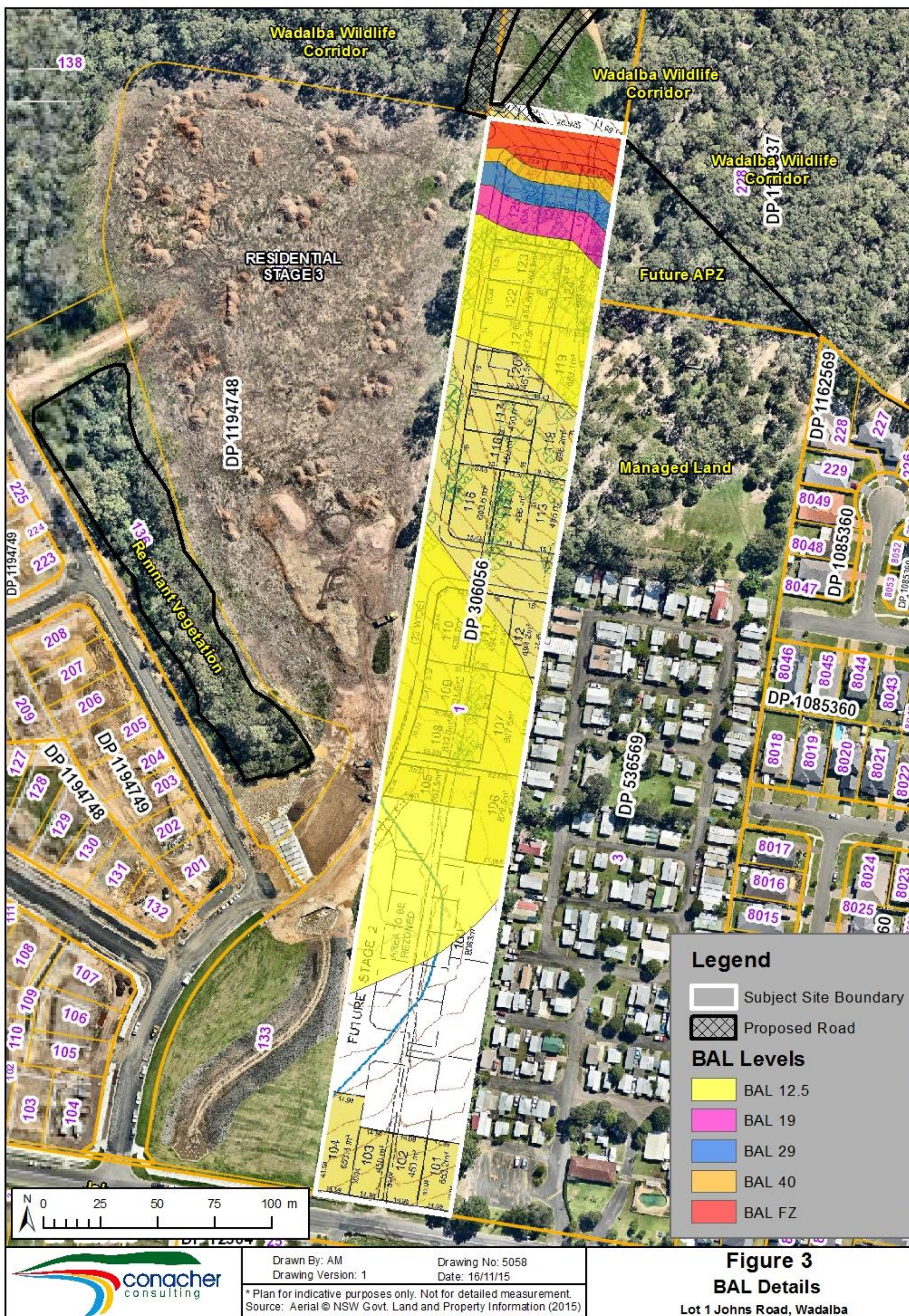
APPENDIX 1
BAL LEVELS FOR STAGE 1 LOTS

TABLE A1.1 BAL LEVELS FOR STAGE 1 LOTS		
Lot Number	BAL Level	Comments
Lot 101	Not Required	-
Lot 102	Not Required	-
Lot 103	Not Required	-
Lot 104	Not Required	-
Lot 105	12.5	-
Lot 106	12.5	-
Lot 107	12.5	-
Lot 108	12.5	-
Lot 109	12.5	-
Lot 110	12.5	-
Lot 111	12.5	-
Lot 112	12.5	BAL 12.5 intersects SW corner of lot
Lot 113	Not Required	-
Lot 114	Not Required	-
Lot 115	Not Required	-
Lot 116	Not Required	-
Lot 117	Not Required	-
Lot 118	Not Required	-
Lot 119	12.5	-
Lot 120	12.5	BAL 12.5 intersects NE corner of lot
Lot 121	12.5	-
Lot 122	12.5	-
Lot 123	12.5	-
Lot 124	12.5	Minor setback from NE corner to avoid BAL 19
Lot 125	40	Approximately 4 metre setback from northern Lot Boundary to avoid FZ BAL
Lot 126	40	Approximately 4 metre setback from northern Lot Boundary to avoid FZ BAL
Lot 127	40	Approximately 4 metre setback from northern Lot Boundary to avoid FZ BAL

FIGURES







05 D

AHIMS Report

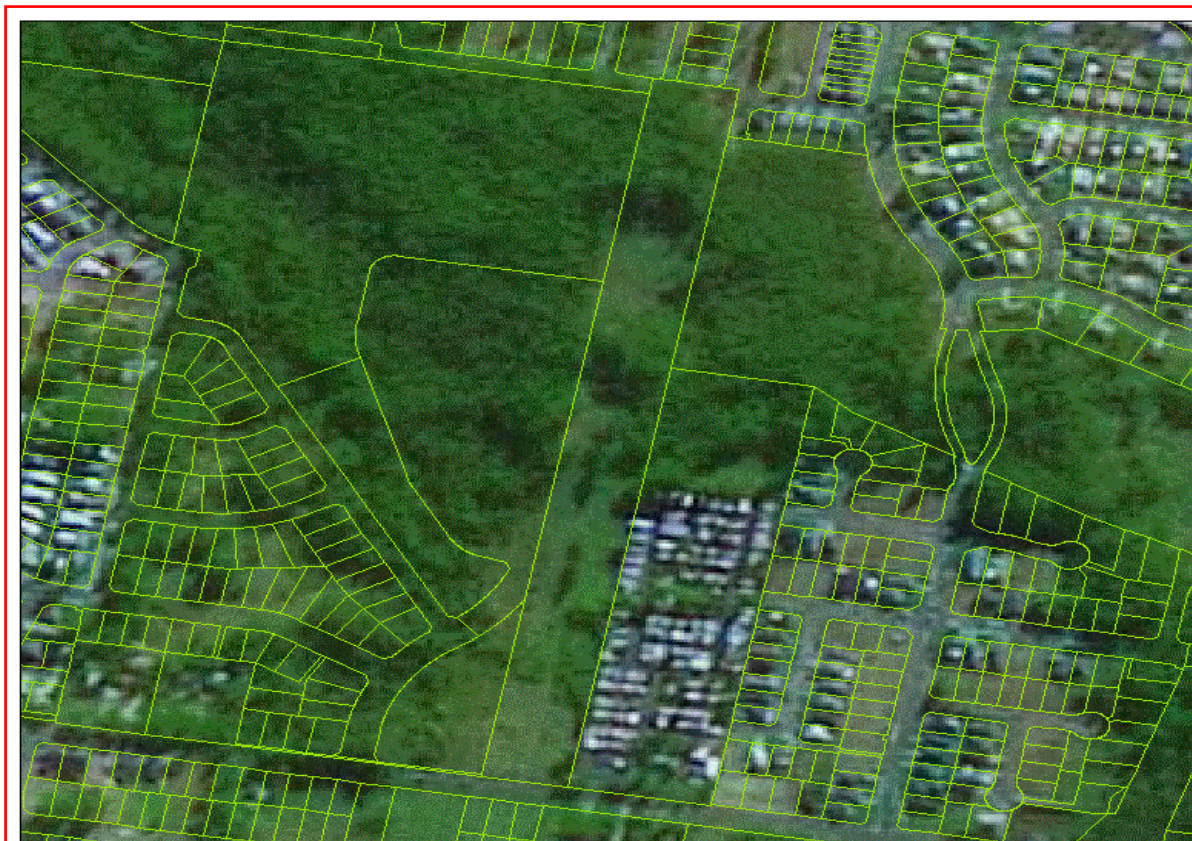
Tim Shelley
25 Lushington Street
East Gosford New South Wales 2250
Attention: Tim Shelley
Email: tandjshelley@bigpond.com

Date: 11 May 2016

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 1, DP:DP306056 with a Buffer of 50 meters,
conducted by Tim Shelley on 11 May 2016.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(http://www.nsw.gov.au/gazette\)](http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.